parting message

we have all enjoyed the architects7 seminar and fully anticipate that the architect-sri interface will be profitable for all concerned. 1

21417 Distribution
James H. Bair, James C. Norton, Douglas C. Engelbart,

1
1a

parting message

(J21417) 15-JAN-74 15:14; Title: Author(s): Connie K. McLindon/CKM; Distribution: /JHB JCN DCE; Sub-Collections: NIC; Clerk: CKM;

subset of directives for output processor

this s a test of the journal system

subset of directives for output processor

```
REPORT:     ;
        .PN=  x;
```

subset of directives for output processor

(lines down from top of body)

.Center=n; ((centers a certain # of lines)

(mber and/or statement at bottom of page. if used,you must include page no. directive to have pages 2.)

16 JAN 74 (date)

.GCR=n;(generates carriage return)

.GPN=n; ((generate page no.))

(n=10=parens/20=brackets/30=algesbracs/40=hyphens/)

.Grab=n;(grab a no. of lines and put on the same page)

(printed under ea, up to 4)

or C (Flush Left or Right)

21418 Distribution
James H. Bair,

1
1a

subset of directives for output processor

(J21418) 15-JAN-74 15:22; Title: Author(s): Inez M. Mattiuz/IMM;
Distribution: /JHB; Sub-Collections: BELL-CANADA; Clerk: IMM;
Origin: <MATTIUZ>DIRS.NLS;2, 14-JAN-74 11:30 IMM ;

link info

Here's the link to the training syllabus (bair,course,) 1

21419 Distribution
James H. Bair,

link info

(J21419) 15-JAN-74 15:28; Title: Author(s): Connie K. McLindon/CKM; Distribution: /JHB; Sub-Collections: NIC; Clerk: CKM;

DLS 15-JAN-74 15:29 21420

Control B problems in New NLS

Control B at the end of insert commands acts like a control H, ie it backspaces a character rather than repeating the insert command....bug????

1

21420 Distribution
New Nls,

1
1a

DLS 15-JAN-74 15:29 21420

Control B problems in New NLS

(J21420) 15-JAN-74 15:29; Title: Author(s): Duane L. Stone/DLS;
Distribution: /NEWNLS; Sub-Collections: RADC NEWNLS; Clerk: DLS;

there is a link to training sylabus and lesson plans (pair,course,) 1

21421 Distribution
Inez M. Mattiuz,

1
1a

(J21421) 15-JAN-74 15:32; Title: Author(s): Inez M. Mattiuz/IMM; Distribution: /IMM; Sub-Collections: BELL-CANADA; Clerk: IMM;

JGR 15-JAN-74 16:27 21422

trial message

Well, I finally got in, though both ISI and ARC seem to have been having troubles today. So far I have only three questions (pardon the format but that's one of them): 1) what do you use in place of CR when typing things like this ? 2) how do I get my stupid Beehive screen to stop scrolling (Terminal Type Beehive doesn't seem to do it) ? 3) how do I find the letter-writing package you mentioned ? (I tried nic to no avail). Jeff

1

21422 Distribution
Charles H. Irby,

1
1a

JGR 15-JAN-74 16:27 21422

trial message

(J21422) 15-JAN-74 16:27; Title: Author(s): Jeff G. Rothenberg/JGR; Distribution: /CHI; Sub-Collections: NIC; Clerk: JGR;

Please do not fill out your project number on you time card this week. It has been changed, for some of you, changed again. Rather than trying to inform you of these changes and you trying to keep up with them, for a while I will just fill in the project number myself. Do continue to use 70200 for vacation, 70201 for sick, 90000 for l.w.p., etc. Be patient..... 1

21423 Distribution 1

James H. Bair, Paul Rech, Dirk H. Van Nouhuys, Diane S. Kaye, Susan R. Lee, Harvey G. Lehtman, Elizabeth K. Michael, 1a

(J21423) 15-JAN-74 16:56; Title: Author(s): Jeanne M. Leavitt/JML; Distribution: /JHB PR DVN DSK SRL HGL EKM; Sub-Collections: SRI-ARC; Clerk: JML;

JOC 16-JAN-74 04:50 21424

Charles, Thanks for your note... i appreciate your support in this effort.. Within a week or so i hope ot have the draft more or less completed, wil let you know when it is. My immediate plans are to then begin implementation of the server (the core section of it) and then go to the user stuff. if you've any ideas that you think i should consider, please let me know, i'll be very interested in hearing them. Take care -- jim

1

(J21424) 16-JAN-74 04:50; Title: Author(s): Jim O. Calvin/JOC;
Distribution: /CHI; Sub-Collections: NIC; Clerk: JOC;

DVN 16-JAN-74 08:18 21425

Good Directory Commands Make Me want More.

I have formed the habit of keeping a branch in my intial file which contians my directory copied via copy directory. Before I copy it in anew as it changes, I have to delete plex to get rid of the out-of-date version. If "directory"were an option at the source selection of the replace command it would save fingering. Of course it would be best if the system automatcialy wrote that branch anew evvery time I logged in or the like. Can the profile do that? 1

DVN 16-JAN-74 08:18 21425

Good Directory Commands Make Me want More.

(J21425) 16-JAN-74 08:18; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /NEWNLS; Sub-Collections: SRI-ARC NEWNLS; Clerk: DVN;

NJN 16-JAN-74 09:56 21428

Defining Users

Wayne and Jake--
To get a start on user definition, let us each compile a list of what we think the user population consists of. Wayne, you said you could name about 40 types of users; that would be a good start. I will try to base my list on computing function. I think 25 Jan is a good daate by which we should have these lists done, and then we can consider the next step. Use the USING directory to build the files and then we can all edit them If either of you has any better suggestions for procedure, let me know.
Salut, Nancy

1

NJN 16-JAN-74 09:56 21428

Defining Users

(J21428) 16-JAN-74 09:56; Title: Author(s): Nancy J. Neigus/NJN;
Distribution: /AWH JAKE; Sub-Collections: NIC; Clerk: NJN;

KEV 16-JAN-74 11:12 21430

xnls and file links

all commands in XNLS (with the exception of GOTO PROGRAMS COMPILE FILE) should now (or after the next load) take file links as input rather than file names. It should not be necessary to enter the opening paranthesis or the closing comma and paranthesis. All new commands should be written to accept file links (e.g.: LSEL(#"FILELINK")) and not file names (e.g.: LSEL(#"FILE")). 1

KEV 16-JAN-74 11:12 21430

xnls and file links

(J21430) 16-JAN-74 11:12; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /NPG DIRT; Sub-Collections: SRI-ARC NPG DIRT; Clerk: KEV;

RWW 16-JAN-74 11:15 21431

Rough Estimate of ARC Overcommitment

It is clear to me that we are seriously overcomitted and either have to decommit or increase funding and staff. Along with the lack of staff goes a lack of computer and terminal capacity. We are operating or are about to operate at about a 50% overcommitment level, which is way above a healthy overload for any group. Areas of my responsibility Development, Analysis, and NIC are either at or below what I consider tolerable levels given commitments at last summers levels let alone new ones being made. The result in all ARC areas can only be failure to deliver in the near to medium term and to be technologically and economically viable in the longer term and eventual (present?) staff demoralization. Even being more conservative and cutting my estimates by 20% still leads to over commitment as a conclusion. My recommendation is to take a hard look at my estimates to see where I might be wrong, examine carefully why we are heading where we seem to be heading and ask ourselves where additional funds can come from or what we should drop and yet have some hope in maintaining critical mass in what remains while yet meeting short term problems and long term viability. 1

ARC TOTAL (being conservative) 53-60 2

MANAGEMENT 3 people 3

DEVELOPMENT 12-17 people 4

APPLICATIONS SUPPORT 2-3 software people required, 2 methodology people required 4a

We have to assume that each serious application, NIC, DEIS, VELA, ARPA and other will require additions changes tailoring etc. not anticipated when a basic function was originally developed. We have to have adequate manpower budgeted for this purpose. For example, the NIC really needs at least one fulltime programmer. We seem to be heading toward enough application use that a minimum of one or two additional programmers should be budgeted for applications, plus the one for the NIC yields 2-3 sftware people required. 4a1

Procedure and methodology development must proceed with any applications and if these are to develop with coherence development must have staff to work closely with Applications, I feel a couple of people minimum are needed. 4a2

FUNCTION DEVELOPMENT 5-6 software people 4b

Under function development I include areas such as DSS, Information Management, DPCS etc. Past experience has convinced me that there is a symbiotic effect if there can be more than one person working in an area and therefore I feel

that we should only work in as many areas as we can staff to at least a 2-3 man level. Because of the nature of our applications I feel we must work in DSS and Information Management (the nature of the tasks open to negotiation but having to have the quality iof more general applicability and of a fundamental nature than would generally be expected for an immediate need of a given application). I feel that some effort shoulld be going into the DPCS area in improving tools for multiple authorship collaboration. I feel a minimum healthy level of 5-6 software people and will assume that the methodology people listed above can also contribute here. Planning for participation in the MST effort may alter the areas but its not likely to do anything but increase the effort required. 4b1

BASIC SYSTEM STRUCTURE 3-6 software people 4c

There is very important work to be done in this area if the Knowledge Workshop concept is really going to be fruitful and if we are going to have an economically viable system for application use. It is in this area that I expect initial forces from the MST project to hit us first. The need to proceed with the NLS frontend system, participating in system protocol design, collaboration and interfacing with other contractors, need for possible reimplementation as MST program moves ahead will require 3-6 software people working at this level. 4c1

ANALYSIS 4-6 people 5

We have looked at Analysis in the past and while we could limp along with present staffing of 2 people I feel a minimum is really closer to 4 to lay the ground work of this new area, really look into areas of vital concern, service requests from applications and development and do some promotion and collaboration out on the Net. I would expect that active participation in the MST program will be very important. The ONR project will require 3/4 of a person. 5a

APPLICATIONS 34-37 people 6

ARC Operations 15 people 6a

We are presently drawing DEIS support heavily out of ARC Operations and as a temporary expedient thats ok but not viable over a longer time. For example our documentation effort is critical to all applications and it is going to be hit hard. 6a1

2 minimum for documentation 6a2

Rough Estimate of ARC Overcommitment

1 Tenex 6a3

1 NLS maintenance 6a4

1 administrative 6a5

3 clerical 6a6

4 hardware people 6a7

1 making catalogs 6a8

2 operators 6a9

NIC 7-8 people 6b

We have made several cuts at looking at the NIC and ACIS and its present 4 person level is just not viable except as a desparate holding action. Each look comes up with a real minimum need of from 7-8 people (software support counted earlier) 6b1

UTILITY 5-7 people 6c

We have looked hard here also several times and see a need for 5-7 people. 6c1

DSIS 5 people plus software above, maybe 2-4 more 6d

Basic support of the two stations was estimated at about 4 people, about 1/2 person in technical support. If Capps wants more demo support of prototype services tht could require 2-3 more people of various skills. Support of Christianson could require another person. 6d1

VELA 2-3 6e

Its clear that a couple people would be required to help design data bases, do procedure develpment collaboraion, liaison etc besides some software effort estimated earlier. 6e1

OTHER LIKELY TO COME UP IN THE NEXT YEAR? 2-5 people? 6f

RWW 16-JAN-74 11:15 21431

Rough Estimate of ARC Overcommitment

(J21431) 16-JAN-74 11:15; Title: Author(s): Richard W. Watson/RWW;
Distribution: /JCN DCE; Sub-Collections: SRI-ARC; Clerk: RWW;

CHI 16-JAN-74 11:30 21432

Some thoughts on a conferencing system

These comments have little bearing on thE NETWORK aspects of the conferrencing system, but rather the capabilities that the user should be able to utilize through the NET.

