CAN/OLE'S ON-LINE DOCUMENT ORDERING FACILITY

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ABSTRACT

CAN/OLE's on-line document ordering facility, allowing users to search and order cited documents in one integrated operation is described. The policy that document backup be an integral part of both a current awareness and a retrospective services is proposed. The CONF file, consisting of conference proceedings held by CISTI and the UNION file, offering serial holdings in more than 250 Canadian libraries, are highlighted as examples of data bases produced for the end user. On-line Document Ordering, as part of CAN/OLE, is the first instance of a National On-Line Document Ordering Facility directly deriving a document request from the data base.

RESUME

On décrit le service de commande de documents en direct qui permet aux utilisateurs de CAN/OLE de rechercher et de commander les documents repérés en une seule opération. On propose d'adopter le principe du support documentaire comme partie intégrante à la fois des services de mise au courant et des services de recherche rétrospective. Le fichier CONF, qui est composé des comptes rendus de conférences possédés par l'ICIST, et le fichier collectif, qui répertorie les collections détenues par plus de 250 bibliothèques canadiennes, servent à illustrer le cas des bases de données constituées spécifiquement pour l'utilisateur . La commande de documents en direct, dans CAN/OLE est le premier exemple de service national de commande de documents en direct permettant de formuler une demande de documents directement de la base de données.

DOCUMENT ORDERING FACILITY

INTRODUCTION

Most Canadians would be surprised to find the extent of the services that are available from a single on-line computer terminal of the Canada Institute for Scientific and Technical Information (CISTI)'s CAN/OLE retrieval and document ordering system. The development of the information transfer and referral function that has taken place at CISTI in the last decade has been possible because throughout, the goal has been to link machine technology to human capability.

In manual searching, the acuteness of the human intellect is brought to bear during all stages of the retrieval of information. Even in an automated retrieval system, judgment is still needed so that searching still remains as much an art as a science; an automated procedure is a set of techniques which enables the user and the machine to work together. There is really no theoretical basis for these techniques, only practical experience and judgment. We will discuss in general terms the development of CISTI's machine readable services, drawing examples from its own on-line information and document retrieval system, CAN/OLE. Statistics concerning this service will be presented so as to enable the reader to judge the merits of the service. For background reading on CAN/SDI, a batch retrieval service offered by CISTI and for introductory material on CAN/OLE, the reader is referred to the bibliography.

The designation of the service as "on-line" refers to the fact that the user is in touch with the computer through a terminal via either a telephone network such as TransCanada Telephone System's DATAPAC network, or simply via a dial-up telephone line. By using multiprogramming and multi-level storage, programs for many users are held within the computer for rapid access. The resulting interaction is two-way, with the user's skill and intelligence exercising control. Ideally then, such a scheme provides the opportunity to extract a reply from the user that can be acted upon. The more interactive the system, the more powerful it becomes.

MACHINE-READABLE SERVICES

Once the material in the printed Abstracting and Indexing Services was made available on magnetic tapes, it was a simple procedure to use the computer to do the actual searching. It became immediately apparent to CISTI that a user knew fairly accurately what he wanted but it was not always a simple matter to correlate his requirements with the subject matter of the literature. Thus most users receive a large bibliography which may not be relevant for their

needs. For such searches, users tended to stress "recall", while the bibliography must be made as precise as possible to avoid printing a lot of irrelevant citations which is costly and, if selectivity is important, self-defeating. As data bases grow in size, this will continue to be a major problem in on-line retrieval. It is quite possible that demand will decrease as users begin to balk at paying the high fees that suppliers will require to make their services profitable and viable. It is not necessary for small organizations to undertake on-line searching with their own resources since such services can be purchased either from commercial vendors, or government agencies such as CISTI. As book, journal and salaries continue to rise in the face of fixed budgets, linking CISTI's collection to the major scientific and technical data bases is a practicable means of offering Canadians access to the information contained in documents.

