Ethics (ETH Library Information Control System)

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The ETH-Bibliothek is not only the main library of the Swiss Federal Institute of Technology (ETH), but also the national center for scientific and technical literature and information. At the end of 1990 its complete holdings amounted to 4.5 million documents including 2 million microfiche and 11,000 current journals. In 1990 450,000 documents were lent (half being internal loans and half external loans, i.e. loans by mail). The ETH-Bibliothek supplies more documents and copies by mail than all other Swiss libraries combined. Among its external patrons are industrial companies, engineering offices, individuals and many local and foreign universities.

For the most part there is no open access to the books for the public so that the holdings may be stored compactly. Approximately half an hour after they have been ordered in the library, books can be collected at the circulation desk. Books ordered by remote access are delivered to the patron by mail the next day.

The ETHICS System

In the seventies the EDP department of the ETH-Bibliothek began developing systems for circulation control, journals checking and descriptive and subject cataloging. These were separate systems running on the computer of the Swiss Federal Institute of Technology computing center. At the beginning of the 1980's it was decided that library applications should run on the library's own computer. The new project to be developed on this computer was called ETHICS.

Before starting to develop ETHICS we thought carefully about the question of whether a development of our own could be justified or whether taking over an existing system would make more sense. We did not find any system that would have fulfilled our requirements or that could have been used as a possible basis for further development, because we attached great importance to the following functions: circulation control, serials control and subject classification. To our knowledge there is at present no system treating these three functions in a satisfactory manner. Developments frequently concentrate in the first place on descriptive cataloging. Extensions to be made later on are only possible to a limited extent, because they were not taken into account from the beginning of the system design (especially the design of data structures). From a purely theoretical point of view a later implementation of new functions is still possible, but the amount of work required is so huge that such an extension could only be done rudimentarily.

Experience with our first EDP systems led us to develop a new system that would satisfy a number of fundamental requirements.

- It is an integrated system for all library functions, the different parts of the system being interrelated via a central data base.

- The main function of this system is the online public access catalog.
Information retrieval as well as book ordering can be performed directly from a screen by interactive communication with the system. Ordering a book implies that the system immediately checks whether or not the book is on loan.

From the beginning, the system is conceived as a multi-library system.

Entered data is immediately checked and stored in the data base. Once stored, it is already available for other libraries.

The check-in for serials is also integrated into the system, with the advantage that data concerning volumes and issues received can also be displayed to the patron.

The system is connected to terminals located outside the library and can be used by the patron in essentially the same way inside or outside the library.

ETHICS provides an interactive communication in German and French for storing and retrieving data (an English dialog is being planned for the future). The subject index is maintained in the three languages German, French and English.

Widely-used hardware and operating software is preferred to "exotic" equipment.

Catalog entries are classified by means of the UDC (Universal Decimal Classification). As all the designations of a UDC number are stored in the subject index, subjects can also be searched alphabetically, thus combining the advantages of a systematic classification with those of a keyboard system.

These requirements have all been fulfilled in today's ETHICS, with the exception of serials control which will only be implemented next year. Approximately 700,000 catalog entries are already stored in the ETHICS system, 50,000 being added each year. At present eleven libraries participate in the ETHICS network and within the next two years a further ten libraries will become new members of the network.

The annual EDP expenditure amounts to a total of 2.5 million Swiss francs representing approximately 10% of the total expenditure of all libraries of the ETHICS network. The actual annual system outlay (depreciation of the development costs) comes to 800,000 Swiss francs which is about 3% of the total expenditure. Thus, an in-house development does not necessarily mean excessively high costs; a badly adapted system would be much more expensive.

ETHICS is running on a computer which is exclusively used by the library. It is a Compaqex-Hitachi model 8/90 (20 MIPS) with 64 megabytes of main memory and 16 data channels (corresponding to the performance of an IBM 3090-180S model).

The computer runs on VM/HPO (Virtual Machine/High Performance Option) and CMS (Conversational Monitoring System, for program development). Its operating system is VSE/SP (Virtual Storage Extended/System Product) with the following main components: VTAM (for terminal control), CICS (a transaction monitor). The base system used is ADABAS.

The library computer is connected to several external networks and approximately 500 terminals may be served simultaneously.
ONLINE INFORMATION RETRIEVAL

There are three ways of online information retrieval:

1. **Retrieval by title words** allows searching by authors' names or elements of titles. It is especially recommended when single words of the title or the authors' names are known.

2. **Subject retrieval** allows searching for literature on a specific topic. This search is done by means of the subject index which contains terms as alphabetic designations and UDC numbers. Designations are stored in the subject index in the three languages German, French and English and are retrieved in the same standardized form, as they were entered into the subject index.

3. **Alphabetic retrieval** allows searching by authors' names and beginnings of titles, the exact form of which must be known. Searching for corporate bodies, places and years of conferences as well as for ETH thesis advisors is also possible.

**Retrieval By Title Words and Ordering**

To retrieve information from catalog entries containing for instance the word "Boston" and the number "1990", these two search arguments must be entered. In a first step the number of catalog entries found for each single word and the number of catalog entries containing both words will be shown, then the first eight titles will be displayed of the complete catalog entry for this title. The corresponding document can then be ordered by simply pressing function key. After having entered his user identification number and password, the patron receives information about loan. If he finally wishes to order this document, he must enter his password once again.

**Subject Search Using the Multilingual ETHICS Thesaurus**

Subject searching is based on the universal decimal classification which is widely used in scientific and technical libraries. In order to provide easy access also for inexperienced users, main access is almost exclusively alphabetic using the subject terms (designations).

The systematic subject index of ETHICS contains about 60,000 UDC numbers and approximately 350,000 alphabetic designations in the three languages German, French and English.[1,2]

In an example of subject searching the subject term "New England" has been entered. Instead of this subject term the corresponding UDC number could have been introduced. In order to obtain a display of subject terms either in the three languages German, French and English or only in one language, the appropriate language code must be selected. Then an extract from the list of alphabetic designations of the subject index will be displayed. When a suitable term has been chosen, the number of hits will be shown and the corresponding list of abbreviated titles can be displayed. As before, a particular title can be selected and the complete catalog entry displayed.

Then the corresponding document may be ordered in the same way as described for retrieval by title words.

It is also possible to display the synonyms of a selected subject term or its logical environment (broader and narrower terms as well as cross-references). Thus one can "browse" in the subject index in order to find a suitable term. It is also possible to display the combined terms of a chosen designation. Furthermore, several subject terms may be combined (with AND and NOT) in a
subject search, allowing the patron to specify that all narrower terms of a subject term should also be taken into account for the search.

The Further Development of ETHICS

The ETHICS network is at present being built up and eleven libraries are already participating in the network. For the moment automated circulation has only been implemented for the ETH-Bibliothek, but from fall 1991 it will be successively extended to other libraries of the network.

At present the programs for the check-in of serials and the corresponding display functions for information retrieval are being developed. In the near future it should be possible to display for all journals and series the corresponding issues and volumes held by every library in the network.

A subsystem for acquisitions is being planned. Ideas for further development include link up with other library systems, bibliographic data bases and systems of publishing companies. In our opinion ETHICS provides a good basis for further development.

REFERENCES


   HUG, HANNES AND META WALSER. Retrieval in the ETH Database Using the UDC. Advances in Knowledge Organization, 2, (Darmstadt 1991).