CHI 16-JAN-74 11:30 21432

Some thoughts on a conferencing system

Jim, some initial thoughts off the top of my head about a conferrencing system:

1) It seems essential to be able to refer unambiguously to previous entries in the conversation (i.e., they should each be given some unique identification -- that is why we have Journal numbers). A user should be able to print an entry by means of its ID.

2) In the begining, a conversation may be well focused, but with time it will become tree-like, as separate issues are defined and discussed. It seems, therefore, desireable to be able to show the user this tree structure, to allow him to make contributions anywhere in the tree (a single entry may in fact address several issues and thus should be linked into the tree in several places), or create nEw brances in the tree.

3) It follows from 2 above that one should be able to find out which entries refer to a particular entry and which entries a particular entry refers to.

4) Since such conversations can become very fragmented, it seems essential to provide some integration tools, the very least of which would be the ability to capture an entire conversation, or any thread thereof, into a structured file, which could then be edited for report production or to submit back into a conversation as a summary entry (this should be appropriatley linked into the conversation tree so that a user can easily find summary entries for a particular branch of a conversation.

Hope the above is helpful. -- Charles.

1

CHI 16-JAN-74 11:30 21432

Some thoughts on a conferencing system

(J21432) 16-JAN-74 11:30; Title: Author(s): Charles H. Irby/CHI;
Distribution: /JOC; Sub-Collections: SRI-ARC; Clerk: CHI;

CHI 16-JAN-74 11:57 21434

Re 21422: Answers to your questions

Jeff, NLS allows its users to define their own control characters (Command Accept, Command Delete, etc). Thus, in answer to your first question about formatting, one can define a character on his keyboard to be his CR key or he can define another key to be his CA key. These character definitions are permanent (not limited to one session). In the current system, one must put a branch in his INITIAL file (the one that is automatically loaded when you enter NLS) with the name NLSControlCharacters. The substructure of this branch is a series of control character definitions (the new NLS does not require this branch, but instead maintians a USER-PROFILE file for each user, in which we store all his user-specific data, data which determins how the system appears to him and what defaults he likes, etc). I will try to dig up documentation on which characters one can redefine, but in the meantime, you can look at my branch (irby, chi, nlscontrolcharacters). Also, of course, one can preceed any control character with ↑V and get it into the text he is typeing (thus ↑V CR would cause a CR to be added to the text you are typing). This LITERAL-ESCAPE character can also be redefined.

We, unfortunately, have not picked up BBN's SCOPE terminal type, which causes the system to stop when the screen is full and wait for the user to type a GO-AHEAD character. We should get this soon. In the meantime, ↑C CONTINUE, or ↑O (stop NLS printing) can be used, although clumsily. The ↑O has the dificulty, that TELNET also uses it. So you should redeFine TELNET's clear buffer character. (isn't the net great)

All of our user programs are described in (user-progs, -contents,) and (user-progs, -userguide,). You should be able to find out about the lettEr formatter there. If not, contact NDM about it, he is our user program librarian.

-- Charles.

1

CHI 16-JAN-74 11:57 21434

Re 21422: Answers to your questions

(J21434) 16-JAN-74 11:57; Title: Author(s): Charles H. Irby/CHI;
Distribution: /JGR; Sub-Collections: SRI-ARC; Clerk: CHI;

CHI 16-JAN-74 12:01 21435

re 21405; -2;text;

Robert, I am forwarding your message to JDH (Dave Hopper). He should be able to get it fixed in the next week or two. Thanks for the bug report. -- Charles. 1

re 21405; -2;text;

(J21435) 16-JAN-74 12:01; Title: Author(s): Charles H. Irby/CHI;
Distribution: /RLL; Sub-Collections: SRI-ARC; Clerk: CHI;

CHI 16-JAN-74 12:16 21437

Re 21401, File Acesses

Paul and Susan, nice work on the file access count. Can we also tell when the last read took place? -- Charles. 1

CHI 16-JAN-74 12:16 21437

Re 21401, File Acesses

(J21437) 16-JAN-74 12:16; Title: Author(s): Charles H. Irby/CHI;
Distribution: /PR SRL; Sub-Collections: SRI-ARC; Clerk: CHI;

JBN 16-JAN-74 15:38 21441

Response to Request for Comments on <Kudlick>nicprogr

Here are comments and suggestions on your draft of NIC programming needs. In regard to the Journal, I have copied over a branch I wrote on all changes I would favor for the Journal, which includes some you may not want the NIC to pay for. 1

Your list is splendid, I think, and I would like to adopt some of your points in the lists I have. 2

I have only one reservation, which is in regard to 1A1A and 1A1B. I don't see that programs to produce these tables are essential, because changes to the tables should be made as soon as possible after the information is received, and if these changes must be made by hand, then producing the tables will eventually be done before the programs are used and programs would be unnecessary. 3

Re: 1E1D1. IDENT SYSTEM 4

I feel the same control should be exercised for MODIFYING Idents that has finally been accepted as desirable for ENTERING Idents. What is at stake is the cleanliness of the Ident file, and this can only be assured by controlling all input. 4a

I feel the system should be designed to provide for temporary Idents and temporary modifications, to be sure that there is no holdup in sending mail, but that all user-entered information should go into a branch of changes which should be flattened by the NIC each day. 4b

Re: 2B. JOURNAL SYSTEM ENHANCEMENTS 5

Modifications to Input Provisions 5a

1. Distinctions, arbitrary and discretionary, should be made in regard to items which should be logged for completeness sake, but which should be deleted from the files used in creating indexes, for the sake of eliminating garbage. 5a1

2. The Journal needs better automatic prompts and feedback for input, specifically a reminder for all needed items. Input procedures should include a reminder, if not a requirement, that a title be supplied. Lack of a title makes retrieval so difficult as to be impractical and usually not attempted. 5a2

3. NIC as a subcollection entry should be made automatic for all items logged from NIC to Sites over the NIC utility, unless the design for the utility makes subcollection NIC a redundancy. In case automatic entry is the option, it should be echoed and allow overriding. The user is often not aware of the provisions for and the present results of subcollection entry. 5a3

4. A correspondence log system should be implemented to work in conjunction with the Journal, to provide desirable links to offline dialogue of similar content and to remove routine transmittals from a record of substantive dialogue. 5a4

5. Numbers should always be available at the time of input, so that the sender can use them for referral immediately. 5a5

Modifications to Delivery 5b

6. A temporary note, designated as such, should be placed in the author's initial file at the time of submission. 5b1

7. The format of the delivery notice should be improved. 5b2

Modifications to Hardcopy Provisions 5c

8. Journal formatting programs should be more easily over-ridden. An item submitted to the Journal should appear in the exact format the author designed, with the Journal information supplied in the upper and right-hand margins outside the formatted areas. 5c1

9. Hardcopy for mailing should be redesigned to reduce the unnecessary bulk and to present all information about sender, recipients, comments, and the first page of the message. 5c2

10. Two formats of hardcopy output should be available and presented to the user as options. 5c3

For a formal document a one-page transmittal sheet: 5c3a

To: Name(s) of recipient(s) DATE
NUMBER 5c3a1

From: Sender 5c3a2

Title: 5c3a3

Commments: 5c3a4

For an informal file or message a heading of the above, preceding the file or message. 5c3b

The journalizer could be given the format options: 5c3c

REPORT format (separate transmittal letter) 5c3c1

MEMO format (To, From, heading) 5c3c2

Response to Request for Comments on <Kudlick>nicprogr

Modifications to Catalog Programs 5d

11. Index programs need a slightly longer stoplist, perhaps 40 or more terms, to suppress the most common useless terms. Beyond these, the anticipation of useless terms is so difficult for this text as to be impractical. 5d1

12. A format for online viewing of the finished index needs to be designed. 5d2

JBN 16-JAN-74 15:38 21441

Response to Request for Comments on <Kudlick>nicprogr

(J21441) 16-JAN-74 15:38; Title: Author(s): Jeanne B. North/JBN;
Distribution: /MDK; Sub-Collections: SRIARC NIC ; Clerk: JBN;
Origin: <NIC-WORK>NICPROGNEEDS.NLS;3, 16-JAN-74 15:23 JBN ;

MLK 16-JAN-74 16:02 21443

Comments on proposed NIC identfile and journal changes

I think you came up with some very good ideas for modification of the identfile and journal system. Below are my comments and criticisms. 1

In 1E1A2, I have a few comments. "Liaison@SRI-ARC" looks too much like a network mailbox address, could cause confusion. It would be better to just read "Liaison" in the function field. 2

Better yet, in my mind, would be to have that field filled automatically when a person is added to or deleted from the NLG (Network Liaison Group) which we have to do anyway. 2a

People out on the network -- well, CERTAIN people anyway -- won't like 1E1D1. But I think it's necessary. I do an awful lot of cleaning up after users inexperienced in identfile work (even Jean Iseli makes messes) Also , then I would not have to chase after the person for additional information necessary to complete the ident entry -- they would call here or sndmsg for initial input -- and I could get all the necessary info then and there. 3

Question about 2A1: do you mean that if Jake made a change in "HOSTADDR MASTER" it would automatically be assimilated into the identfile entry for the particular host in question? 4

Another thing I'm not quite clear on is the "deadwood" you mention in 2A3 and following. Do you mean people who are no longer around and who should be deleted? If so, that mechanism already exists and works fairly well as long as net organizations keep us informed as to their current memberships. 5

If, on the other hand, you mean something like "independents" when you refer to deadwood then it's another story. I don't know quite how you would know whom to get rid of - manually or automatically. Can you clear this up for me? 5a

Concerning the journal, I think 2B2 is a good idea. Of course, it would be essential to make sure that "non-recorded mail" does NOT come out in the hardcopy that we sort through every day and file in the master and access binders that are loading down the conference room and DCE's shelves. 6

