FOUDRE: A FRENCH PROJECT FOR ELECTRONIC DOCUMENT DELIVERY

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Introduction

FOUDRE: **FOU**rniture de **D**ocument sur **R**éseau **E**lectronique, abbreviation for Electronic Document Delivery, was a pilot experiment carried out in twelve French academic libraries for an 18 month period. It consisted of the automation of the final part of the interlending process through a decentralised storage facility linked to an electronic document delivery system over the French ISDN Network NUMERIS (64 Kbits/sec) allowing high capacity transmission.

The project was initiated in 1988 by the Ministère de l'Education Nationale and led to a joint contract in March 1989 between France-Telecom for the telecommunications network, Télésystèmes for the software developments and the Ministère for the application within the libraries. Revised and simplified, the project was operational, initially with six workstations, at the end of 1990. This application leads to a fully automatic system of periodical article delivery in order to meet the users' ever increasing requirements for rapid document supply.

The ILL Context in France

Over the last ten years interlibrary loan activity has increased considerably in France. Nowadays, whatever the level of acquisition, no library can be comprehensive in all fields. In 1980 documentary inflation linked to financial difficulties obliged academic libraries to set up shared acquisition policies by the creation of 20 subject-specialised libraries, called CADIST (Centre d'acquisition et de diffusion de l'information scientifique et technique). They fill a large proportion of ILL transactions (26% in 1989). ILL activity increased by 45% from 1981 to 1986, and by 5% per year ever since. Now, in 1991-1992, ILL requests between French academic libraries amount to 1,194,483 transactions. TPEB, the computerised messaging system, is used for requests and replies. The search and location procedures in the automated national union catalogues (CCN for serials and periodicals, Téléthèses for doctoral dissertations, Pancatalogue for monographs) are not linked to the PEB system. More than 80% of the ILL requests concern periodical articles and the great majority are delivered in the form of reproductions (usually photocopies). The essential part of the process for access to the documents is the document supply. The main objective of the project FOUDRE was to provide rapid access to documents, linked to the quality of the documents.

What is FOUDRE ?

The basic principles

During the experimental period, whilst still using the traditional ILL process, 12 test libraries (3 providers and 9 requesters/receivers) were fulfilling requests for periodical articles in scientific, medical and economic fields through FOUDRE. Software developed within the Windows environment drove all the operations of digitalisation, connection to NUMERIS, expedition on the one hand, reception and printing out on the other hand. One lending library, specialist in a field, was connected to three other borrowing libraries. The basic principle was the on-demand digitalisation of the documents as soon as they were requested. Then, the articles were stored on optical disk. A list of stored

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documents was kept by each lending library. The plan was to build a database, so that, once a requested document was stored, it could be sent automatically without any human manipulation.

Architecture

The borrowing libraries used a documentation receiving workstation connected to NUMERIS including a standard 386 microcomputer, a VGA screen and a high definition laser printer. An interface card ensured the ISDN connection, while another card managed the data compression-decompression.

The lending libraries used a similar configuration: a PC with a high resolution full page screen, interfaced to 3 peripherals: a scanner for the digitalisation of the documents; a numerical or digital optical disk double drive for the storage (called DON hereafter), and a laser printer. The station also included ISDN and compression-decompression cards.

Workability

The main functions of the system for the borrower station were the data entry of the requests, their transmission via NUMERIS, the answer processing with temporary storage on hard disk of the received documents and their printing out. For the provider station the functions were the automatic receipt of the requests, the request processing, automatic search of already digitalized documents, the digitalisation and storage of the new documents, the transmission of the replies and of the digitalised documents. Communications were automatically treated.

Scanning and storage

Each document was digitised page by page and stored on the PC hard disk. The software authorised a choice of text, photo or mixed mode and a choice in strength; the density is 300 dpi. After being transmitted to the requesting library, the document was sent for storage on optical disc.

Digitised articles were indexed and available within the lending library by the use of the BIBLID: Bibliographic identification of contributions in serials and books which is the ISO Standard 9115. As the unique periodical identifier, it comprises 38 alphanumeric characters representing the ISSN, the year of publication, the volume, issue, supplement, first and last pages of

the article. The main advantage in using BIBLID lies in the fact that it is not a sequential number system, but that it can easily be created *a posteriori* from the full bibliographic reference.

As soon as it received the borrower's requests, the software of the lending configuration integrated them and sorted them out automatically. The document could be:

> already digitalised = search on the DON
>
> to search = not digitised
>
> ambiguous = verification of the BIBLID

The stored documents were delivered automatically without any manipulation of the primary copy.

Ambiguous requests became a specific process linked to the BIBLID. FOUDRE compared their BIBLID with all the BIBLID of the stored documents. The nearest was selected and could be displayed on the screen. It was then possibel to zoom in on details or to rotate the document through 90° for verification. If the document was correctly matched it was accepted, and the BIBLID was corrected and stored if incorrect.

When the requested document was not stored the scanning and storage processes were carried out.

Transmission

The documents marked "to transmit" were sent to NUMERIS. The transmission took about 7 seconds per A4 page. The quality of the image was remarkable, with resolution being provided by gradations of grey. In a traditional ILL system provision of a 7-page photocopy excluding the physical treatment (clipping, enveloping, mailing) needs about 30 minutes. FOUDRE considerably reduced the delays. It was possible for the user to obtain an urgently requested document on the same day.

Management unit

The "administration" function provided connection history: reasons for eventual unsuccessful transmissions or storages on the DON.

The "journal" reflected the transactions. It traced the process: information about the scanning speed (5 minutes for 10 documents), the time of storage on the DON (2 Mb per minute) and the time of the transmission over NUMERIS (3 minutes between Paris and Marseilles -about 750

kilometres- for a document). This information was interesting for NUMERIS costing taking different components into account: subscription, calliduration, distance and calling hours.

FOUDRE also provided a statistics module and assistance for invoicing.

Evaluation

As we said at the beginning, FOUDRE was an experiment for eighteen months in 12 test sites. The 30th of June 1992 was the deadline which was set by mutual agreement between the different partners. The Ministery does not plan for further FOUDRE software dissemination.

Major positive elements

- high satisfaction rate: 80 to 90% of the requests were supplied.
- excellent quality of the delivered documents
- friendly use of the software
- speed and reliability of the NUMERIS network
- satisfaction with the system's technical performance, with the times of the different operations are not far from those expected: 1 minute for entry of a request; 15 seconds for the transmission of 10 requests; 40 seconds for the 120 Kb page digitalisation; about 1 minute a page for the dump on the DON, and 3 minutes for transmission of 10 pages.

The main limitations

- problems with some hardware and its maintenance
- rapid evolution and obsolescence of this kind of material
- expensive upkeep
- some limitations in the software
- low rate of recalled requests: about 2%.

In conclusion, this experiment demonstrated the possibilities provided by such new methods and their technical reliability. It allowed us to demonstrate expertise in new technologies: France Telecom gave proof of the availability and the performance of the ISDN network, and Télésystèmes demonstrated that a system for electronic document delivery was operating. The libraries proved that they could fulfil high requirements.

As a result an agreement has been signed between former partners (Télésystèmes) and new ones (BLDSC, PICA, TIB Hannover) to extend the experiment based on the successes and difficulties with FOUDRE. This new program called EDIL: Electronic Document Interchange between Libraries has been submitted to the European Commission.