

## Tilburg University

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**DEVELOPING A DIGITAL LIBRARY  
STRATEGY AND PROCESS OF A CASE STUDY:  
TILBURG UNIVERSITY**

*Hans Geleijnse*

# **Developing a digital library**

## **Strategy and process of a case study: Tilburg University**

*Hans Geleijnse*

### **ABSTRACT**

This paper described the strategy for the development of a digital library at Tilburg University. This strategy is being developed in close connection with the overall strategy of the university. This is an important explanation for the firm commitment of the executive board of the university. The paper emphasizes the importance of a well elaborated planning process. A close cooperation between the library and the computer centre in order to realize the goals which were set was one of the success factors. The involvement of staff can be identified as the most important factor.

### **1. INTRODUCTION**

Within a period of three years Tilburg University managed not only to build a new library but also to reshape library and information services in an innovative fashion.

In the beginning there was an idea, a vision. An important impetus for developing a vision of a library of the future was the decision by the Dutch Minister of Education to fund the construction of a new library in the centre of the university campus. The Board of Governors of the University regarded this decision as a great opportunity and an essential stimulus for reconsidering the current library situation and the future developments with respect to information technology and to work out a program for a 'high-tech documentation, information and communication centre'.

When the new library was opened in May 1992, the direction for innovative services was set and various new and exciting facilities could be offered to users campus-wide. Since then these services have been renewed in such a way that the university still maintains a leading position in the innovation of scholarly information provision.

### **2. TILBURG UNIVERSITY AND ITS LIBRARY BEFORE 1989**

Tilburg University is a medium-sized university with a focus on the humanities and the social sciences. Currently 9,000 students are enrolled. The university employs 1,500 staff:

researchers, teachers and supporting staff.

In the seventies and early eighties the University focused very much on growth, in number of students and in number of faculties. This was considered to be important because of constant threats from governmental bodies that occasionally wanted to decrease the number of universities in the Netherlands. In that period there was an emphasis on diversification of courses that could be offered to the students. A new Department of Arts was started, information management was a new branch in the Department of Economics. In the Department of Social Sciences courses on Labour and Organization, Leisure Studies and Social Security were launched.

Over all, in that period the university could be characterized as an average institution with no special reputation of excellence and with no particularly strong international relations.

## **2.1 New university strategy**

In 1985/1986 the strategy of the university focused very explicitly on the stimulation of excellence in teaching and research. Within the medium term faculties were to reach the top three of their kind nation-wide. Internationalization was stimulated. The use of information technology had to be fostered both in teaching and research and in the supporting services. In other words, the university wanted to manifest itself as a dynamic, innovative and versatile university for the humanities and the social sciences.

Now, ten years later, the Tilburg Departments of Economics and Law hold a top ranking position in the country both in teaching and in research. Economists from all over the world regularly act as visiting professors at the Tilburg Center for Economic Research. Other research institutes, such as the Schoordijk Institute (a part of the Law Department), also maintain a prominent position.

## **2.2 The library between 1978 and 1989**

The library had completed the first wave of library automation in 1983 with the launch of the Online Public Access Catalogue and with the completion of its retro-conversion in 1986.

As early as 1978, the management of the library, as well as its staff, had developed plans and ideas which assigned an important role to modern technology and advanced forms of services. Cooperation with the computer centre and cooperation with others, such as the Dutch organisation for library automation Pica, were regarded as necessary in order to realize new and advanced services. Because of the ideas in the library with respect to the future role of libraries and electronic information, plans for staff education were developed and executed which caused an important improvement of skills in the library and a greater focus on the use of new technologies.

Another important impetus to this was given by the acquisition of a very important national collection on applied computer science in 1985. It stimulated the library to develop in-house databases (Excerpta Informatica) and to attract young and new staff that were committed to new technologies and to the development of new library applications.

In this period, library facilities were decentralized and organised in six different departmental libraries housed in various buildings on the university campus. The library was used quite intensively by faculty but did not play a prominent role in the educational process. Student use of the library, which altogether offered approximately 250 study places in the various locations, was limited.