If this is impossible (and it might be, particularly if the document is sent to a person without online or network delivery, i.e. hardcopy), then the journal system should at least mark the access and master copies with a prominent "NON-RECORDED MAIL" so that we may discard them during the sorting process and therfore not file them. 6a

(Carol or Judy and I should be asked WHERE this prominent place should be, for efficient sorting...) 6a1

Comments on proposed NIC identfile and journal changes

We don't mind the filing so much as we mind filing silly things that would never be needed for reference. It seems a waste of time and money to meticulously file (in 3 places) something like "I got your note.". A surprisingly large volume of the journal we sort contains messages like this. 6a2

3C1 is an absolute must. It would reduce costs and would be much more efficient and accurate a way to produce labels. 7

MLK 16-JAN-74 16:02 21443

Comments on proposed NIC identfile and journal changes

(J21443) 16-JAN-74 16:02; Title: Author(s): Marcia Lynn Keeney/MLK;
Distribution: /MDK; Sub-Collections: SRI-ARC; Clerk: MLK;
Origin: <KEENEY>COMMENTS.NLS;3, 16-JAN-74 16:00 MLK ;

DCE 16-JAN-74 16:08 21444

Discussion Log: 16 Jan 74, Roger Cooper, SRI Bioengineering Lab, re eye tracking and speech recognition

George Eilers sent him to me. First off we talked a very little bit about what ARC does. He wondered if his work might have any profitable overlap with ARC's. Conclusion: Not for next few years. 1

His work: Eye movoement, worked at SU Psychology Det, under Norman Mackworth... using NM's equip anyway.. Just published a papr on it: "Contrl of eye fixation by the meaning f spoken language: A new methodology for the real time investigation of speech perception, memory, and language processing. 2

Paper's hypothesis: when people are simultaeneously presented with a visual field, containing elements semantically related to the informative items of speech, they tend to spontaneously direct their line of sight to those elements which are most closely related to the meaning of the language currently heard. 2a

Possible "new response measure for lab studies of perception and cognitive psychology" - a new tool to measure without interrupting the processes. 2a1

The linguistic sensitivity of this resonse system together with its asociated small latencies, suggests its use as a practial new research tool for the real time investigation of perceptua and cognitive proesses, and in particular, for the detailed study of speech perception, memory, and language processing. 2a2

What sort of thing does he project that might overlap with ARC's activity? 2b

Extension of his work might allow obtaining peoples instantaneous inerpretation of ongoing heard language, in the context of its contemporary visual field; and one can use this techniqu to study, in detail, th evolutionof those interpretation as a language is being processed. 2b1

So, ability to test the way people simultaneosuly interpret both syntax and semantics of ongoing languge; Especially, studying how himas semantically parse language, giving prtocol aids to guide evolution of AI processes that might provide semantic parsing. 2b1a

A sensitive test, and able to be made more so; proposes augmenting computer speech-recognition processes by means of a person's eye-fixation data, correlated with a record of the ongoing language, towards obtaining a single-pass, semantic parser. 2b2

DCE 16-JAN-74 16:08 21444

Discussion Log: 16 Jan 74, Roger Cooper, SRI Bioengineering Lab, re eye tracking and speech recognition

He feels that a speech translator might well be implemented using his technique's support before a general translator is developed. The early one he describes would require the speaker to have his eye fixation tracked while he spoke, and he would have to be looking at a display, probably with his head clamped in place. 2c

I felt that it wouldn't be a very high-payoff tool to integrate into our Workshop as compared with the many other tools and techniques that we had to choose among in allocating our energy. Someday, without doubt. Sorry 2c1

Suggested that perhaps as instrumentation for future analysis work would be first possibility for applying it in the augmentation research field. 3

Loaned him the following: OSR 62, FJCC68, NCC73AKW 4

D. C. Engelbart, AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK, SRI Project AFOSR-3223, October 1962 (XDOC -- 3906,) 4a

D. C. Engelbart and W. K. English. "A Research Center for Augmenting Human Intellect", AFIPS Proceedings, Fall Joint Computer Conference, 1968, Washington, D.C. (XDOC -- 3954.) 4b

D. C. Engelbart, R. W. Watson, J. C. Norton, THE AUGMENTED KNOWLEDGE WORKSHOP, paper presented at the National Computer Conference, New York City, June 1973. (Journal -- 14724.) 4c

DCE 16-JAN-74 16:08 21444

Discussion Log: 16 Jan 74, Roger Cooper, SRI Bioengineering Lab, re eye tracking and speech recognition

(J21444) 16-JAN-74 16:08; Title: Author(s): Douglas C. Engelbart/DCE ; Sub-Collections: SRI-ARC; Clerk: DCE ;

RWW 16-JAN-74 17:47 21445

Recommendation to JCN and DCE for Go Ahead on PDP-11

Recommendation for meeting rww jcn dce on Jan 17 1974

RWW 16-JAN-74 17:47 21445

Recommendation to JCN and DCE for Go Ahead on PDP-11

For comparison purposes configuraion proposed in (20713,) cost is: 1

64K sys = $38,385, 96K sys = $46,657 1a

Dave Brown's group has not yet placed the order for their PDP-11 with DEC. Hence they expect to get their machine in June-July. 2

Their configuration for the CPU is the same as ours. In order to use their machine we would have to upgrade: 1) get the memory managment hardware (memory protection) 2) add 64K memory 3) get the IMP interface. 3

They are also getting a diablo 44 disk unit and a versateck electrostatic printer. We may find the disk useful at some point, if we can even share it. But the disk memory will not enable us to get along with less core memory and still do meaningful experiements. 4

cost of additions 4a

32 K core = $7,000 64K = $13,900 4a1

~~Special mem hardware = $2,480~~ 4a2

Net interface = $4,000 4a3

Total = $13,480 minimun = $20,380 max. 4b

Conclusion to use ISL's PDP-11 would still require us to layout large hunk of money, and entail use scheduling problems. These problems likely to cost goodly proportion of $25K extra we'd have to spend to get our own, not to mention other psychological costs. My feeling is we should not go this route except as last resort. 5

Discussion with JCN on capital equipment budget. We put in for $69K. Because DBIS will buy some of Line Processors and Terminals budgeted there, there is probably $40K that we could realistically exect to get for PDP-11. But, we would have to negotiate with Bart Cox. 6

We have checked on the cancellation costs if we go ahead with the order and they are: 7

now to 30 days before shipping date (presently April xx) $100 7a

30 days to shipping date 10% of purchase price 7b

shipping to receipt 20% of purchase price 7c

receipt to acceptance 30% of purchase price 7d

Recommendation to JCN and DCE for Go Ahead on PDP-11

We have checked on leasing arrangements and they are: 8

DEC standard 5 year lease 2.2% per month 8a

for max (96K congifuration proposed) thats $1,026.45/month + taxes 8a1

There are possibilities for third party leases or other periods that could be checked on 8b

RECOMMENDATION 9

We should go ahead with purchase order now on purchase basis and during the next month decide whether to rent or buy. My own recommendation would be to rent from project funds. 9a

RWW 16-JAN-74 17:47 21445

Recommendation to JCN and DCE for Go Ahead on PDP-11

(J21445) 16-JAN-74 17:47; Title: Author(s): Richard W. Watson/RWW;
Distribution: /DCE JCN CHI DIA DCW KEV MDK PR; Sub-Collections: SRI-ARC;
Clerk: RWW;
Origin: <WATSON>PDP11.NLS;6, 16-JAN-74 13:33 RWW ;

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

5 FEB 74
SRI-ARC 21447

Proposal For Research
SRI No. ISU 74-25

AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

Part One--Technical Proposal

Prepared for:

Advanced Research Projects Agency
1400 Wilson Blvd.
Arlington, Virginia

Attn: Col. David Russell

Submitted by:

J. C. Norton, Assistant Director
Augmentation Research Center

R. W. Watson, Assistant Director
Augmentation Research Center

Approved:

D. C. Engelbart, Director
Augmentation Research Center

Bonnar Cox, Executive Director
Information Science and Engineering Division

5 FEB 74
SRI-ARC 21447

Proposal For Research
SRI No. ISU 74-25

AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

Part Two--Contractual Provisions

Prepared for:

Advanced Research Projects Agency
1400 Wilson Blvd.
Arlington, Virginia

Attn: Col. David Russell

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

I INTRODUCTION

1

This is a proposal to the Advanced Research Projects Agency (ARPA) that Stanford Research Institute provide equipment, technical support, and computer support to three principal activity centers involved in the ARPA-SRI Defense Energy Information System (DEIS) project currently being sponsored by the Nuclear Monitoring Research Office (NMRO) of ARPA. SRI's Augmentation Research Center (ARC) would provide these services to staff both in ARPA and in SRI who are working on the DEIS Project. 1a

In this proposal, NMRO is being asked to provide funding to cover equipment, travel, and other such direct costs. 1a1

The Information Processing Techniques Office (IPTO) of ARPA is being asked to transfer the combined technical- and computer-service support equivalent to 25% of the service it has contracted for (as part of the Workshop Utility service), and to transfer approximately 15 man-months of technical support being provided to ARPA by ARC under an existing SRI/RADC contract (AF F30602-74-C-0076). 1a2

The services proposed herein would be provided between 8 February and 30 June 1974. 1a3

II BACKGROUND

2

This proposal reflects the preliminary discussions held in a meeting at ARPA's NMR Office on 3 Jan 74, between ARPA and SRI. ARPA was represented by Dr. Eric Willis, Col. David Russell, and Mr. Carl Romney of NMRO, and Col. John Perry of IPTO; SRI was represented by Mr. Robert Rodden and Mr. Arlie Capps, Supervisor and Manager, respectively, of the SRI DEIS Project, Mr. David Brown, Director of the Information Sciences Laboratory, and Dr. Douglas Engelbart, Director of the Augmentation Research Center. 2a

The services being proposed represent an exploratory application of a set of advanced techniques developed in ARC, under ARPA-IPTO sponsorship, over a ten-year period. These techniques involve applying a set of suitably adapted conventions and methods within a group of distributed people to improve their effectiveness in handling their working information (doing their "knowledge work"). These conventions and methods employ a large and coherent set of computer services, and the capabilities of the ARPA Network to provide what is called an Augmented Knowledge Workshop. 2b

III STATEMENT OF WORK 3

The attached cost estimate for ARC support of the DEIS project is based on the assumption that two main DEIS Project Control Centers are being established--one at SRI-Menlo Park and one at SRI-Washington-- and that a third, smaller unit will operate from ARPA's NMRO office. 3a

ARC STAFF TO PARTICIPATE 3a1

ARC will provide a senior professional (half time) to coordinate the overall ARC support effort. He will be deeply involved in all aspects of the NLS workshop support and in the development of appropriate methodology for its use as needed by the DEIS staff and NMRO. 3a1a

We will place an experienced ARC Professional in each of the two main Centers to work with one or two NLS-trained typists (to be provided by the ongoing DEIS project) to provide service to the DEIS staff at each Center. 3a1b

