ABSTRACT
        The minutes of a meeting sponsored by the Association
of Research Libraries (ARL) is presented. Thirty-one representatives,
primarily from the library community, met at the Brookings
Institution in Washington, D.C. on July 19, 1974, for an
ARL-sponsored meeting to discuss a recently-completed feasibility
study of a computer-based system for interlibrary communication
(SILC). The meeting reviewed and summarized the major features of
SILC services and functions including accounting, message switching
and processing, and the referral of interlibrary loan messages
transmitted between borrowing and lending libraries. A discussion of
bibliographic verification and location information is included.
However, the major portion of the minutes and the accompanying charts
are devoted to the costs and funding of SILC. (WCM)

ASSOCIATION OF RESEARCH LIBRARIES
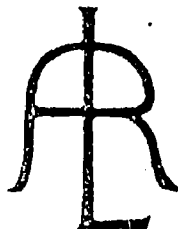
A SYSTEM FOR INTERLIBRARY COMMUNICATION (SILC)

MINUTES OF A MEETING SPONSORED BY THE
ASSOCIATION OF RESEARCH LIBRARIES

Brookings Institution
Washington, D. C.
July 19, 1974

Thirty one representatives* drawn primarily from the library
community met at the Brookings Institution in Washington, D. C. on
July 19, 1974, for an ARL-sponsored meeting to discuss a recently-
completed feasibility study of a computer-based system for interlibrary
communication (SILC). The study was conducted by ARL with a grant from
the National Science Foundation. The meeting was chaired by David Weber,
chairman of the ARL Interlibrary Loan Committee, and included a briefing
by Dr. Robert Hayes, the principal investigator for the SILC study.

In the briefing Dr. Hayes reviewed and summarized the major features
of SILC services and functions including accounting, message switching
and processing, and referral of interlibrary loan messages transmitted
between borrowing and lending libraries. [Sections from the SILC final
report were assembled into a compilation of SILC Briefing Charts which
were distributed to each participant and were referred to throughout the
discussion. The information contained in the charts will not be summarized
here. For additional information reference should be made to the charts
(selected charts are attached here) or to the SILC final report: A System
for Interlibrary Communication (SILC).

Bibliographic Verification and Location Information

A recurring discussion topic was the importance of bibliographic
verification and location identification for interlibrary loan. The
proposed SILC system does not directly provide for either of these activities.

The larger problems of bibliographic control were considered to be
beyond the scope of the current project, which is recognized as being only
one component involved in the provision of access to information. The
proposed SILC system was carefully designed as a "do-able" project, one
that could serve as an important first step in the implementation of a
national communications system which eventually would accommodate activities
related to bibliographic verification and location information.

*List of attendees attached

Nevertheless the participants felt that more attention needed to be given to such things as the use of bibliographic data bases (e.g. MARC and CONSER) in a SILC-like system, and the relationship of SILC to current on-going activities of existing bibliographic centers and interlibrary loan networks.

Costs of SILC

(See Figures 3-3, 6-1, 6-11 attached)

Essentially, the cost figures for the present system used by Dr. Hayes are taken from the Westat study A Study of the Characteristics, Costs and Magnitude of Interlibrary Loans in Academic Libraries. However, because of the differences in interpretation of what constitutes a "transaction", some adjustments of the Westat figures were made to include both the costs of the borrowing and lending libraries. Costs for verification are not included in the estimates. Total costs cited for the present system should be increased from $8.77 to approximately $10.50 to include costs for referrals.

Because of the inadequacy of available cost figures and the need to make estimates based upon incomplete information, Dr. Hayes emphasized that the cost figures used are the best estimates he could derive, but admittedly are not firm for a number of categories. For example, total costs of a SILC system performing all functions could be $9.70 - $12.00 depending upon a number of factors (e.g. costs for connect time, type of input/output device used, mode of processing, terminal costs, etc.)

Dr. Hayes stated that one of the important outcomes of a pilot test of SILC would be the generation of reliable data, including cost figures, which could provide the basis for improved planning and decision making.