Initiatives to develop a new and innovative library and to move in the direction of the digital library must be seen against this background: The library was ready to make an important step towards innovation and the university offered an environment which stimulated new initiatives with respect to the use of information technologies in order to improve teaching, learning and research.

### **3. A STRATEGY FOR THE DEVELOPMENT OF A DIGITAL LIBRARY**

#### **3.1 Policy strategy in 1989**

The decision of the Dutch government which enables Tilburg University to build a new library was an important impetus for broad consultation and intense discussions on the type of library that should be created. It was obvious to all participants, the library staff, the management of the computer centre and the senior management of the university that a new library should be in compliance complete with the new demands of the forthcoming electronic age.

In May 1989 Tilburg University Press published a basic document for the new library program: "The new library and the development of innovative information services at Tilburg University". This publication was a cooperative effort by the library staff, the staff of the computer centre and specialists from Digital Equipment Corporation and was inspired by the ideas of Leo Wieërs, who at that moment was the university librarian.

In this document the university's policy, which has been described before, was an explicit starting point: "This policy has challenged all faculties and supporting services into actively contributing to the realisation of this aim."

#### **Basic assumptions were:**

- The forthcoming changes in the scientific **information chain** will provide the author with more facilities both as a consumer and as a producer of new information.

- Close cooperation between the library and the computer centre can have a strong supportive influence in the primary process of academic education and research by making possible an **information-oriented workplace**, both inside and outside the library building.
- Optimal support can be offered to staff and students in all aspects of the gathering and use of information by focusing on **integration** of library information services with other computing facilities.
- The technical infrastructure should be characterized by flexibility and stability, and should be based on technological standards and **open solutions**.
- Only with the help of other parties can the technological potential in the field of information use be made operational. Hence there should be a clear and active preference for **cooperation** both within the university and with other parties: libraries, vendors, publishers and others.
- There should be a strong belief in the potential, the creativity and the **expertise of the staff** of library and computer centre. These two departments already have a history of successful partnership and cooperation. The library could take advantage of the experience of various staff members and, since 1985, has been developing its own applications in specific areas (f.e., the design, development and exploitation of the Excerpta Informatica databases).

### 3.2 The innovative direction

Central element in the concept was person-oriented information management:

- Databases can be consulted and documents can be requested from the desktop of the individual user.
- Electronic information can be retrieved from computerized collections which are stored remotely and without the intermediate steps of collecting and sending printed documents.
- The different applications on the desktop computer can be integrated.

### 3.3 Program description 1989

Based on the policy strategy and the central items seven projects were defined in order to examine the key areas in which innovative courses of action would be taken such as:

- imaging
- electronic publishing
- office automation
- automated circulation
- learning environment
- database development
- networking.

### 3.4 Start of various projects

In these seven key areas project teams were assembled using staff from the computer centre and the library, some key personnel from faculties and other university departments, and

consultants from Digital Equipment Corporation. These teams had to examine the technical requirements and opportunities and had to deliver a project plan with specific bench marks within six months.

## **4. SUPPORT AND COMMITMENT**

### **4.1 Support from the University**

It was of crucial importance that the Board of Governors and the University Council of Tilburg University acknowledged the program as one of the most important initiatives for the coming years and gave it full support. In June 1989 the Council decided to provide additional budgets to start up the first projects and to allocate a yearly budget for the maintenance and the substitution of hardware and software that had to be acquired in order to realize the goals of the programme. From the very start, however, it was obvious that all of the important investments for setting up the various pilot projects could only be realized with external funding.

### **4.2 Funding and support**

This programme was gradually realized with important financial contributions by the Dutch Ministry of Education, the Ministry of Economic Affairs and the Commission of the European Community. An agreement was made with the Dutch organization for library automation, Pica, to the effect that Pica would provide financial support and experts who would take an active part in the programme.

A clear and open technology architecture, based on standards and aimed at integration, was viewed as a prerequisite for success. For that reason, cooperation with business and industry was imperative. As the University's chief industrial partner, Digital Equipment Corp. supplied a large amount of technological expertise as well as financial means for making the programme a success. But cooperation was not restricted to Digital. Cooperation also took place with companies such as Verity, SPC and ID Systems and with major publishers such as Elsevier Science Publishers and Wolters Kluwer Academic Publishers.