We will also provide assistance at a two-man Professional level from our ARC staff located in Menlo Park for procedure development, training, documentation and other tasks. 3a1c

INITIAL SUPPORT SERVICES 3a2

We will initially provide support in the following areas: 3a2a

DIALOG SUPPORT 3a2a1

We will assist the DEIS staff in making more effective use of the TENEX Sndmsg system and will introduce combined Sndmsg and NLS Journal user methodology. 3a2a1a

This will include production of Sndmsg listings and frequent NLS Journal indexes to the recorded DEIS dialog. 3a2a1b

WEEKLY REPORT PREPARATION ASSISTANCE 3a2a2

We will assist DEIS staff in preparation of status reports to NMRO and to the DOD Committee. 3a2a2a

LINKED CONFERENCES - SHARED SCREENS WITH SPEAKERPHONES 3a2a3

We will assist the separated DEIS and NMRO staffs in

holding on-line, speakerphone-augmented conferences through provision of appropriate terminal equipment and will provide proficient NLS system users who can operate the terminals during such conferences where appropriate. 3a2a3a

REPORT PRODUCTION 3a2a4

We will work with DEIS staff at each Center who are engaged in report production from early draft stages through final production, using NLS-based features and methods appropriate to the effort. 3a2a4a

CATALOGING OF HARDCOPY AND INDICES 3a2a5

When the foregoing services appear to be operating smoothly, we will consider providing special cataloging services for hardcopy and other material, including the production of indices to that database as it evolves. 3a2a5a

Some very useful features already exist in NLS that will aid in this effort. The methods to be used in their application to DEIS staff needs will need developing and documenting as we go along. 3a2a5a1

This is a particularly intriguing area for us and seems to offer much potential for real help to the DEIS staff. It would also serve as a relevant and useful example of a potential service of a special-interest Community Information Center. 3a2a5b

COMPUTER SERVICE 3a3

Computer service to support this effort will be provided from SRI's "OFFICE-1" PDP-10 TENEX computer facility connected to the ARPANET through the Tymshare-TIP in Cupertino, California. 3a3a

The number of simultaneously available job slots for this service are estimated to be three and will be coordinated between the ARC, NMR, and IPT offices. 3a3a1

EQUIPMENT TO BE PROVIDED 3a4

We will provide appropriate terminal equipment (on a staged basis) for effective use and demonstration of NLS technology. 3a4a

This will include Delta Data displays (3), each with line processor, mouse, and keyset, T-I typewriter terminals (3) with Termicette Magnetic tape recording features (permitting off-line text preparation for more effective use of the Utility job slots), and Terminet terminals (2) to serve as printers for higher quality hardcopy output than is available from the T-I terminals. 3a4a1

In addition, we will provide "slave" TV monitors (2) for use with the displays so that larger groups of DEIS staff and their visitors can participate in on-line conferencing between the Centers. 3a4a2

We expect that speakerphones and telephones will be provided by the DEIS project at each center to further augment this on-line conferencing capability. 3a4a3

IV PROPOSED EVENT SEQUENCE: First rough cut 4

```
Week of:  Feb          Mar             Apr          May>>>>>Jun
      >> 3 10 17 24  3 10 17 24 31  7 14 21 28  5 >>>>> 30                4a

SERVICES:                                                                 4b

Dialog
Help        xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>              4c

ARC Professionals at both
Centers     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>              4d

Initial setup of
Centers      xxxxxxxx                                                     4e

Typing
Service     xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>              4f

Information organization
Assistance       xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>              4g

Report Preparation
Assistance       xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>              4h

Bibliographic and Index
Service                      xxxxxxxxxxxxxxxxxxxxxx>>>>>>>>               4i

FACILITY:                                                                 4j

T-I terminals
in use       xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>             4k

Terminet printer terminals
in use        xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>            4l

TTY mode
Displays (2) xxxxx                                                        4m

Mouse-keyset
Displays      (2)>xxxxxxxxxxxxxx(3)>xxxxxxxxxxxxxx>>>>>>>>                4n

TV Monitors loan xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx>>>>>>>>             4o

Week of:  3 10 17 24  3 10 17 24 31  7 14 21 28  5 >>>>> 30
      >> Feb          Mar             Apr          May>>>>>Jun            4p
```

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

I ESTIMATED TIME AND CHARGES

5

It is proposed that the work outlined here be performed during a period of 4-3/4 months, between 8 February and 30 June 1974. 5a

Pursuant to the provisions of ASPR 16-206.2, a cost estimate and support schedules are attached in lieu of the DD Form 633-4. 5b

II CONTRACT FORM

6

Because of the nature of the work proposed, we request that any contract resulting from this proposal be awarded on a cost-plus-fixed-fee basis. 6a

III ACCEPTANCE PERIOD

7

This proposal will remain in effect until 15 February 1974. If consideration of the proposal requires a longer period, the Institute will be glad to consider a request for an extension of time. 7a

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

Cost Estimate:

COST ESTIMATE

Direct Costs		
Travel and Subsistence *	$ 11,680	
20 RT to Wash @ 336 = 6,720		
160 days @ 31 = 4,960		
Supplies (paper, tapes,) etc.	1,000	
Shipping	500	
Equipment *	23,411	
Communications	1,200	
Total Direct Costs		$ 37,791
Fixed Fee		2,079
Total Estimated Cost Plus Fixed Fee		$ 39,870

* See following Schedules

Cost Schedules:

SCHEDULE A

TRAVEL COSTS

Air fare is based on prices for travel to Washington D.C. at $336 round trip tourist established in the Official Airline Guide dated January 1, 1974.

Domestic subsistence rates and travel by private auto are established standards based on cost data submitted to and approved by DCAA.

SCHEDULE B

EQUIPMENT COSTS

DISPLAY TERMINALS

2 Delta Data terminals @ 220/mo = 4.75 mo @ 440/mo	= 2,090
1 Delta Data terminals @ 220/mo = 4 mo @ 220/mo	= 880
3 Line Processors + Mouse, Keyset @ 2500	= 7,500
2 TV Monitors for use with Displays	= 3,400

TYPEWRITER TERMINALS

3 T-I's Portable @ 150 = 4.75 mo @ 450/mo	= 2,137

PRINTER TERMINALS

2 GE TermiNets @ 130 = 4.75 mo @ 260/mo	= 1,235
2 Couplers 30 cps @ 15/mo = 4.75 mo @ 30/mo	= 142

MAG TAPE RECORDERS TERMINALS

3 Termicettes (IPC) @ 100 = 4.75 mo @ 300/mo	= 1,425

MODEMS

4 (480 cps) @ 115/mo = 4.75 mo @ 460/mo	= 2,185

HIGH SPEED LINES 480 cps

SRI to TYMSHARE-TIP (Cupertino) 1 full-duplex data link 22 +69 +22 /mo = 113/mo 4.75 mo @ 113/mo	= 537
SRI-WASH to MITRE-TIP 4.75 mo @ 80/mo	= 380
One time installation charges and maintenance	= 1,500
TOTAL EQUIPMENT	= 23411

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

JCN RWW 31-JAN-74 22:07 21447

SRI Proposal ISU 74-25, AUGMENTED KNOWLEDGE WORKSHOP SUPPORT FOR THE ARPA/SRI DEIS PROJECT

(J21447) 31-JAN-74 22:07; Title: Author(s): James C. Norton, Richard W. Watson/JCN RWW ; Distribution: /sri-arc jsp dcr2 ;
Sub-Collections: SRI-ARC; Clerk: JCN ;
Origin: <NORTON>JCN.NLS;5024, 31-JAN-74 21:53 JCN ; (notes,1:xb)
(:xany)
f INMES $NP -'(; ["xxx"];
(Sndmsgs,jan:xbn) (demo,stocks:gwzn) (NORTON,demo,)
(Mitre-Tip,On-Line,3:xbn)

CKM 17-JAN-74 07:12 21448

ALONE with NLS

I thought you might like to see an example of how effective your course has been Although i'm physically removed from the helpful ARC environment, I can still use NLS with a rather confident feeling. I'm very appreciative of all the ARC hospitality (in addition to the great training) - we all enjoyed these past eight days very much.

connie 1

CKM 17-JAN-74 07:12 21448

ALONE with NLS

(J21448) 17-JAN-74 07:12; Title: Author(s): Connie K. McLindon/CKM;
Distribution: /DCE JCN JHB RWW; Sub-Collections: NIC; Clerk: CKM;

CHI 17-JAN-74 07:17 21449

CHI's work schedule

Given the amount of work I have to do and given the general condition of the system during most of the 9:00 to 5:00 time period, I have decided to try working from early in the morning (5:00 or 6:00) until about noon and from home in the evenings. In the afternoons I will be enjoying the company of my wife nd will be somewhat displeased by too frequent interruptions. This is effective today and until further notice. If this causes someone hardship, please communicate this to me. -- Charles. 1

CHI 17-JAN-74 07:17 21449

CHI's work schedule

(J21449) 17-JAN-74 07:17; Title: Author(s): Charles H. Irby/CHI;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: CHI;

Abstract

A system of information-handling for use in an Office or by a Community of knowledge-workers, using computer-based tools, is under design at the Augmentation Research Center. Support from ONR during the period April 15 to December 31, 1973, was directed toward study of the tools as currently used at ARC and on the ARPA Network, to determine their feasibility for early transfer to another Office, and to produce procedural tools to facilitate use of the system in an Office.

The components of the information-handling system that were examined were: the Online Journal System, the Ident System, User Programs, Personal Files, and Retrieval Provisions.

Procedures were designed for capturing, storing and retrieving research information in an Office, and a manual was written giving procedures for computer-based operations and contrasting them with procedures for non-computer-based operations for the same activities.

Other procedural tools were designed and are included in the report: a design for an online correspondence log system, a scenario for producing subject bibliographies, and a scenario for using the Network Journal.