One aim of CAN/OLE was to provide a needed extension to CAN/SDI, that of allowing rapid on-line access to retrospective files. Very few changes in CAN/SDI were made to implement CAN/OLE. The actual search of the file changed because of the difference in software rather than any need imposed by on-line searching. The search process had to be rapid and efficient in the stage where documents satisfying a search were identified. The experience at CISTI has shown that it is in the activities leading up to the presentation of a search to the system and, following the search, the organization and selection for presenting of the citations retrieved, that interaction with the user can be most helpful in an on-line environment. We are only beginning to understand this interaction and to make use of it on-line. Should a system be accessed by the ultimate user of the information, reducing the dependence on the intermediary person often involved in information retrieval? There will always be people who will want to do their own searching. CISTI believes it is technically possible to ultimately provide an on-line system that can be used effectively by the end user. As soon as terminals become standard in design and come into every day use, learning to handle an on-line system will be much easier. Hands-on terminal experience is being emphasized in CISTI's training periods. There is a normal resistance of even highly trained on-line users to reading instruction manuals, preferring instead to learn on-line. Personal tuition is more acceptable and more effective than any known method; however, due to cost and staff time, we have had to compromise by limiting attendance, using the terminal device as an aid in teaching, and inputting a whole teaching course on-line.

ON-LINE DOCUMENT ORDERING

On-line commands can incorporate all the instructions that a user wishes to give the computer. A user enquires into a database, searches an index for terms of a search formulation, may even browse

through an index, will usually combine preceeding results, and inevitably settle on one or more search statements of citations. The output of these citations is controlled by the user, who may choose to have them presented on-line, off-line to some address, or have documents ordered based on specific citations.

STANDERA (1975) has shown that the number of commands available to a user has little or no bearing on the performance of the system. Simplicity over sophistication is preferred. CAN/OLE offers on-line document ordering from its in-house collection of documents by requiring that a user present a single citation, instructing that it be ordered (see illustration). The system will automatically print off-line a 4-part computer printout, similar to a standard Interlibrary Loan form, containing the complete bibliographic citation, pre-addressed to the requester. A means for providing special instructions is included. Ordering is available on all files except the Information Exchange Centre (IEC) file, a cumulation of more than 57,000 university-based research projects as reported by 36 funding agencies of the federal government. The UNION file, in offering locations to serials in over 250 organizations in Canada, is unique. Using the above facility to include special instructions, it is possible to specify the volume and page number of any required document, even if not covered by a database on CAN/OLE. A user need only retrieve the source journal and notice if CISTI is a location to this periodical. Two other files, BA and CAC have had the publication source tagged to indicate if it is held by CISTI, while the CONF file represents CISTI acquired conferences. An analysis of on-line document orders between July 1977 and February 1978 indicate that 90% were filled from our in-house collection. Most items requested were for material known to be or likely to be held by CISTI (see Table A). The NTIS, INSP and EI files yielded over 80% of these on-line requests, equivalent to 3.2% of all photocopy requests during this period (see Table C). Surprisingly, 25% of these requests came from industry (see Table B). Generally users found this approach a convenient way to submit document requests. Fully verified, they enter the normal flow of operation, with no special priority, and are usually mailed out in less than 36 hours.

COST COMPARISONS

Cost 'contrasts' between on-line and manual searching are very popular today, but their value is doubtful since the full potential of on-line services is not achieved through a shift of one method (or system) to another; on-line services afford a capability not available in human-to-human intervention. McCARN (1974) has observed that increased use of these services is due to the availability of

telecommunications networks, and the continual drop in CPU cost, while all along the cost of printing and manual searching is increasing. Clearly the lack of clear definitions and objectives in these cost estimates contribute to the wide spread in the cost of on-line services. CAN/OLE's on-line fees are available to the user at every change of file, and are calculated on a connect hour basis, including all on-line computable cost such as royalties, communication charges, and any applicable off-line print fees. It does not include the photocopy charges for a document request. Table E suggests that the $8.29 average for a complete on-line terminal session compares well with the $8.13 average per file that is computable from Table D. CAN/OLE users may well prepare their search formulations to fit one file!