Pilot Test (SILC Phase 2)

The SILC pilot test was seen as important for a number of reasons:

1) the technical, operational, management and economic feasibility of SILC needed to be tested and evaluated;

2) the pilot test will generate badly needed data which will give a truer picture of the volume and costs of interlibrary loan activity;

3) the human factors and problems involved in a SILC-like system are of considerable importance and need to be fully explored.

The pilot test would be so designed that it will be a fair test of a national system.

The choice of test participants would be made by the ARL Executive
Board, the funding agency and the SILC manager. Others expressing
interest in serving as the SILC manager are MINITEX, WICHE and NASIC.
Dr. Hayes indicated the most likely candidates to serve as the time-
sharing company for a SILC system include Computer Science Corp., General
Electric, National CSS, Time Share, Inc., United Computing Systems as well
as Datran, Service Bureau and Western Union.

The schedule for the pilot test would involve approximately 18 months,
including six months for planning and design, six months for implementation,
and six months of a full scale operation of the system. At the end of these
18 months, the manager would make his report including analysis of all
pertinent data on costs and statistics on various activities. Based on
this analysis and review, the decision would be made as to whether future
funding should be explored. It was noted that under this schedule, there
might be problems of transition into a full scale operation, since halfway
through Phase 2 and prior to a fair testing, the proposal for Phase 3
would have to be prepared. An alternative was suggested that would provide
for the evaluation phase to begin about the twelfth month; by the fifteenth
month a decision would be made as to whether the testing was successful;
and during the last three months the project would be phased out if the
evaluation had been negative or, if successful, plans would be made for
seeking added funding and planning future activities.

Funding for SILC Phase 2

(See Figures C-9 and C-10 attached)

In figure C-9 Dr. Hayes provided a breakdown of costs for Phase 2
totalling $578,000. In discussing alternative strategies for funding
Dr. Hayes identified five potential sources of funds: the funder of
development, the funder of pilot tests, the participating consortium, the
participating libraries, and the SILC manager. As an example of the
nature of the cost sharing Dr. Hayes noted that a portion of the costs
(specifically, some part of the $150,000 estimated for "Administration")
might be considered as an "in kind" contribution by the SILC Manager.
For example, the administrative staff may already be on board and funded
by the budget of the SILC Manager; those salaries and related expenses
could be treated as the contribution by the SILC Manager, under the
assumption that the work in development of SILC was a necessary part of
the overall mission of the SILC Manager.

Similarly, a portion of the costs (specifically, some part of the
$110,000 estimated for personnel in the participating libraries) might
be considered as an "in kind" contribution by the pilot test libraries.
The extent to which they would be willing and able to donate the time
of staff will vary greatly from one possible test bed to another, but in
most cases some donation of time and expenses seems feasible.

A portion of the costs of the participating libraries could be coverable by a funding agency concerned with the support of their interlibrary cooperation, for example NLM (if one of the regional medical library networks were the group of pilot test libraries) or OE (if one of the state library networks were).

The sources of funds and decisions regarding allocation of costs would be dependent upon the choice of the SILC manager and the participants in the pilot test. The amounts shown on Figure C-10 attached were suggested by Dr. Hayes as one possible plan for the sharing of costs.

When fully implemented as a national system, funding for SILC could be provided both at the state and national levels. There was some discussion of Figure 5-6 attached showing the estimated cash flow for the first three years after the pilot test. In commenting on the funds required for the first year of operation, particularly before income was generated, it was noted that $50,000 per quarter the first year was required. To the extent that there would be state and federal funds available, this amount would not be required from the participating libraries. Another consideration mentioned was that if the projected schedule were not maintained the negative cash flow would be present for a longer period of time. In addition if there were not full participation, the cash flow might be adversely affected to a significant extent. All of these factors need to be carefully considered if planning goes forward.