CONTENTS

INTRODUCTION 1

A small computer-augmented system is being developed in the Augmentation Research Center at SRI, based on online, timesharing components, to provide research workers with a means for handling information. The set of techniques developed for this use has been termed the Research Information System (RINS). 1a

The computer-based tools on which the Research Information System is built are being developed at the Augmentation Research Center (ARC) of Stanford Research Institute in a long-range program supported by several sponsors. With this multiple support, ARC has developed hardware and software by which information in text form can be input, edited, analyzed, recorded, disseminated, and retrieved by individuals and groups working in geographically-distributed situations. 1b

Support from ONR is directed toward study of means of incorporating the tools into the handling of research information by knowledge workers, in the Knowledge Workshop concept (14724,), pursuing their work as a Group and as members of information-handling Communities. Through study of the needs of knowledge workers and of the extent to which the experimental tools meet these needs, the further development of these tools is given direction. 1c

This report documents some of the study carried on to examine the use of these tools in the Workshop environment at ARC, where these tools are used in the Group and in a Network Community, and to examine the potential of these tools for transfer to other Offices which function as Workshops. 1d

SUMMARY OF RINS ACTIVITY 2

During the current period, April 15 to December 31, 1973, various analyses and module designs were completed. The subjects chosen were selected for their apparent relevance at this point in the ongoing development of a Research Information System. 2a

The main objectives of the project work remained the same as those stated at the outset of the project: 2b

(1) Develop an operational information system specifically to support the needs of a computer-systems research and development community. 2b1

(2) Provide as much computer augmentation as possible to all phases of the operation of such a system -- with a practical orientation toward learning how users will get maximum cost effectiveness in these research-information functions within the systems development environment of several years hence. 2b2

(3) Stimulate the building of technical information data bases of intrinsic value to the systems development community, by leading other people into cooperative use of these ONR-supported tools and services, with the ultimate objective of having the other people pay part of the costs and share the data bases they develop with a larger community. 2b3

During the contract period, development of the ARC Utility raised the possibility of an imminent introduction of the tools to an outside group (see footnote), an "Office" in the Knowledge Workshop concept (14724,). To accelerate preparation for such an introduction, emphasis of the ONR work was placed on study of the RINS tools as currently used and of means for transfer of present technology to such an Office. Plans for transfer resulted in a proposal for 1974 work submitted to ONR in November (19938,). Emphasis of work during the period changed somewhat from design for an indefinite future to study of the suitability of present tools for an early transfer, particularly of aspects which could be improved to make transfer most satisfactory. The choice of aspects to be studied and the conclusions drawn are the author's and are not to be considered as representing ARC or ARPANET consensus. 2c

[Since this report was prepared, Offices in the following have become users of the Utility: Naval Ship Research and Development Command, Rome Air Development Center, ARPA, Ballistics Research Labs, Bell Canada Hudson Institute, MIT Seismic Program, and Educational Testing Services.] 2d

Two approaches were taken to the design of an information system to be implemented in the near future for an Office of knowledge workers. 2e

I. A dual system was designed for handling research information; it included a design for handling information in a non-computer-based mode, and a design based on computer use where feasible. This report contains a juxtaposition of the steps in the two modes, with some comments on the results and on the merits of each. 2e1

II. A series of critiques were made of ARC computer-based tools as currently used by ARC and by the ARPA Network Community. 2e2

The design builds on the April 1973 examination of the various information-handling needs of a group of knowledge workers (16737,) that appeared in the previous report on this project (16508,). The dual system was designed in the form of a set of policies and procedures covering many of the information-handling activities presumed to be essential to an Office. The activities covered were: 2f

Information Contained in External Publications

Information Generated by the Individual in His Work

Information Generated by Dialogue in the Office

Information Issued in Formal Office Reports

Information Communicated by Correspondence

Information Communicated by Phone

Information Gathered from Visits and Visitors

Information Collected by the Individual for Personal Use

The other phase of the project work was a series of critiques of tools useful to RINS as they have been experimentally implemented in the ARC environment. The ongoing evolutionary nature of the tools makes any assessment of their successes and drawbacks a reflection of a temporary state. However, assuming the possibility of an imminent export of these tools, it seemed there would be value in examining their recent use for any implications this use would have for further development. 2g

The RINS design considerations study referred to above (16737,) looked at the handling of research information as a conceptual system whose components are collection, capture, processing for

dissemination, means of dissemination, processing for retrieval, and means of retrieval. The efforts reported here view information handling from a different perspective. Various tools used for one or a combination of the conceptual components are placed in primary focus, and experience with them is reported. Then for each tool a set of conclusions is derived as to the ways in which and degree to which it meets the needs it was designed to meet, and suggestions for improvement are made where applicable. 2h

The computer-based tools which are examined are: 2i

The Journal System

The Ident System

User Programs

Personal Files

Retrieval Provisions

Each of these tools is the subject of a separate section in this report. 2j

One area of information handling had not been addressed before, the handling of correspondence. A design for handling correspondence in the Office is included as Appendix A. 2k

A scenario was prepared for constructing bibliographies, as an alternative to making annotated catalogs of citations for documents, and this scenario (17884,) is included as Appendix B. 2l

A scenario was prepared to aid the user in use of the Network Journal, and this scenario (22383,) is included as Appendix C. 2m

It is important to note that the tools examined represent the then-current state of parts of a whole Knowledge Workshop system that is under constant evolution. The comparisons that are made, advantages and disadvantages that are brought out, and the conclusions reached, are important contributions to an emergent discipline, the design and analysis of augmented Knowledge Workshops; but many of the specific points will soon be obsolete as evaluative measures. New assessments will need to be made as the tools and system evolve. 2n

It should also be noted that no methodology had been developed for studying these kinds of systems. The analyses made here are numerically accurate, and the data are representative of the periods studied, but the selection of aspects to be studied was based on intuition rather than scientifically established principles. There is a clear need for research in the means by which use of computer-augmented communication tools should be studied, and for continuing analyses based on this research. A prime consideration should be the dynamic nature of the phenomena being studied: the evolution of the tools, and the concurrent changes in user behavior.

20

BACKGROUND DOCUMENTS

2p

Engelbart, Douglas C., Richard W. Watson and James C. Norton. The Augmented Knowledge Workshop. Presented at National Computer Conference, New York, June 1973. Stanford Research Institute. Augmentation Research Center. ARC Journal 14724. 1 March 1973. 19p.

Engelbart, Douglas C. Coordinated Information Services for a Discipline- or Mission-Oriented Community. Presented at Second Annual Computer Communications Conference in San Jose, California, January 24, 1973. Stanford Research Institute. Augmentation Research Center. ARC Journal 12445. 12 December 1973. 7p.

A Knowledge Workshop for the Navy: An Experiment in Technology Transfer. Proposal for Research SRI ISU 73-175. Part 1 - Technical Proposal. Stanford Research Institute. Augmentation Research Center. ARC Journal 19938. 28 November 1973. 19p.

North, Jeanne B. Experimental Development of a Small Computer-Augmented Information System. Annual Report, Contract N00014-70-C-0302, April 1973. Stanford Research Institute. Augmentation Research Center. ARC Journal 16508. April 1973.

North, Jeanne B. A Status Report on RINS Design Considerations. Stanford Research Institute. Augmentation Research Center. ARC Journal 16737. April 1973. (Included as Appendix A in 16508.)

USER GUIDES

29

ARC Primer. Stanford Research Institute. Augmentation Research Center. 3 January 1974. 10p.

SRI-ARC / Office-1 TENEX Users' Guide. Stanford Research Institute. Augmentation Research Center. 22 March 1974. 39p.

TNLS Users' Guide. Stanford Research Institute. Augmentation Research Center. ARC Journal 19200. 27 November 1973.

DEX Primer. Stanford Research Institute. Augmentation Research Center. No date. (Online document, continuously revised.)

DNLS Users' Guide. Stanford Research Institute. Augmentation Research Center. ARC Journal 20400. 4 December 1973.

Journal Users' Guide. Stanford Research Institute. Augmentation Research Center. No date. (Online document, continuously revised.)

North, Jeanne B. Scenario for Using the Network Journal. Stanford Research Institute. Augmentation Research Center. ARC Journal 22383. 27 March 1974. (Included as Appendix C in this report.)

Network Journal Submission and Delivery. Stanford Research Institute. Augmentation Research Center. ARC Journal 17777. 13 July 1973. 8p.

User Programs. Stanford Research Institute. Augmentation Research Center. No date. (Online document, continuously revised.)

L10 Programming Guide. Section 7. Content Analysis and Sequence Generator Programs. p.69-73. Section 8. Invocation of User Filters and Programs. p.75-87. Stanford Research Institute. Augmentation Research Center. ARC Journal 9246. 4 April 1972.

North, Jeanne B. Scenario for Producing Subject Bibliographies. Stanford Research Institute. Augmentation Research Center. ARC Journal 17884. 17 July 1973. 6p. (Included as Appendix B in this report.)

North, J. B. Codes Used in the Master Catalog. Stanford Research Institute. Augmentation Research Center. ARC Journal 10937. July 1972. 3p.

Output Processor Users' Guide. Stanford Research Institute. Augmentation Research Center. ARC Journal 12209. 23 August 1973. 97p.

PROCEDURES FOR CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

INFORMATION GATHERED FROM EXTERNAL PUBLICATIONS 3b

INTRODUCTION 3b1

Offices vary in their interest in and need for scientific, technical, and business publications issued by other Offices and Communities, i.e., laboratories, associations, and commercial publishers. 3b1a

Some of these publications will be received in anticipation of need, some will be received for which probable need should b# determined, and some must be acquired after the need exists. Subscriptions and automatic distribution will be arranged for those items for which need is anticipated. Some materials will arrive gratuitously and their possible usefulness should be judged so that valuable time and space will not be wasted on processing and storing items of little worth. Single items not already seen will continually come to attention and will need to be acquired. 3b1b

Forms in which the information occurs: articles, news notes, preprints and reprints, and books, will affect the manner in which these items are processed, stored, and retrieved. Files, boxes, and shelves have advantages and drawbacks. The indexes and keys to these items may be kept online or offline, according to cost-benefit decisions to be made for the Office. 3b1c

Each mode and form will entail procedures to be set for the Office, following principles of information-handling, allowing for factors in the particular Office siuation, using augmenting technology and techniques. 3b1d

Principles to follow to insure the usefulness of information without regard for particular Office situations are: 3b1e

Records should be made of publications ordered and received, and of the requestors of each.

Announcement should be made of publications as received.

Controls should be set up for tracking the publications received.

Subject retrieval of items of interest should be provided for.

