40 Years of Technology in Libraries: A Brief History of the IFLA Section on Information Technology, 1963/64 - 2003

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Created by IFLA in 1963 at the beginning of the commercial computer era, the IFLA Section on Information Technology has led the Federation through changes in computer and communications technology by introducing, describing, teaching, and predicting its use for information delivery. The programs and projects of the Section have assisted librarians through successive phases – starting with local applications, through common data format development, early networking crossborder connectivity, and Internet connectivity, and into today's digital resource challenges. Very early the Section promoted standardization as a critical thread through this rapid change, standards either developed by or adopted by librarians.

This brief history was finalized at the IFLA 2003 Conference in Berlin. The information on Section activities came primarily from the *IFLA Annual*, published from 1976-1995, which contains short descriptions of the activities of each IFLA professional group. Prior to the Annual, similar descriptions were published each year in the *Proceedings of the Council*.

The history consists of a description of the changes in the Section members' interests over the period as the technology matured and shifted and new opportunities were made possible. The history is followed by an annex listing the papers sponsored by the Section at the IFLA General Conferences, along with some workshops undertaken by the Section. These papers reflect the history of library automation and are interesting to review. The enormous variety of topics and international mix of authors is a tribute to the work of the organizers of sessions. The last annex lists the officers of the Section from its earliest days.

Start-up and Sharing of Experience - 1963-1970

In 1964 IBM introduced the 360 series, the first "family" of computers to be released and the robust machine that propelled computing out of the universities and into the mainstream. Computing machines at that time were large mainframes using transistor technology and input was largely via punched cards. In this technical setting the newly formed Committee on Mechanization held an organizational session at the 1964 IFLA Council meeting in Rome. IFLA President Frank Francis (UK) took the chair for that session and Walter Lingenberg (Germany) served as secretary. Verner Clapp (USA) read a paper on "Mechanization and Automation in American Libraries".

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The previous year, in 1963, the IFLA Section on National and University libraries had surveyed its members for areas in which IFLA focal points would be valuable. The Section recommended that IFLA organize two new committees, one on mechanization and one on reprography. "Primitive" as computing was in the mid 1960s, its potential for the consistent and repetitive tasks of libraries was recognized, and experiments were taking place in many countries. The IFLA attendees, especially those from university libraries and national libraries, wanted to exchange information on automation projects and technologies.

The need was not endorsed by all, however. At the first few meeting of the new Committee, in addition to sharing early automation developments and identifying areas of applicability, "critical voices were heard about the possibilities of application of computers in libraries." (1965) One participant has been quoted as stating he was strictly against using automation and electronic data processing in libraries just as nobody would use airplanes to fly through libraries.

It should be noted that librarians in 1963 did not yet have many of the automation options that are commonplace in 2003. Integrated circuits, chips, networks, even floppy discs were still a few years away. The cathode ray tube was invented but not yet deployed. The personal computer would not debut for 17 more years. And the first MARC Pilot Program at the Library of Congress would not start until the following year.

The Committee on Mechanization was formally founded in 1965 at the IFLA meeting in Helsinki. Gunther Pflug from the University Library Bochum (Germany) became the first official chair of the Committee, and Walter Lingenberg (Berlin) the Secretary. They had been active in getting the Committee started and led it through the early years.

In the 1960s the Committee heard automation reports from a variety of countries: Canada, Germany, Sweden, UK, USA, and USSR. These and other papers described automation activity for many library processes: acquisitions, serials control, circulation, catalogue card production, book catalogue production, accession lists, KWIC-indexing and even union catalogues.   The committee also fostered interaction of colleagues working in automation by soliciting liaisons and compiling lists. A shared cataloging experts meeting was discussed with lofty targets: unification of methods for compiling data, adapting cataloging rules, and investigating automatic translation of titles.

Bibliographic Formats, Standards, and Data Exchange - 1970-1975

By 1970, the Committee had become very active as automation interest in the community increased. The Committee turned from the general discussions and case-history reports of the 1960s to more sophisticated and technical subjects. Areas under investigation in the early 1970s

were: data formats and the new MARC II format, the emerging ISSN and possible "World Serials Data System", new organizational structures for libraries resulting from the mechanization programs, user reactions to automation, and handling of the large data banks that were being created. In 1971 a significant conference of experts was held in Berlin to discuss MARC formats and data exchange, key topics of this period. The Committee approved a resolution to request that "manufacturers of computers should take care for more compatibility of the equipment of different firms and should provide for a basic software packet which is required for successful library application of EDP." (1970) It is interesting to note that librarians were at that time hoping that the differences among computer systems would be resolved at the hardware and operating system level. By the 1980s the reality of dissimilar systems gave rise to projects to overcome the differences through protocols and application software.

Collaboration with other groups working on automation and standards for automation was initiated in the early 1970s. UNISIST and FID had interests in common with the Committee and IFLA began a special relationship with ISO TC 46, Automation in Documentation. The Committee recognized that "standardization is one of the important problems of mechanization". (1972) In the early 1970s IFLA had already a Committee on Statistics and Standardization with which the Committee on Mechanization had to sort out the overlap of standards responsibilities. The Committee on Mechanization also began to work more closely with the Committee on Cataloging, including the setting up of joint working groups on (1) Content Designators, and (2) Filing. Both of these groups were also joint with ISO TC46. The Working Group on Content Designators eventually developed the first draft of the UNIMARC format.