Comments from NSF - OSIS

Mr. Weber asked Dr. Lee Burchinal, head of the Office of Science Information Service, NSF, to discuss his assessment of the SILC project and the interest of NSF in Phase 2. Dr. Burchinal indicated that he felt a very promising base for futher activity had been created in Phase 1 of the project. NSF would encourage ARL to pursue a pilot project assuming acceptable answers could be found for some of the broader issues raised during the meeting, such as those relating to bibliographic control and the type of services that a SILC system should provide. He noted that perhaps additional consideration was needed of such areas as (a) alternative pilot test designs (e.g. should there be more than one group involved in a pilot test?); (b) the geographical considerations that should be taken into account in selecting the pilot test areas; (c) the level or type of libraries asked to participate in the pilot test; (d) the state versus multi-state basis for participation. The criteria for selection of the manager, the manager's role and selection of the time-sharing companies are all extremely important matters which need careful consideration.

Dr. Burchinal also suggested that the planning should go beyond Phase 2 to Phase 3, including a reasonable schedule of proposed activities, and the determination in advance of criteria for selection of participants in a national system which might be established after Phase 2 activities.

There is a need for careful delineation of the kind of data that is needed to make the hard decisions regarding some of these issues. The implications of the changes caused by the SILC system were important as they would affect the total community, including publishers, libraries, users, the scholarly community and so forth, and that an oversight committee might be formed with representatives from these groups. Should the decision be made to go ahead with Phase 2, ARL should seek joint funding; NSF would be interested in being a party to these further activities, but Dr. Burchinal indicated that joint funding was necessary to ensure a longer term continuity for a project of this scope.

ALA Comment

Robert Wedgeworth, Executive Director of American Library Association, said that there was a basic difference in the way ALA and ARL see the problem. From the ALA point of view, the state and regional systems are important and would seem to offer the best approach to providing interlibrary loan services. ALA is in the process of preparing a proposal for a funding agency which will be ready in the fall to look at a "developed" system, such as the OCLC, and an "undeveloped" system. The ALA feels the emphasis should be upon the development of a bibliographic system which will provide location information. The potential number of lenders is much greater than we now assume, but because location information is not available the number of lenders is not as great as it should be.

Conclusion

In response to Mr. Weber's request for a general reaction from the group on their interest and support for ARL going further with the SILC study, five people indicated they were enthusiastic, 13 people favored it but with some reservations and one had serious doubt.

It appeared that the general view of the group was that the feasibility of the project had been well-documented, and that there should be further consideration of the issues noted above.

Submitted by

Suzanne Frankie
Assistant Executive Director

August 19, 1974

FIGURE 3-3

REPRESENTATIVE CALCULATION OF

ESTIMATED TIME-SHARING SYSTEM

COSTS OF SILC PROCESSING

(1) Connect time charges for input and output,
assuming that an average request involves
about three messages with bibliographic data
(each of 300 characters, as an average) and
six other messages (each of 60 characters):

$$\frac{(300 \text{ char.})(3 \text{ messages})(\$12 \text{ per hour})}{(10 \text{ char. per sec.})(3600 \text{ sec. per hour})} = \$.30$$

$$\frac{(60 \text{ char.})(6 \text{ messages})(\$12 \text{ per hour})}{(10 \text{ char. per sec.})(3600 \text{ sec. per hour})} = .12$$

(2) CPU time charges for message switching, referral,
and accounting:

$$(20 \text{ msec.})(9 \text{ messages})(\$.20/\text{sec.}) \quad = .04$$

$$(20 \text{ msec.})(9 \text{ mess.})(15\% \text{ referrals})(\$.20/\text{sec}) = .006$$

$$(1 \text{ msec.})(9 \text{ messages})(\$.20/\text{sec})(3 \text{ reports}) = .006$$

(3) On-line storage charges until resolution of a
request, assuming that the average length of
a record is about 1000 characters (300 for
the initial bibliographic message and 9 times
60 for the subsequent postings), and that it
is on-line for an average of 20 days:

$$\frac{(20 \text{ days})(1000 \text{ char.})(\$.40 \text{ per month}/1000 \text{ ch.})}{(30 \text{ days per month})} = .03$$