PROCEDURES FOR CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

Factors which determine the set of procedures to be followed in an office in handling the information in publications are: 3b1f

- Types of publications of interest
- Quantities of each type
- Number of potential readers
- Office arrangement
- Use to be made of the information

Technology available to augment the handling of the information includes: 3b1g

- Machine input of text
- Online distribution to users
- Indexing and content-analyzing programs

In concept it appears attractive to integrate information from publications into a depository for all other types of information, so that retrieval would be possible without distinction as to form of the original information. This would suggest that all types of citations and files be input together, as serially numbered items. Certainly, information from one medium, such as a periodical, should be as accessible to the user as that from another, such as correspondence. However,it is impractical to handle a data base which contains diverse formats of information; retrieval and formatting programs cannot be used. Achieving the desired accessibility does not require that all items of information be retrieved from a common file. Since file size is a limitation for large record systems, and not all citations can be kept in a single file under any condition, it is advantageous to divide files by type of citation. A user can more easily integrate references as he needs them, into a personal file perhaps, than he can extract different types by programs when he desires. 3b1h

Based on the above principles and factors, and applying the technology as appropriate, a draft manual of policies and procedures can be written. To place emphasis on the augmentation to be accomplished by computer assistance, each step of the system will be described both as it would be carried out by a non-computerbased system and as it could be accomplished using the computer. In this way, a comparison of methods can be made, and the value of computer augmentation of the process be assessed. 3b1i 3b1j

CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

INTRODUCTION 3a

The product of the knowledge worker is more knowledge, and the aim of the workshop is to maximize the quality and quantity of the product. In manufacturing operations for most products it is possible to achieve efficiency of production by measuring input and output of materials and assuring that waste is kept to a minimum. In the production of knowledge, the principal raw material is information. Measurement of the raw material is inexact and the means of moving and processing it are loose, and it can be assumed that much is wasted. 3a1

To increase the amount and availability of information to be used in the production process, methods must be devised to capture it and to contain it where it can be drawn upon. Sources must be recognized and tapped, and the material acquired must be stored for timely and easy retrieval. 3a2

This section discusses the means for capturing, containing and retrieving the raw material of knowledge from several sources. The sources are: 3a3

Information Contained in External Publications
Information Generated by the Individual in His Work
Information Generated by Dialogue in the Office
Information Issued in Formal Office Reports
Information Communicated by Correspondence
Information Communicated by Phone
Information Gathered from Visits and Visitors
Information Collected by the Individual for Personal Use

For each topic of this report, a set of procedures for handling this information without the computer was designed, and then a set of procedures by which augmenting tools could be used to handle it was outlined, the outline being structured to allow a comparison of the two. 3a4

Comparison was made on the basis of processes to be carried out, and on the differences in results to be expected under the best procedures now evident. For the computerbased operations, the processes were annotated with references and links to instruction manuals and other background material, so that the process description could serve as a procedure manual. This procedure manual appears as Appendix A of this report. 3a5

One important fact should be emphasized here. New tools not only make it possible to perform old tasks more efficiently, but as the

CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

user gains experience, new uses and new methods are perceived, and the tools affect the nature of the tasks themselves. 3a6

The availability of online text-handling and text-communication tools has opened new possibilities in the ways the worker can use information. It is possible to foresee only a portion of the evolution which will take place in the handling of research information as new tools become familiar to the users. In the procedures described here it will be evident that some processes have already changed in nature so that comparison of old and new methods is difficult. Some old advantages or products may be lost temporarily in the changes which bring new advantages or products. This fact is not an argument for continuing old methods, but such losses should be noted so that they can be compensated for as the new systems evolve. On the other hand, the advantages of new tools are not as evident as the losses, because only as the worker gains experience with the whole of a new system, can he perceive its further potential and improve the tools to realize their full power. 3a7

SOURCES 3b

Information Contained in External Publications 3b1

The difficulties encountered in the receipt, announcement, circulation , indexing, and recovery of books, periodicals and reports which are of interest to an Office are too well-known to need reiteration. Even a small Office which lacks a formal library finds that control of such materials is necessary and is hard to accomplish.

In Appendix A, detailed procedures for setting up workable controls are designed, for both manual and machine systems. Comparison of the steps in each shows that the use of computer-based tools for handling this information changes the actual work performed, but often substitutes one time-consuming task for another. The degree of importance of such information to an Office will be a guide as to the amount of effort and the type of task which will fill its needs.

Information Generated by the Individual in His Work 3b2

Workers vary in their capacity for recording and transmitting the results of work in progress. Some are facilitated in their thinking by the process of formulating their thoughts for a record. Others feel diverted from productive activity when they must document their results. Some are publication-minded and publish and distribute even informal documents of their work.

Others, while not secretive, will not think to do so in the absence of a formal policy or vehicle to accomplish this.

Tools which maximize the return from effort, by reducing the labor of transcribing and of editing, by creating a clean record to file, by making dissemination a normal procedure, or by providing a filing system which aids in retrieval, will tend to improve the quality and quantity of the record of individual contribution to knowledge.

Information Generated by Dialogue in the Office 3b3

The total effort of groups or teams is facilitated by awareness of their colleagues' advances, and by building on each other's ideas. In an Office much such information is transmitted orally.

Sometimes a fertile subject is pursued for a time and then pushed aside by more immediate goals. When the subject comes up again, a large amount of rethinking occurs which could be bypassed by a record of previous discussions. Capture, dissemination and retrieval of the cooperative thinking in an Office is desirable, both to stimulate current efforts and to eliminate redundant work. Application of computer-based tools to augment such communication appears to allow dialogue to be carried on in a medium which simultaneously transmits, records, and provides for retrieval.

Information Issued in Formal Office Reports 3b4

Requirements for formal reports vary in different Offices, and where reporting is done infrequently, the substance of each report may be in everyone's mind for a year or two at least. However, in many Offices it is the practice to issue reports each month, or on the completion of a short investigation or project, and the contents of these is less well remembered, as occurs after a period of time for even a small report output.

The preparation of formal reports to sponsors or customers or colleagues requires publication effort as well as the consumption of a considerable amount of creative effort by the Workers. These efforts often seem to be diversions from the principal thrust of Office projects. Means of shortening the time and effort necessary by tools which aid the Worker in the creation of the text, and means of augmenting the publication and distribution of the intellectual product are to be sought.

Information Communicated by Correspondence 3b5

Correspondence provides a fruitful source for information which is

pertinent in subject and timely in content. The degree to which the work of an Office is integrated with the work of other Offices or Communities and the nature of this integration affect the relative importance of correspondence as an information source and determine the appropriate efforts to be made for its control by indexing, storage and retrieval. Conventionally, correspondence files are kept in chronological order either according to the sender's name, when a continuing dialogue is carried on, or grouped by subject of the correspondence when letters in relation to a particular topic are received from numerous sources. Appendix B deals at length with points to be considered in controlling correspondence. The alternative procedures for offline and online correspondence systems are set forth in the Manual in Appendix A.

Information Communicated by Phone 3b6

Phone communication plays a large part in inter-office information transfer but provision is seldom made for its recording. Conversation tends to be informal, redundant, and even inconsequential. Where records are kept, these may be in the form of a chronological log, somtimes with notes on the topics dealt with and the recorder's impressions of any points made or agreements reached. When appropriate, correspondence about agreements may be generated.

The growing trend toward audio recording of phone calls may be acting to decrease the intimacy in what has been a characteristically direct means of interpersonal and interoffice communication. Phone communication may be increasingly inhibited by the knowledge that a record may be being created. Even more inhibiting would seem to be the possibility that the record can be manipulated to distort the intention of a communicator. The particular need in capturing the information from phone contacts is the capability for verification of the record. It seems desirable that the interactive nature of the communication itself be accompanied by the capability for creation of a real-time interactive record which can be private and also permanent. The concurrent use of phone and shared online terminal facilities by which a record can be created, agreed upon, recorded and protected offers an attractive potential.

Information Gathered from Visits and Visitors 3b7

The purpose of personal visits between Offices is usually to gather or disseminate information about the activities of either Office for the benefit of the other. To meet this purpose it is important that the information transferred by made available to other people in the respective Offices. Sometimes a meeting is

held for formal verbal transfer. It is common practice to prepare a trip report or visitor memo to record information transferred. These may be long or brief, and are often regarded as a formality, rather than as an information transfer tool. Trip reports particularly may suffer from delay in preparation. In general, the process of transfer of such information and the deposit of it are likely to be haphazard.

A practice of creating immediate, online records, which can be discussed wth the visitor or Office visited, and disseminated discriminately but immediately, with the provision for retrieval by online search, offers possibilities which can be explored.

Information Collected by the Individual for Personal Use 3b8

Such information will be received from the same sources as those discussed in the preceding categories. The distinction is in the use intended. These files are those which an individual creates without considerations about communication to others. They may contain such items as appointment notes, random thoughts, links to documents he intends to read, and actions he intends to take. When these files are created in a computer-augmented system, the whole may resemble a combination of the user's desk file drawer, bulletin board and calendar pad. An important difference is thax at present the system can store only text, and only text which has been key input, so that such files are likely to be less comprehensive than offline files and to consist largely of leads to other files, many of which may be accessible directly through online links.

The potential of computer-augmented personal files has only begun to be explored, and by only a few individuals. However, it is a prime use for which the system was envisioned. Individual thinking patterns and proclivities, and the freedom from protocol requirements, will make this one of the most creative uses of the system.

CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

CONCLUSIONS 3c

General 3c1

These conclusions are drawn from general information-handling experience, that of the author and that of others as reported in the extensive literature available, and from the results of using the procedures as developed in the Manual. (Appendix A). The Manual is placed in an Appendix for convenience, but a careful reading of the alternative procedures is important to an understanding of the conclusions here.

Use of computer-based tools for capturing, storing and retrieving research information has some evident advantages, notably that a worker who is accustomed to receiving and sending information online will want to tie as many of his tasks into his online mode as possible.

No saving in total effort in one Office can be expected from use of computer-based tools to handle information gathered by the Knowledge Worker. There are tradeoffs in human and machine effort, and when the system as designed does not work optimally, as when machine speed or capacity is less than planned, effort may be increased or result impaired. Use of the machine means dependence on the machine also.

It can be presumed that if other Offices can use the products (data bases) produced by an Office, that savings in effort will result. The extent of re-use of machine-disseminated and machine-stored dialogue needs to be studied, before cost-benefits can be established.

Because the possession of new tools changes the nature of the tasks to which they are applicable, it is important to look for benefits derived from performance of tasks in new ways, and from new tasks which were not attempted heretofore because tools were not adequate.

A communication system has benefits for inter-Office communication which are not evidenced in a local situation. Improved communication in an Office is independent of use of computer-based tools. If increased communication can be obtained at all, the same results can be achieved by use of face-to-face dialogue for ephemeral messages, and of typewriters and photocopiers and hardcopy files, for distribution and retrieval of substantive material. Analogously, a telephone system installed for a single Office might not improve communication in that Office, but may facilitate communication with other Offices.

CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

Many of the limiting factors in usefulness of gathered information are machine-independent, and result from the application of semantic and bibliographic efforts not yet demonstrably improved by machines.

Intelligence Gathered from External Publications 3c2

No advantage is seen for an Office to put online its records of the acquisition or subsequent storage or circulation of external documents. The small number of records, the storage and access provisions necessary, and the lack of any later use of the records do not call for online records, and the offline procedures are clearly easier.

Online citations to external documents are advantageous for remote retrieval, for which offline procedures are not adapted. The deciding factor in use of online catalogs is the extent of use of these citations by remote Offices. The NIC online catalog never developed to a state where its content or currency made it very useful. A time, cost, and use study could be made to establish the value of an online catalog in an Office, For the NIC, an ad hoc, intuitive decision was that it was not an important use of resources.