CISTI'S EXPERIENCES WITH TRAINING USERS

CISTI provides one and a half day training sessions to familiarize new users with the technical aspects of on-line terminals, the software interface, and the content and structure of each of the 8 available data bases. The data base producers are invited to instruct in the most effective search formulations or strategies suitable with their file, stressing the differences in the indexing policies and vocabulary structures. On-line searching is often considered an extension or simply an added responsibility for an individual in an organization, requiring to know more than one system and expected to be well acquainted with the literature of particular disciplines. The question of whether this user of the system should be a subject specialist is still being debated. On-line document ordering poses entirely another problem as it is not a subject retrieval process but one of verification. Unless a user has little or no library facility, the decision to order is often deferred until their catalogue is consulted. CAN/OLE will soon be offering a capability of storing a citation, enabling someone to return at a later time and release the citation for ordering. With the increasing cost of Interlibrary Loans, the day is at hand when on-line verification may be mandatory. This verification process simply requires that the references at hand be retrieved from a data base. With the help and extensive experience of CISTI's Interlibrary Loan Department, CAN/OLE has conducted one day seminars for on-line document ordering procedures, stressing the economy of the CAN/OLE commands. Although the terminal device is the big initial obstacle, we have found that the departmentalization of roles is an organization give rise to difficulty. This is particularly true where subject requests and interlibrary loans are separate functions. On-line terminals are tools that may be used by each of these departments to effectively carry out their duties.

ILLUSTRATION OF AN ON-LINE DOCUMENT ORDER

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BEGIN OLE,(N75ERIC,TOTAL)
CANADA INSTITUTE FOR SCIENTIFIC AND TECHNICAL INFORMATION
'17/02/78 11:06'.        FOR NEWS, TYPE:  EXPLAIN NEWS.
@
ENQUIRE NTIS
(C) U.S. DEPARTMENT OF COMMERCE.  JAN/71-FEB/78
"EXPLAIN I.L.L." ON HOW TO OBTAIN NITS REPORTS.
@
S (URANIUM,HEXAFLUORIDE,CONTAINER,CRITERIA),T,AND
SET 01 = 5491
SET 02 = 288
SET 03 = 311
SET 04 = 4990
SEARCH ENDED. LOGIC BEGINNING.
SET 05 = 2
@
P ,*
       1
 U7301; ORO-651 (REV.3)
URANIUM HEXAFLUORIDE-  HANDLING PROCEDURES AND CONTAINER CRITERIA.
OAK RIDGE OPERATIONS OFFICE (AEC), TENN.
AUG 72; 75P
*SHIELDED CONTAINERS; *SHIPPING; *URANIUM FLUORIDES UFV
18F; 77F

       2
 U7801; ORO-651 (REV.4)
URANIUM HEXAFLUORIDE:  HANDLING PROCEDURES AND CONTAINER CRITERIA.
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION, OAK RIDGE, TENN. OAK RIDGE
OPERATIONS OFFICE.
APR 77; 77P; PC A05/MF A01
*URANIUM HEXAFLUORIDE; CONTAINERS; MATERIALS HANDLING; PACKAGING; SAMPLING;
ERDA/050400; ERDA/050900
18J; 77I
@
P ,SKIP=1,MODE=ORDER,NOTE='FOR DR. J.E. BROWN'
ILL REQUEST 0970-03.
@
FINISH
17/02/78 11:10/    0 HR.  4 MIN.  CONNECT TIME / $ 2.93 ESTIMATED COST /
   4 SEARCHES /       0 OFFLINE HITS(S) /   0 BATCH PRINT(S)
TERMINAL DESENGAGE, ENGAGER OU RACCROCHER

TERMINAL LOGICALLY DISCONNECTED, RECONNECT OR HANG UP.
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	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	TOTAL #	TOTAL %
BA	13	23	34	5	5	2	3	8	93	7.0
CAC	12	10	16	20	11	6	7	34	116	8.7
CONF	1	0	1	2	0	1	2	1	8	0.6
EI	51	70	42	23	33	8	20	28	275	20.6
INSP	17	16	51	67	26	26	19	77	299	22.4
NTIS	66	45	61	93	82	20	31	110	508	38.0
UNION	0	0	5	5	3	4	8	11	36	2.7
TOTAL	160	164	210	215	160	67	90	269	1335	100

TABLE A: BREAKDOWN OF ON-LINE DOCUMENT REQUEST BY FILE

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	TOTAL #	TOTAL %
UNIVERSITIES	22	23	47	23	25	19	5	46	211	15.8
GOVERNMENT	138	138	118	109	89	19	51	118	780	58.4
INDUSTRY	0	3	45	83	46	29	34	104	344	25.8
TOTAL	160	164	210	215	160	67	90	269	1335	100