It was never anyone's intention that these pilot projects should be executed in isolation and therefore cooperation was established with other university libraries. A European project within the framework of Comett (The Telephassa project) was realized with the Universitat Autònoma de Barcelona (Spain) and the University of Patras (Greece) aiming at organizing seminars on the use of information technologies in libraries and at developing interactive modules for user instruction.

A memorandum of understanding was signed with Carnegie Mellon University (Pittsburgh, USA) in order to exchange ideas and information. A pilot project on the Online Contents database (with the Dutch Royal Library in The Hague) was developed and sponsored by the

Ministry of Economic Affairs. This Ministry also sponsored the Lendomaat project, a project that aimed at the development of a completely self-service system for lending and returning library books and at full integration with the Local Library System provided by Pica.

Through numerous lectures, workshops, seminars and publications, Tilburg University drew international attention to the programme for a high-tech library.

## **5. BUSINESS PLAN AND MANAGEMENT**

### **5.1 Plan of Action, summer 1990**

Based on the reports of the seven project teams a blueprint was published in the summer of 1990 which described the fashion in which information technology would have to be applied in the total programme: 'Documentation, Information and Communication at Tilburg University. Plan of Action - Research -Services'.

A basic characteristic was that the technology architecture had to be able to support multi-vendor offerings, both hardware and software. Another principle was that the architecture had to be based on the use of open standards wherever these were relevant and available.

### **5.2 Project management**

In order to manage the various projects, to monitor the progress of the overall programme and to initiate new activities and projects in compliance with the general vision, a Programme Management was installed. This Programme Management (ProM) consisted of the senior management of the library and the computer centre en the various project managers. It regularly evaluated the results of the seven project teams, presenting state-of-the-art overviews on the seven key areas and proposals for new projects for development and implementation. The management recognized two important problems:

1. The actual budget was limited. It was obvious that not all of the possible projects could be launched.
2. The environment - university staff, students, library and computer centre staff - was rather sceptical about the innovative ideas on the digital library and badly needed a clear perspective. They had to be convinced, they wanted to see, in a concrete form, that bright ideas could become reality.

For these reasons, the Program Management decided:

1. To focus on the realization of clearly defined services such as:
  - a. An Online Contents database with the content pages of the current journals of the library, using the techniques of scanning and optical character recognition and to make it operational for the end-users, by fall 1990. The creation of such a service had already been requested by the library advisory committees for a very long time. With modern techniques and with governmental support these demands could be fulfilled.



- b. The first Campus-wide Information System in the Netherlands.
  - c. The KUB-Guide as a network navigation instrument to various local library databases, such as the OPAC, the Excerpta Informatica databases, the Online Contents database and the Community Information System (CWIS).
  - d. The first version of the "Integrated Desktop" that would directly benefit the users. In order to offer a campus-wide affordable solution it was decided not to focus on expensive SUN or UNIX work stations but on the PC environment.
2. To develop - in close cooperation with Digital Equipment - a demonstration model ('Quasi Modo') in order to give an impression of the impact of the program. To that purpose equipment was installed in a special room at the university. Presentations and demonstrations for university staff and external visitors could then be organized to visualize the idea of integration of data, texts, and images and to show the new innovative developments that would be possible in a few years.

For each of these services, new project teams were installed in order to develop the deliverables as they were specified in the action plan. Each project team would have one or more working groups in a specific field. In these teams and groups, library staff worked together with staff from the computer centre. In some cases, staff from other university departments and specialists from Digital joined the teams as well.

### 5.3 Developing by prototyping

The projects were realized without the use of any official standard method for system development. Functional and technical specifications were set. Subsequently, an experimental prototype was built. This prototype was tested and validated. Important principles were:

- to buy, whenever possible, what is available on the market
- to look for open solutions preferably based on (international) standards
- to realize cooperation and communication between members of the project teams through electronic conferencing
- to give every single member of a project team a task and a responsibility, with a strong emphasis on team spirit
- to report regularly to the Programme Management.

