Computing and the library

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Fifteen years ago, February 1, 1980, the Helsinki University of Technology (HUT) Library stepped into the era of library computing: card catalogues were abandoned. Cataloguing was first performed off-line on a mini computer of Finnish origin, named MIKKO 6. New cataloguing files were dispatched once a month to the nearby State Computing Centre for batch processing and magnetic tape production. With the return mail came a fresh set of a monthly cumulated microfiche catalogue and a tape. The tape was further brought into the computer room of the HUT Computing Centre (CC), where the operator uploaded it on the two-year-old DEC-20, the first multi-user mainframe computer at HUT. The TENTTU databases of the Library were born. In 1981 they were opened up to the public. During the next fourteen years, they were to reside in three subsequent machines.

What is interesting to notice is that cooperative activities between the Library and the CC remained on the same level from 1980 to 1993. Why? Do library computing issues, by nature, differ so much from general computing, that potential benefits gained from other cooperation would have been too small to be truly desirable? No matter how computer-intensive, do library practices and services concern, basically, only the library itself? Neither of these statements seems to be true.

First, from an administrative point of view, both the Library and the CC belong to support units of the university. Despite their relative freedom however, they are members of the same institution. According to the strategy of the university, all its units have, first and foremost, the local university community to serve. That is why
computing issues, especially when they are focused on local circumstances and services, ought to be of mutual concern.

Second, library computing is based on computers, programs and data transmission, just like all computing to date. What makes it different from other computing, such as computer-aided design, is that, traditionally, library computing has meant, by and large, text manipulation. At first glance this seems to isolate library computing from other computing environments, particularly at a technological university. One might think for example that cooperative activities with text-based systems would not stimulate enough professional enthusiasm and inspiration, compared with challenges in, say, 3D graphics. In some sense this is true. But there are symptoms that speak for the contrary as well.

Growing interest in campus-wide information systems has meant a comeback for text-related issues. Having in mind that the volume of text information on a WWW or Gopher server grows quickly to that of a whole text database, it is easy to see that textual information asks for organization. Of no less significance are skills in text analysis and various search techniques.

Regardless of the seemingly common concern of university computing, mutual efforts to work for them together, rather than individually, have thus been modest. There seems to be at least two reasons for this: evolution of computer architecture on one hand, and lack of equal benefits gained from cooperation on the other.

The 1980s was the last decade of mainframe computer giants. Computers like DEC-20 needed special facilities, hours of weekly operating work and proper skills in low-level computing. Off-line cataloguing added routine maintenance procedures. It is obvious that the library could not have managed without cooperation with the CC. Strictly speaking though, cooperation of this type is not cooperation but outsourcing. Short-term benefits from outsourcing are clear - work for money and money for work, respectively - but long-term ones are much more difficult to see. At its worst,
outsourcing may build resistance to development. At its best, it may foster living interaction, especially if both parties belong to the same institution. In practice, outsourcing tends to be a rather mechanical arrangement, not very inspiring in terms of future cooperative challenges but very often the only sensible solution.

Today's mainframes are multi-processor minicomputers or powerful microcomputers. The time needed for their daily operating is counted in minutes rather than hours. Nevertheless, letting the CC operate the machine on its premises is practical. First, it ensures the best available physical environment. Second, it enhances data security. So, rather than being a prime example of cooperation per se, an agreement on computer maintenance may be said to serve the parent organization's interests by securing its property.

The HUTCC is actively seeking more library clients. In March 1994, the HUTCC, the HUT Library and the Library of the Swedish School of Economics and Business Administration, situated in Helsinki, some 10 kilometers away from the HUT, signed an agreement to purchase a joint computer for the VTLS library online system. The computer was installed at the HUTCC.

Later that year a new consortium was established, this time between the HUT Library, the Information Service of the Technical Research Center and the Library of the Geological Survey of Finland, all located in the Otaniemi area in Espoo. The aim is to enhance operability of the two-year old Otaniemi Science Network by gathering the text databases of each organization on one single machine. The tender submitted by the HUTCC for the machine and its maintenance was accepted.

During the latter half of the 1980s the Library set out to improve its computing services on two fronts, personal computing and library cooperation.

It was evident that the personal computer revolution would also cause fundamental changes in library computing. The perceived view of computers as secret boxes,
demanding special wisdom to understand, eroded quickly. This had two important practical consequences: first, library staff began to operate the computers by themselves, and second, new PC-based computer programs for library services were developed locally. These in turn meant greater independence in terms of computing. In addition, the advent of CD-ROM databases and stand-alone CD-ROM jukeboxes bore witness to the fact that the Library now had a stronger role than before in providing computing services of its own. At the same time, however, it became clear that without Ethernet-type network connections from the library, the use of personal computers would be limited.

In 1987, a full-scale university library automation project was started in Finland, conducted by the Ministry of Education. Over four years, from 1989 to 1993, the target of computing at the HUT Library was on the implementation of the integrated library system VTLS, on which library cooperation at the program level was to be based. The beginning did not look very promising. It turned out that the hardest problem to solve was the computer.