Reorganization and the Section on Information Technology - Late 1970s

In the late 1970s, IFLA had a major reorganization and adopted new Statutes (1976) and Rules of Procedure (1979). Under the old statutes, only type-of-library groups could be IFLA Sections. All interest groups concerned with library functions, such as mechanization, were called Committees. This changed with the new IFLA Statutes and Rules, and function-related Sections were allowed. Thus the Committee on Mechanization became the Section on Mechanization, and, in 1979, the Section on Information Technology (IT), the name it has today. While the collaborations and working groups organized before 1975 continued their work, the presentation of programs was interrupted by the reorganization.

Networking and New Technologies - Micros, Optical Discs, CDROMs - 1979-1987

Networking became a focus in the early 1980s as many countries had developed or were developing national networks by that time. Reports presented at open sessions of the Section included reports on networking from Australia, Canada, Germany, Netherlands, Taiwan, and the

USA. Other papers explored international networks, and networking concepts and issues. A session joint with other sections in 1983 explored the whole impact of technology on libraries - staff, management, and users.

The Section's interest in networking led it to commission a study on transborder data flow, to investigate the potential and problems of networking across national boundaries. Up until this time it was relatively easy to control data flow on a national basis and many countries had developed national information policies to describe and control information access. Protection for privacy of citizens of a country was a concern and even library authority files were subject to scrutiny for the personal information they might contain. This focus of the Section led to the creation in 1985 of a new core program at the National Library of Canada, initially called Transborder Data Flow (but eventually changed to Universal Dataflow and Telecommunications (UDT)). The Section on Information Technology had an especially close relationship with this core program.

Important new technology was emerging during this period and the Section responded with projects and presentations on software and microcomputers, especially exploring their potential for developing countries. CDROMs were investigated as carriers for resources and for library catalogues. A study of optical and videodisc technology was commissioned. The occurrence of the IFLA conference in Japan during this period stimulated a preconference seminar on automation of non-Roman scripts.

Networks, Protocols, Electronic Document Delivery, and OPACS - 1987-1992

Networking in a broader sense became an interest in the late 1980s. While in the early 1970s librarians had hoped that their interoperability problems would be solved through the use of common architectures by the hardware and software manufacturers, it became obvious that was not possible in the competitive global computer environment and could even be stifling to innovation. Open System Interconnection protocols and other protocols for linking dissimilar computer systems were examined by the Section through seminars, open sessions, and projects. The Section surveyed different architectural approaches to interoperability and distributed systems, and began to look at electronic document delivery strategies.

The public catalog also continued to be a concern. With the development and rapid proliferation of microcomputer terminals the Online Public Access Catalog (OPAC) became the goal for many libraries. This meant all the records for a catalog needed to be in electronic form and many large-scale retrospective conversion projects were tackled. IT held a workshop on the topic at the conference in Moscow. The Graphical User Interface (GUI) project, viewed as an aid for standardization of OPAC interfaces, was also initiated in the early 1990s.

Connectivity - Internet, Web, Protocols - and Electronic Publications - 1993-1997

In the 1990s the Internet became the defining technology and especially its Web application. This development opened up vast new areas for librarians to explore and exploit. The Section opened the period with a session on protocols and navigation in the new environment, followed by several sessions at future conferences on the Internet, emerging navigation tools, communications options, and web site construction (usually joint with UDT). Internet/Web workshops sponsored by IT and UDT in 1994, 1995, and 1996 were well received and valuable for conference attendees. An Internet Discussion Group sponsored by IT was very popular at IFLA meetings.

The Section also sponsored workshops and open sessions on protocols (interlibrary loan, information retrieval (Z39.50), email) and an important early program in 1995 on electronic publishing. In 1993, the Section held another conference on multiple script and language issues – 10 years after the first IT conference on the topic in Japan and the same year as the alignment of the new Unicode with the ISO Universal Character Set.

Aspects of Digital Libraries - 1998-2002

In the last few years the Internet, the Web, computer languages, and tools have matured to enable creation of a rapidly increasing number of digital resources that need to be controlled, served, and preserved by libraries. The Section programs have treated a variety of aspects of the digital environment such as global and local digital projects, technical issues, cross-domain interchange, e-reference, and subject gateways. The Open Archives Initiative (OAI) protocols for harvesting bibliographic data was reviewed in 2001 in Boston and a joint session with Preservation and Conservation highlighted the preservation difficulties introduced by electronic resources. The Section also supported new Discussion Groups on Metadata, Unicode, and Digital Libraries.

New Technologies - 2003-

In its 40th year the Section is looking at a variety of new technologies to carry out new and old information tasks. Sessions in 2003 investigated wireless communication for efficient management of tangible resources, research and progress in digital preservation, end user navigation of the electronic environment through portals applications and metadata options. The Section targets for the future include a continuation of the investigation of standards and practices, examination of new technologies, and provision of tutorials on new developments in the electronic environment. The management of digital resources will no doubt play a prominent role.