## 6. REALIZATION AND IMPLEMENTATION

In April 1991, a demonstration of the current status of these projects was organized in the main hall of the university, presenting an overview of what would be available in the new library. When the new library was opened by the Minister of Education, dr. Jo Ritzen, on 21 May 1992, several new services became available to the users:

1. A **fully self-service circulation system**, the 'Lendomaat', providing users with facilities for borrowing, checking out and returning books without assistance by library staff.
2. An **Online Contents database** giving users information about articles in 1600 journals.

This is a service comparable to Current Contents, but mapped on the journal collection of the library. The database was produced using **scanning and optical character recognition**.

In line with this new service a pilot project was launched in cooperation with Elsevier Science Publishers which complemented the standard bibliographical information in the database with keywords and abstracts of articles in the Elsevier journals to which Tilburg University subscribes.

3. The implementation of **KUBguide**, an online information system, offering transparent network navigation between various databases, such as the online public access catalogue, bibliographic and abstract databases, and community information.
4. **The realization of the integrated desktop.** By summer 1992 the planned integrated services were functioning on **250** PCs in the library and on about **1300** other PCs all over campus. All these PCs were equipped with a 80386SX processor using MS-Windows. All computers provide access to internal and external databases, Internet access and other communication tools. Various software packages with campus-wide licenses can be used in an integrated fashion. This broad implementation is unique because it offers a number of different computing services in an integrated form. In addition to these services, in January 1993 various CD-ROMs became available via the campus-wide network.

## 7. FIRST EVALUATION

After five years of operation an evaluation can be made:

1. The new library is a great success. Every day the building is overcrowded with especially students who want to write a paper using one of the desktops or to use the library in a traditional way.
2. The support on the side of the faculty is improving. A development is under way to implement the use of the integrated desktop and the use of electronic information in the curriculum. On the other hand it is clear that it takes time to persuade faculty to use these new facilities when remodelling their courses and to really integrate electronic information services and electronic communication facilities in the curricula.
3. The concept of the integrated desktop is widely accepted by the university, by the executive board and by all departments. With the development of new applications in other departments it is a logical precondition that these new services - for instance with respect to management information - should be fully compatible with the integrated desktop.

There are also problems, of course:

1. First of all there is a demand for more: more software, more computers, more printers, more support, but also a demand for more money to buy books and journals. As a result a new collection-management policy was set by the university giving the library and the departments a clear and more solid basis for funding in the next four years.

2. A completely different issue is the maintenance of the systems. It requires a lot of attention and a continuous effort on the part of both the library staff and the staff of the computer centre. Because of the heavy use made of the services, performance problems require attention. New solutions to new problems constantly have to be found.

## 8. CURRENT SITUATION

In 1994-1996 the library and computer centre focused on the improvement of the various services and on providing access to primary information. Currently all end-users have access, on more than 2400 computers (450 student work stations in the library, 400 student work station elsewhere on campus and approximately 1600 PCs for staff), to

- the full text of more than 100 Elsevier journals the library subscribes to and to journals provided by Kluwer Academic Publishers and Academic Press.
- the full text of research papers produced by researchers of the Departments of Economics and Social Sciences and by researchers of the Centre for Economic Research.
- the coloured images of 13,000 pictures and maps from the Topographic Historical Atlas of the province of Brabant.
- Netscape, E-mail.

The campus-wide information system has been converted to WWW. From September 1997 KUBweb using Netscape is the logical entry point to all in-house developed databases, to various CD Roms and other services. We expect that this will be extended in 1998 with a similar access to the OPAC. In my previous paper presented at this summer school these developments and the future focus have been elaborated more in detail.

## 9. STRATEGIC PLANNING BY THE LIBRARY

Strategic planning has become standard practice in Tilburg University library. Every two years the library makes a new plan for the next four years. The whole process of change over the last 10 years that had a major impact on the library staff and on the library as an organisation would have been impossible without planning. Several aspects will be discussed in my paper "Human Resources and the digital library".