VTLS is a system-dependent software package. Unfortunately, the type of minicomputer it runs on was something of an oddity at computing centres in Finland. Connecting the CPU and the peripherals to the campus backbone network was, in many places, a cumbersome task due to the fact that the computer was using network protocols of its own. In one word, the VTLS machines were exceptional. From the CCs' point of view this was a step backwards. Working relations between the Library and the HUTCC ensured that difficulties were eventually overcome.

The unlucky outcome of this period may have been that the CC's belief that the library was a problematic partner because of its rather esoteric computing environment was strengthened.

It is indisputable that a nation-wide, uniform university library network is a true achievement, equalled by hardly any abroad. But the problem was timing. Because
Internet protocols and standards had already become widely accepted at universities in Finland, it was understandable that the CC did not welcome very warmly the idea of connecting old-fashioned technology to the campus network. But it did, the agreement on outsourcing of the machine was signed and life went on.

If the 1980s was the last decade of mainframe computer giants and, as in Finland’s case, the first decade of library software giants, the beginning of the 1990s witnessed the birth of the user. This was predictable for two reasons: first, personal computers had been encouraging independent use of computers and second, Internet had become an open forum for every university student, teacher and researcher, who wanted to join to the worldwide community of other like-minded individuals. Everyday computing had to be fast, free and easy. Besides, the more the platform was adaptable to the needs of the user, rather than dictated by someone else, the better. A graphical workbench was introduced. Now at last the time had come for users to shake computing to its very foundations.

In the middle of growing demands for new and flexible services, the university tried to overcome constraints on government funding. Effectiveness, quality, strategic planning and cooperation were emphasized like never before, not only in Finland but everywhere in the academic world. Not surprisingly, information was found to be of prime importance. Accurate and timely information, channelling through the university in various directions and packages, depending on what purpose it tried to serve. Special attention was given to network-based information.

Gopher was launched in the United States in 1992 and it had a flying start in Finland soon after. The HUT Gopher server was installed by the CC in spring 1993. Among the very first units who saw the potential of incorporating network-based information services into their daily work at the University were the CC itself and the Library.

Necessity is the mother of invention. The CC realized that it needed help in constructing the hierarchical structure of the Gopher, and turned to the Library for
advice. Important in this event was that it was the first evidence of what balanced cooperation between these units could be. Benefits were twofold: the goal was mutual and items of exchange were countable in knowledge rather than money. Since then the cooperative activities between the Library and the CC have focused on campus-wide information access and staff training.

In 1994 Gopher was replaced by World Wide Web as the CWIS of HUT. This had wide-ranging effects. The most notable feature of WWW is that it is the first Internet service able to act as an intelligent gateway to other Internet services, expanding the range of electronic information easily available. The more information there is around, the more users want to know what the information is all about and how to become information producers themselves. Since 1994 the CC and the Library at HUT have jointly trained staff in basic networking skills.

The use of CD-ROM databases at HUT Library has grown significantly during the last few years. Currently the Library subscribes to over 40 CD-ROM databases, available at library premises. With the CC the Library is now conducting research on how to get the most popular of them available on the campus network. Because of involvement of a third party, that is the publishers, the Library plays also an intermediary role. Thanks to the innovative and effective cooperation, a workable hybrid solution has been found recently.

Information at HUT serves teaching, learning, research, marketing and administrative purposes. The volume of information is staggering: HUT is the second biggest publisher of printed material in Finland.

I quote David J. Ernst and Peter Segall:

"Now...the times call for strategic and well-coordinated planning across the institution. There is great need to weave together the interdependent components of academic program, administrative support, and information infrastructure in a way that responds both to shrinking resources and the requirement for increased effectiveness. Managers of campus information resources--whether
labelled administrative, academic, or library--should take the lead to push for this integrated planning and for the more important integrated actions that will flow from it2.

The goal of an automobile factory is to produce cars; thus the way a car is manufactured, step by step, has to be thoroughly understood. Information about how and when something has to be done is critical. Wrong, obscure, badly timed or missing information is an immediate disaster.

Comparisons between factories and universities are bound to be simplified of course. Nevertheless, bits and pieces of useful experience could still be distilled from industry, as in the way the life-cycle of the product is understood. There are hundreds of "information products" found at universities, some of them easily distinguishable and clearly formulated like academic dissertations, some of them obscure like how researchers gather information. Nevertheless, for a university community it is crucial to be familiar with them. If improvements or new solutions are needed, with the help of experts in information processing, evaluation and retrieval, the CC and the Library, the whole university would benefit.

It has been said that computers "may well be remembered not as technology used primarily to compute but as coordination technology3". History of computing at the HUT Library gives credit to this statement. It is the era of cooperation with the rest of the academic and research community that really shows us what computers ought to be used for in the Library.
Acronyms

CC: Computing Centre, see: HUTCC
CWIS: Campus-wide information system
HUTCC: Helsinki University of Technology Computing Centre
TENTTU: Online information retrieval system of Helsinki University of Technology Library, consisting of ten databases
VTLS: Virginia Tech Library System
WWW: World Wide Web

References