The national efforts now under way to provide improved public access to large federal bibliograhic data bases may eventually make it possible for any Office to copy prepared citations from these bases and would then eliminate much of both offline and online work in the Office as described here. A new area of work in retrieving and manipulating the citations would develop.

Intelligence Generated by the Individual in His Work 3c3

For the individual who has a display terminal readily available, the recording of his thinking on a subject or problem is facilitated by input of his thoughts in a file he can access, modify, build on and print out clearly with or without the aid of a secretary.

It has been observed that an individual's thinking process is often stimulated when he is shown the clean text being produced and experiences the ease with which it can be modified.

The Worker can have the file archived when his present use of it is ended or suspended and, by keeping an online description of such files, can have it retrieved from archive if or when he wants it back.

CAPTURING, STORING, AND RETRIEVING RESEARCH INFORMATION

Upon completion of an analysis or study, the Worker can Journalize his file, which is dated and serves not only to announce his efforts to his co-workers, but to document his contribution. In many Offices"@ no offline means of capturing this work is provided, although it could be.

Intelligence Generated by Dialogue in the Office 3c4

Having created even a draft online, the individual can send a message to a co-worker telling the location of the file and asking for comments. By making a copy of the file, the co-worker can insert comments, additions, or corrections, and let the author know where the copy is, to read or recopy. Ths can occur offline, of course, but the practice of this activity is greatly encouraged by the online JouNAL.

The practice of creating and distributing opinions, and requests for opinions, on a topic of interest is encouraged by the online Journal. Any matter of Office interest has been found to be discussed in Journal dialogue, to an extent which is unlikely by any other written means.

From the Journal it is possible to reconstruct the thinking that went on while an issue was being resolved or a design decision made.

Intelligence Issued in Formal Office Reports 3c5

Online input provides speed and flexibility in preparation of reports which is not possible with simple pencil and typewriter methods, It has an advantage even over mag tape typing in quicker feedback. Whether the deferred input method, DEX, has advantages over all mag tape systems is not known.

The convenience with which major changes can be made in text and format is an aid in producing consistent, attractive report products. Use of COM (Computer Output Microfilm) for final output allows a great variety in typeface and format. One balancing factor at the present time is the experience needed to produce an acceptable product in COM; an inexperienced user can spend a great deal of time and money experimenting before the result is satisfactory.

Intelligence Communicated by Correspondence 3c6

In an online environment, in which the recipient is reading his mail online, it is clearly an advantage for him to be able to make notes in the same medium. The use of citation numbers and links

enables him to connect his notes with the originals, and to send the original, his notes, or an answer immediately to others online.

A carefully worked out system is required to duplicate the record-keeping capability of offline originals, on which notes can be made, and copies filed in as many contects as desired.

Intelligence Communicated by Phone 3c7

Using a headphone, the listener can make online notes during the conversation as easily as he could write them, and they are in a reusable form. If the other party is also online, by linking terminals the listener can show the notes to the other party for mutual agreement.

As a habit, the taking of notes as phone conversations occur would tend to result in more records, and more accurate recording.

An online log, standardizing online records, presents the same challenge in design as a correspondence log.

Intelligence Gathered from Visits and Visitors 3c8

Making notes online has the great advantage of getting instand verification of notes, if the visitor can see the screen. It can facilitate the personal dialogue; if the visitor finds that a point is not noted, he can give more information to fill out the topic.

Taping the visit will make a more complete, and possibly less intrusive, record and can be used in conjunction with online note-taking when the topics are complex and detailed. Tapes can be transcribed and input as part of the document, or as liked documents. This is a fairly expensive process.

The online record of the visit need not be made during the visitor's stay, and can be made online by the person visited, or may be dictated and transcribed online or in DEX later.

The online log, which is independent of the method of input, has the advantages of being accessible by some or all of the others in the Office, and of being retrievable by the same means as are other online indexes.

Intelligence Collected by the Individual for Personal Use 3c9

The principal drawbacks to the keeping of personal files of

references that serve to organize records and to aid in locating them for individual use are the same for offline and online systems. Either means will only be as good as the design for the record-keepng, and most individuals don't have the expertise or the patience to set up and maintain workable record-keeping systems.

The added limitations currently imposed on storage size and program speed mean the user is sometimes reluctant to depend on online files for keys to his personal information. When these limitations are not present, the online collection of personal references will clearly serve the purposes of the user who works habitually in the online mode.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes 4a

INTRODUCTION 4a1

The Journal system is the basic tool that supports the dialogue seen to be necessary to a discipline- or mission-oriented Office or Community. Since its inauguration by ARC in June 1971 it has been enormously successful in stimulating and recording dialogue between members of the Office group that constitutes ARC and between members of the Community group represented by the ARPA Network. 4a1a

Ref: Journal User Guide (userguides,journal-guide,)

Capabilities provided in the ARC Journal Design are: 4a1b

Online dialogue between individuals, including those geographically separate.
Recording of the dialogue by serial numbers to allow unique reference.
Online and offline retrievability of text of past dialogue.
Online and offline subject and author retrievability.
Creation of networks of documents connected by online links.

For the RINS project, analyses were made of the experimental use of the Journal by the ARC Office and by the ARPANET Community. These analyses do not do justice to the future use of the Journal, in that they do not indicate the eventual potential of the Journal system in an Office or Community of experienced users who take full advantage of the features. These studies were made to reflect the actual usage during a period of experimentation, and as such indicate some results to be expected in technology transfer to new Offices. They record interim problems encountered and point to possible solutions which can be considered as the system is evolved. An outline of the sections of the critique is as follows: 4a1c

4a2. How the Journal Serves an Office and a Community

4a3. Analysis of the Present ARC Journal as Used by ARC

This data represents use by an Office of experienced workers, who use many of the present Journal capabilities regularly.

4a4. Analysis of the Present Journal System as Used by the ARPANET Community

This data represents use by a Community of users, many of whom have received some training in the techniques but who vary greatly in their experience and expertise.

JOURNAL SYSTEM
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4a5. A Critical Look at the Journal Delivery Announcement

The format of the announcement which the Journal delivers to addressees is considered.

4a6. A Critical Look at Hardcopy Output Provisions

Online reading and reference to the Journal is the preferred mode for the Office, but because of present constraints on size of online storage, and because of the certainty that for a long time in the future it will be impossible to communicate online with the entire outside world, hardcopy printout is not only useful but necessary. The forms in which this is currently available were examined.

4a7. Analysis of the Output of Subject Indexing Programs

Because the success of retrieval by subject depends on the input as much if not more than on the indexing process, this aspect was analyzed here.

4a8. Modifications Deemed to be Desirable

From the analyses and critical examinations a list of suggested modifications is given.

4a9. Recommendation for Use in a Workshop Office

This summary discusses the implementation of the Journal as a tool in a new environment.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

HOW THE JOURNAL SERVES AN OFFICE AND A COMMUNITY 4a2

With the growth of online network communication, various mail systems have been designed by which messages can be sent between workers at the same or separate Offices. The most widely used mail system, available to all PDP-10 sites, is SNDMSG, which quickly transmits messages to individuals recognized as users at their particular TENEX installation. While such mail systems are useful for transitory dialogue they lack universality and the capability for reference and retrieval by specific item. The Journal system at ARC was designed to satisfy the range of needs perceived for support of continuing dialogue. Within ARC, as a prototype Office, it is used in the online system NLS. In a Community, such as the ARPANET, it is used in the ARC online system, NLS, and in other systems through the Network. The Network Journal allows input by SNDMSG or other local mail system, and augments these with the special features for dissemination, reference, and retrieval which the Journal provides. The Network Journal was not in general use until after this study was made, and its use is not reported here. 4a2a

If the Journal provided no more than a running record of work and dialogue concerning the work, it would be an extremely useful tool. The capability of capturing and archiving a substantial portion of the thoughts and actions of a group of workers as they design a system is of great value. in their interaction and for later reference 4a2b

In addition to creating such a record, the Journal system allows the dissemination of questions, replies, ideas, and reports to selected recipients with economy of sender effort. A worker can send his messages with ease, assured that they will reach the addressees, whether an addressee is in the same room or across the country, whether the addressee is online or has only U.S. mail service, whether or not his address is known to the sender, whether the sender is personally acquainted with an addressee or is even unaware that the person is a member of a Community with similar interests. Mail is addressed to groups of people by using an identification for the group. This Ident is entered in the Identfile (see Section 4b) which is used by the Journal to accomplish all distribution. For example, the Journal will distribute to individual members of the Network Graphics Group when the address "NGG" is given. 4a2c

After initial dissemination, the content can be referred to by a unique number, and even paragraphs can be referred to by a system of marginal subnumbers, such as those in this report, allowing easy reference in subsequent dialogue. 4a2d

JOURNAL SYSTEM
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The online recipient of Journal documents and messages is given the capability of storing the item or the announcement which links to the actual item. He can file items in any arrangement he likes, and can put copies of an announcement in several places if he wishes. 4a2e

The Journal system is designed to allow instant online retrieval of the text of the message when the number is known. The linking provision allows the Worker to follow paths of dialogue, as succeeding input includes file names which are linked online to earlier dialogue items. 4a2f

With content analysis programs, the item can be retrieved when the author or subject is correctly searched for. Online content searching through large sections of the recorded dialogue is not now practicable, but is expected to be a useful capability in the future. 4a2g

The Journal provides hardcopy which can be filed in any way desired. 4a2h

Index programs operate on the files to produce online or hardcopy indexes for general online or offline retrieval. 4a2i

The Journal system, then, in principle functions as a good information-handling system. Over the two years it has been in use by ARC, detailed design features have been given critical use and improvements have been made. The system has proved itself in user acceptance as a means of acquiring, capturing, disseminating, and retrieving research information in an Office, and is appropriate for use in other Offices. 4a2j

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

STUDY OF THE ARC JOURNAL AS USED BY ARC 4a3

The ARC Journal contains all items sent through it by ARC and ARPANET users. An analysis of the Journal for the months September through November 1973 showed approximately 1300 items sent. Of these about 50% were authored by non-ARC users. This analysis considered only the items authored by ARC members. 4a3a

Activity 4a3b

Specific attention was paid in the analysis to the nature of the dialogue carried on by ARC users between themselves, to look at the nature of the dialogue between workers in an Office. However, an initial count was made of the submissions of all kinds by the 31 ARC members during the 3-month period examined, which showed the following:

No. of Items Sent	No. of ARC People Sending this No.
None	2
2- 7	8
11-16	7
20-28	4
31-37	4
42-49	4
58	1
93	1

Addressees 4a3c

The Journal system allows addressing to individuals and to groups of individuals. Much of the dialogue on the Network is addressed to groups, but inside ARC most is addressed to specific individuals. Analysis of the addressees, reduced to percentages shows:

Addressees per Message	Percent Addressed to this No.
All of ARC	25% of Messages
10+ Addressees	8%
4 - 9	12%
3	12%
2	8%
1	35%

JOURNAL SYSTEM
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Length of Item

4a3d

As might be expected if the Journal is an informal mode of communication, the majority of items are less than a page long; about 45% were only a paragraph or two. Another 30% were one-page entries. Almost 25% were longer than two pages, these averaging about five pages each.