The library plans were constantly made in conjunction with the university plans, especially the process of the development of the digital library described before. In general the strategic plan of the library contains:

- an evaluation of the past period: which goals have been achieved and which have not
- an SWOT analysis
- a definition of the goals and objectives for the next period
- the strategy to realize the goals
- a matching of tasks and means
- implications for staffing

- organisational change
- changes in job description
- educational plan.

In order to prepare such a plan the following steps are made:

1. Environmental scan.
2. Meetings with all faculty boards  
Interviews and discussions with key people in the university.
3. Internal discussion (brainstorm sessions) and identification of weaknesses, strengths, threats and opportunities. Broad internal consultations.
4. Internal discussion on what should be achieved in the next few years. Identification of key issues.
5. Preparation of first draft by the librarian.
6. Discussion with management teams of library and computer centre, discussion with member of Executive Board.
7. Preparation of a second draft.
8. Discussion in the library, in the departments. Discussion with the personnel committee that should agree with the plan.
9. Approval by Executive Board.

## **10. STRATEGY FOR THE NEXT FEW YEARS**

Tilburg University library recently presented an adapted strategic plan for the period 1997-2000. The new strategy was developed as a consequence of earlier steps in the direction of the digital library, based on the vision and the focal points which have been discussed before. The key points of the strategic plan of 1995 were reconfirmed:

- The library's service is focused on its internal users.
- The concept of the integrated desktop remains the starting point for library services, supporting education and research.
- Uniform access will be provided to heterogeneous databases.
- There will be a focus on systems for selecting and filtering information, tailor-made personal service, and the development of systems for knowledge navigation..

In the period 1997-2000 three goals will be highlighted:

1. Improvement of the quality of day-to-day service.  
First of all, a greater emphasis on quality management is required.  
A key issue in user service will be the choice between local availability/storage of primary information on the one hand and the use of data from other information suppliers on the other.  
The library confirmed its strong focus on distributed approaches rather than relying on central end-user services provided by commercial suppliers.

2. Optimizing the use of the integrated desktop for education and research.  
Various projects will be running in cooperation with faculties in order to make a better use of new facilities, to professionalize lecturers and to take part in the curriculum.  
The library is also committed in supporting electronic publishing by researchers.
3. The library wishes to maintain a leading position in Europe and to proceed with innovations.  
The focus will be on "knowledge navigation". We will set up a system that aims to:
  - determine the information need in dialogue with the user
  - select relevant files, and
  - search in these files for the user.

## **11. WHY A DIGITAL LIBRARY INITIATIVE AT TILBURG UNIVERSITY?**

The main factors which made it possible to develop a digital library initiative at Tilburg University can be summarized:

1. The university environment was ready for innovation and prepared to see the use of information technology as an important tool to improve the support of teaching and research.
2. There was an idea, a strategic plan, that completely matched the strategic plan of the university and that was a logical consequence of thorough considerations on technological developments and the increasing importance of electronic information.
3. A close cooperation between the library and the computer centre, not only at the level of senior management but also at the level of developers and other staff.
4. Personal commitment on the part of the Executive Board of the university and a close relationship between the senior managers of the library and the computer centre and the Member of the Board that is in charge of Finance, Library and Computing.
5. Support from the Dutch Government that considered developments in Tilburg as a good stimulus for innovative services in libraries in the rest of the Netherlands.
6. A good network of cooperation. Developments were not initiated in splendid isolation but in close cooperations with others: Digital Equipment, Pica, Elsevier Science Publishers, other universities such as Carnegie Mellon University (USA), Limerick University (Ireland), De Montfort University (England) and the partners in the Telephassa project, the University of Patras (Greece) and the Autonomous University of Barcelona (Spain).
7. The most important success factor, however, were the people: staff members who worked with enthusiasm and creativity to make a new library and develop new services. Strategic plans themselves will be worthless and remain paper tigers if there is not the power and the ability to actually realize the goals and objectives which were set in a strategic plan.

These factors were the basis for success and can also be the basis for work in the future as it is quite obvious that innovation cannot stop once a window to the future has been opened. Because there is a vision, accepted by the University Board as a strategic goal, new projects can and will be started in line with the overall strategy.