Total $.502

FIGURE 5-6

CASH FLOW FOR FIRST THREE YEARS AFTER

COMPLETION OF PILOT TEST &

INITIATION OF FULLY OPERATIONAL SERVICE

Years:		1				2				3			
Quarters:	1	2	3	4	5	6	7	8	9	10	11	12	
Usage[1] (in thousands of requests)	00	50	100	150	200	250	300	350	400	450	500	550	By Quarter
				300				1100				1900	By Year
				300				1400				3300	Cumulative
Costs [2] (in thousands of dollars)	70	100	130	160	190	220	250	280	310	340	370	400	By Quarter
				460				940				1420	By Year
				460				1400				2820	Cumulative
Billings[3] (in thousands of dollars)	00	40	80	120	160	200	240	280	320	360	400	440	By Quarter
				240				880				1520	By Year
				240				1120				2640	Cumulative
P/L[4] (in thousands of dollars)	-70	-60	-50	-40	-30	-20	-1o	00	+10	+20	+30	+40	By Quarter
				-220				-60				+100	By Year
				-220				-280				-180	Cumulative
Receipts[5] (in thousands of dollars)			40	80	120	160	200	240	280	320	360	400	By Quarter
				120				720				1360	By Year
				120				840				2200	Cumulative
Cash Flow[6] (in thousands of dollars)	-70	-100	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	By Quarter
				-340				-220				-60	By Year
				-340				-560				-620	Cumulative
Cumulative[7] Total Cash Commitment (in thousands of dollars)	70	170	260	340	410	470	520	560	590	610	620	620	
Average Cost Per Request[8]				1.53				.86				.75	

(1) See Figure 5.3
(2) See Figure 5.4
(3) Based on $0.80 per request
(4) Billings-Costs
(5) Based on Billings from prior quarter

(6) Receipts-Costs
(7) Cumulative Cash Flow
(8) Yearly Costs/Yearly Usage

FIGURE 6-1

ESTIMATED COSTS PER REQUEST, PRESENT OPERATIONS

(BY PROCESSING FUNCTION, INSTITUTION, & REQUEST RESULT)

	Bibliogr. Searching	Physical Handling	Other	Handling Expenses	Commun. Expenses	SILC Related	Total
Borrowing Library							
Filled Original	$2.87	1.00	.27	.50	.16	1.24	6.04
Filled Copy	2.87	.25	.27	.05	.16	1.34	4.94
Unfilled	2.87		.27	.05	.16	.69	4.04
Lending Library							
Filled Original	.72	1.30	1.00	.33		.90	4.25
Filled Copy	.72	1.50	1.00	.85		1.00	5.07
Unfilled	.72		1.00	.05	.16	.22	2.15
Total							
Filled Original	3.59	2.30	1.27	.83	.16	2.14	10.29
Filled Copy	3.59	1.75	1.27	.90	.16	2.34	10.01
Unfilled	3.59		1.27	.10	.32	.91	6.19

If we assume 35% Filled Original, 30% Filled Copy, and
35% Unfilled, we get the following Average "Cost per Request":

	Bibliogr. Searching	Physical Handling	Other	Handling Expenses	Commun. Expenses	SILC Related	Total
Average	3.59	1.33	1.27	.60	.22	1.76	8.77

TOTAL COSTS PER REQUEST FOR ALTERNATIVE SYSTEMS

Alternative Accounting Systems	Bibliogr. Searching	Physical Handling	SILC Related	Other (Unalloc.)	Total
Present System	$3.59	1.93	1.98	1.27	8.77
Present System (with full accounting)	3.59	1.93	2.68	1.27	9.47
Clearinghouse (with use of coupons)	3.59	1.93	2.33	1.27	9.12
SILC (only for accounting)	3.59	1.93	2.16	1.27	8.95