TABLE B: BREAKDOWN OF ON-LINE DOCUMENT REQUEST BY USER GROUP

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	TOTAL
PHOTOCOPY #	4194	5425	5246	5321	5554	4559	5180	5973	41452
ON-LINE %	3.8	3.0	4.0	4.0	2.9	1.5	1.7	4.5	3.2

TABLE C: COMPARISON OF PHOTOCOPY REQUEST TO ON-LINE DOCUMENT REQUEST

	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Average
BA	11.18	11.36	11.64	12.11	13.20	11.55	9.92	11.03	11.50
CAC	10.38	10.07	10.88	11.34	12.40	9.85	10.44	9.84	10.65
CONF	5.81	5.58	6.09	5.07	5.97	4.00	6.34	4.32	5.40
EI	9.60	9.19	8.05	8.98	9.47	6.96	8.39	9.09	8.72
IEC	5.64	6.50	8.80	8.20	8.05	8.54	9.06	5.53	7.54
INSP	8.12	8.26	9.48	11.00	7.78	7.62	6.70	8.70	8.46
NTIS	8.54	8.85	8.94	7.70	8.61	6.87	8.03	6.52	8.01
UNION	3.07	4.87	4.85	5.82	6.38	3.65	4.09	5.51	4.78

TABLE D: AVERAGE TOTAL COST PER FILE

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Average
7.75	7.85	8.07	8.51	8.72	8.17	7.61	8.94	8.20

TABLE E: AVERAGE TOTAL COST PER TERMINAL SESSION

FILE	PRINTED EQUIVALENT	CAN/OLE FILES PUBLISHER	COVERAGE	NO. OF CITATIONS AS OF 1/MAR/78	RATES Computer Connect time per hour
BA	Biological Abstracts Bioresearch Index	BioSciences Information Service (U.S.)	JAN 1972-	1,520,000	$55.00
CAC	Chemical Abstracts	American Chemical Society (U.S.)	JUL 1973-	1,750,000	$44.00+2¢/hit off-line
CODOC	Forthcoming/Prévu	Council of Ontario Universities			$45.00
CONF	Conference Proceedings held by CISTI	National Research Council of Canada	1928-	10,000	$40.00
EI	Engineering Index	Engineering Index Inc. (U.S.)	JAN 1970-	649,000	$44.00+3¢/hit off-line
IEC	Directory of Federally Supported Research in Universities	National Research Council of Canada	1971/72-	57,000	$40.00
INSP	Physics Abstracts; Electrical & Electronics Abstracts; Computer & Control Abstracts;	The Institute of Electrical Engineering (U.K.)	JAN 1970-	1,065,000	$55.00
NTIS	Government Reports Announcements & Index	National Technical Information Service (U.S.)	JAN 1971-	398,000	$46.00
UNION	Union List of Scientific Serials in Canadian Libraries	National Research Council of Canada	43,000 serials held in 250 Canadian libraries		$40.00

*includes communications from nearest CISTI operated node to Ottawa. Add $1.00 per off-line printout (maximum of 300 citations per printout).

CONCLUSION

A complete search service requires delivery to the user of documents relevant to his search. Services similar to CISTI's on-line document ordering are now being offered by commercial on-line services, though only when documents are conveniently available via a data base producer. Recent telecommunication techniques, such as Facsimile and Videophone, have been thoroughly researched and developed, and are now ready for mass distribution. Facsimile can transmit a 21 x 39 cm document over ordinary telephone lines in 2-3 seconds, while Videophone also allows conversation. The present day telephone networks permit terminal-to-terminal communication, making it possible for a user to request on-line a document from a library contracted to supply documents. WILLIAMS (1975) has observed that on-line systems have involved the library in additional costs and have changed their acquisition policies to reflect the increased demand for documents. Microform collections may become necessary, especially if they can be linked to on-line systems. CISTI's acquisition policy has always been to improve accessibility to bibliographic documents. Until the day a descriptive on-line abstract contains charts, tables, figures, statistics, photographs, etc. that contribute to the understanding of scientific and technical information, the printed document will be necessary.

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