Alternative Message Switching Systems	Bibliogr. Searching	Physical Handling	SILC Related	Other (Unalloc.)	Total
Present System	$3.59	1.93	1.98	1.27	8.77
Full use of teletype plus clearinghouse accounting	3.59	1.93	2.79	1.27	9.58
SILC (for message switching and accounting)	3.59	1.93	2.52	1.27	9.31

Alternative Referral Systems	Bibliogr. Searching	Physical Handling	SILC Related	Other (Unalloc.)	Total
Present System	3.59	1.93	1.98	1.27	8.77
Full use of teletype for message switching and referral & Clearinghouse for accounting	3.59	1.93	3.09	1.27	9.88
SILC (for message switching, referral and accounting)	3.59	1.93	2.55	1.27	9.34

FIGURE C-9

Phase 2 Cost Estimate

Task	SILC REPORT Amount	REVISED ESTIMATES
Administration (SILC Manager)	$150,000	_____
Programing	150,000	_____
Pilot-test (SILC Manager)		
Planning	10,000	_____
Procedures development	15,000	_____
Training	45,000	_____
Test & evaluation	20,000	_____
	90,000	_____
Time-sharing system costs	30,000	_____
Participating library costs		
Terminals (15 for 12 mos. @ $100/mo.)	18,000	_____
Phase 2A Personnel (1 Library, 6 mos.)	10,000	_____
Phase 2B Personnel (15 Libr'y, 6 mos.)	50,000	_____
Phase 2C Personnel (15 Libr'y, 6 mos.)	50,000	
	128,000	
Travel and other expenses	30,000	_____
	$578,000	_____

FIGURE C-10

PHASE 2 SOURCES OF FUNDS

	FUNDER OF DEVELOPMENT	FUNDER OF PILOT TEST	PARTICIPATING CONSORTIUM	PARTICIPATING LIBRARIES	SILC MANAGER	TOTAL
Administration (SILC Manager) 150,000	50,000				50,000	
Programming	150,000					
Pilot-test (SILC Manger)	90,000	50,000				
Planning						
Procedures Development						
Training						
Test & Evaluation						
Time-sharing System costs		30,000	78,000			
Participating library costs				50,000		
Terminals (15 for 12 mos. @ $100/mo.)						
Phase 2A Personnel (1 Library, 6 mos.)						
Phase 2B Personnel (15 Libr'y, 6 mos.)						
Phase 2C Personnel (15 Libr'y, 6 mos.)						
Travel and other expenses	30,000					
Totals	= 320,000	80,000	78,000	50,000	50,000	

A System for Interlibrary Communication (SILC)

A Conference Sponsored by ARL

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July 19, 1974

ATTENDEES

Albert Berkowitz	National Library of Medicine
Paul Berry	Library of Congress
Virginia Boucher	University of Colorado
William Budington	John Crerar Library
Lee Burchinal	National Science Foundation
Richard Chapin	Michigan State University
Margaret Child	National Endowment for the Humanities
Edward D'Alessandro	Library of Congress
Richard De Gennaro	University of Pennsylvania
Leslie Dunlap	University of Iowa
Suzanne Frankie	Association of Research Libraries
Robert Hayes	Becker & Hayes
Ralph Hopp	University of Minnesota
John Humphry	New York State Library
Sheldon Katzin	National Library of Medicine
Robert Klassen	Office of Education
Joseph Leiter	National Library of Medicine
Lawrence Livingston	Council on Library Resources
John Lorenz	Library of Congress
Stephen McCarthy	Association of Research Libraries
John McDonald	University of Connecticut
Wallace Olson	National Agricultural Library
Rutherford Rogers	Yale University
G. F. Shepherd, Jr.	Cornell University
Alphonse Trezza	Illinois State Library
David Wax	Northeast Academic Science Information Center
David Weber	Stanford University
Robert Wedgeworth	American Library Association
Edward Weiss	National Science Foundation
William Welsh	Library of Congress
Gordon Williams	Center for Research Libraries
Richard Farley	National Agricultural Library