Subject Matter

4a3e

Types of subject which can be identified, and the percentage of the dialogue which they represent are:

Design suggestions, and responses in ARC	30%
Formal reports	15%
Notices of visits and other events	15%
ARC and SRI internal business	10%
Dialogue from ARC to Network users	20%
Correspondence from ARC to outsiders	5%

Dialogue

4a3f

The Journal can be seen upon casual reading to be a true dialogue. There are items journalized for their record value which are not internally linked to other items. However, most messages refer to previously discussed subjects, and many items which are direct responses to earlier items use the capability of the online link to make access to references easier for the reader. An analysis of the links actually inserted in the messages shows the use made by ARC of the linking capability. About 30% of the items sent by ARC members to each other contained online links to other documents. This percent may be expected to increase as users become more familiar with the feature and as more inter-related documents are entered into the Journal.

The link capability (Userguides,tnls-address,entry:w) allows the user to insert a reference in the parenthetical form shown in this sentence, and this insertion, or link, can be addressed and will retrieve the file or particular section of the file denoted.

Links occasionally fail in their immediate-retrieval function. One reason is that storage capacity is too limited at this time to keep all old files online, and the link may lead only to a message that the file is archived, in which case the user must wait a

short time for the file to be retrieved by an operator. Another reason is that the link format is used by some to refer to documents which were never online, for which only a reference has been cataloged, in which case the link could lead only to a coded citation, and currently it is not able to do even this. A further reason is occasional carelessness of the author in typing a link, so that the number is wrong and leads to the wrong document or nowhere. In this case augmentation is again helpful, in that the author can try his links to assure they are correct, if he will think to do so.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

ANALYSIS OF THE PRESENT JOURNAL SYSTEM AS USED BY THE ARPANET COMMUNITY 4a4

Introduction 4a4a

The Journal system has been in use by a small subset of the ARPANET Community for over two years. To provide a basis for any conclusions drawn, and to serve as an indicator of aspects to be considered, various appropriate samples of the Number and Author indexes to the NIC Journal were analyzed to obtain data on the use of the Journal and to critique the use made of the Journal. A representative page of the Author Index is shown on the next page.

Samples Studied 4a4b

Number Index

About 300 NIC items were retrieved by the catalog program from those items entered in two month period 1 July to 1 September 1973, items between 17593 and 18796. These 300 items were analyzed and compared with the entire collection of Journal hardcopy in binders for this period, with the following results:

Content of Item -- 44 were trials or handshakes which could be deleted for lack of substance; for most of these the hardcopy had not been filed. (See Conclusions 1). 33 were transmittal letters which could be better handled in a correspondence log than in the Journal.

Content of Citation -- 63 other than the above 44 were untitled, and therefore not usefully informative here, nor subject-retrievable in the Titleword Index.

Content of Index -- 60 items in the hardcopy Journal binders, items sent by NIC to Network people not RADC, were not in the NIC Journal index. These omissions were the result of input manipulation by the Journal, not the result of indexing programs.

Author Index

The Author Index gives the title, date and number of all items sent by each author. Because of limitations in the amount of information which can be fitted on one line, it does not give addressees, which would often be useful.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

The Author Index was analyzed to determine the extent of use by the Community represented by the ARPANET. It was analyzed for data on use by individuals over the entire period of the Journal's existence, with attention given to the frequency and recency of use by individual authors.

Users

Number of Users -- 170 non-NIC people used the Journal at least once, in the period June 1971 to August 1973, often during a TNLS course.

Number of Continuing Users -- The pattern observed is shown in the next table.

JOURNAL SYSTEM
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ANALYSIS OF CONTINUING USE OF THE JOURNAL BY ARPANET USERS

The following table indicates patterns in continuing use by members of the ARPANET Community. It appears that a number of users tried the Journal only experimentally, sending only 1 to 5 messages and their last input was some time ago. Others, named in the table, have sent continuing dialogue over the Network and apparently find it very useful. (See observations in following section).

Breakdown by number of messages, and last date of input:

Total Msgs.	Users With This Total	Date of Last Input by SPECIFIC User 12/71	12/72	4/73	6/73	8/73
1	44	1	12	13	10	8
2	35	2	9	5	13	7
3	25	2	1	9	7	7
4	15		1	1	5	8
5	7		1	2	2	2
6	5	(Sandum, Lindamood, Bruffey, Bouknight, Cornell)				
7	6	(Mitchell, Kelley, Kahn, Fikes, Cutler, Cosell)				
8	3	(Strollo, Licklider, Kampe)				
9	2	(Day, Stern)				
10	2	(Walden, Bockweg)				
11	1	(Bressler)				
12	3	(Barden, Karp, Silberski)				
14	1	(Metcalfe)				
15	1	(Lieberman)				
19	1	(Krilanovich)				
21	3	(Cotton, Dolan -12/72, O'Sullivan)				
22	1	(Masinter)				
23	1	(Stoughton)				
28	2	(Kline, Padlipsky)				
29	1	(Forman)				
34	1	(Bhushan)				
41	1	(Levin)				
43	1	(Owen)				
51	1	(Pickens)				
58	1	(Cerf)				
72	1	(Iseli)				
96	1	(Deutsch)				
131	1	(Neigus)				
162	1	(McKenzie)				
176	1	(Postel)				
256	1	(Dave Crocker)				

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Observations on the Data

4a4c

1. About 15% of the items in the NIC Journal Index are not substantive, and another 11% are routine transmittals. These add to the bulk of the Index without contributing much to its usefulness.

2. About 20% of the items are entered, carelessly or purposely, without titles, making their retrieval by subject impossible.

3. About 20% of the existing Network Journal dialogue is not being captured by the NIC Journal Index. This occurs because all messages originating at Sites other than RADC are automatically coded for NIC in the subcollection field, but messages from NIC to Sites are only coded as NIC at the instigation of the sender, and the sender does not know how to or does not remember to take the action to do this.

4. Only 44 non-ARC people had used the Journal for more five messages. Yet some non-ARC people use it heavily and continuously.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

A CRITICAL LOOK AT JOURNAL DELIVERY ANNOUNCEMENT 4a5

The following is a sample of Journal delivery as seen by the worker in his initial file: 4a5a

```
PR 11-DEC-73 10:15  20845
Bibliography on the Economics of Information
Location: (MJOURNAL, 20845, 1:w)

   Comments: This bibliography was given to me by Mike Rothkopf.
   He told me that I can publish it in our Journal System.
PR 11-DEC-73 09:22  20844
An Interesting Weekend Seminar
Location: (MJOURNAL, 20844, 1:w)

MLK 10-DEC-73 16:52  20835
Hark! ARC!
Location: (MJOURNAL, 20835, 1:w)

   Comments: Please read this important announcement!
JCN  9-DEC-73 15:21  20819
Note to RADC Users: Transfer of AKW Online Services to OFFICE-1
Location: (MJOURNAL, 20819, 1:w)
```

Several improvements have been suggested for the format of these items. They include: 4a5b

- Give the full name of the author(s).
- Incorporate the third line into the first line.
- Remove the empty line between the item and any comments, so that the relation of the comment is seen to be to the item above.
- Place the title line first, so that a one-line view is more informative.

A reworking of the preceding sample according to these suggestions is shown on the next page. 4a5c

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

Bibliography on the Economics of Information
Paul Rech 11-DEC-73 10:15 (J20845,)
Comments: This bibliography was given to me by Mike Rothkopf. He told me that I can publish it in our Journal.

An Interesting Weekend Seminar
Paul Rech 11-DEC-73 09:22 (J20844,) forget

Hark! ARC!
Marcia L. Keeney 10-DEC-73 16:52 (J20855,)
Comments: Please read this important announcement!

Note to RADC Users: Transfer of AKW Online Services to OFFICE-1
James C. Norton 9-DEC-73 15:21 (J20819,)

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

A CRITICAL LOOK AT HARDCOPY OUTPUT PROVISIONS 4a6

Hardcopy is available to the user in four forms: 4a6a

Output Quickprint
Output Device Teletype
Ouput Device Printer
Hardcopy Journal Delivery

Evaluations of the adequacies of these forms are: 4a6b

Output Quickprint gives the user a copy of the item with all information as to sender, date, and other recipients printed on the terminal or on the printer. This is the preferred mode for informal dialogue and is eminently satisfactory.

Output Device Teletype prints the item on his terminal using all formatting directives supplied by the Journal and those supplied by the user which are not overridden by the Journal. This mode is required for output of formal, formatted items such as reports. Its continuing drawback is the frequent conflict between format directives supplied by the author and those imposed by the Journal, so that highly formatted tables and text designed to nonstandard line width or page length are deformed by the Journal formatting program. Intimate familiarity by the author with provisions for circumventing these problems is required to prevent unpleasant surprises in the output.

Output Device Printer provides high-speed printer output using the formatting directives as above.

When the user's Ident information marks him as a recipient for hardcopy, he receives under present conditions a copy printed either on the ARC printer or through use of an IBM 360 and an off-site printer, and this copy includes an outside page containing the address for mailing. This form is used for hardcopy mail to non-ARC recipients. It currently has the drawback that it entails a delay of fOM TWO DAYS TO A WEEK, caused by the processes it must undergo, of tape conversion, IBM 360 processing, printing, bursting and collating. These delays are not intrinsic to the Journal system, but result from a decision not to overload the Office printer with this bulk of output. A drawback which is intrinsic is the format program which spreads the information over three or four sheets: the first sheet containing the text with a heading consisting of the ident of the sender and the date and Journal number, a second sheet giving the full name of the author and full names of all addressees, and a third sheet formatted to

give the full name and address of the specific addressee so that it can be folded and mailed. A fourth sheet is generated if any comments on the message are included by the sender. To keep the complete record all sheets must be retained. For filing, this presents a problem of bulk of paper and of staples used to attach them.

Despite the criticism detailed above, it should be appreciated that no other system has the variety of distribution modes of the Journal.

4a6c

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

ANALYSIS OF THE OUTPUT OF SUBJECT INDEXING PROGRAMS 4a7

Retrieval by Subject from the Journal 4a7a

Three means are provided for retrieval of items by subject:

Keywords can be supplied by the person Journalizing.

There is no prompt for this action, and few people use this facility. At present no programs are run to produce general indexes on sender-supplied keywords.

Subcollections can be specified by the person Journalizing.

The Journal by default categorizes input into certain subcollections according to the sender's address (e.g. SRI-ARC, NIC, RADC) and according to any groups addressed (e.g., SRI-ARC, SUR, NGG, PRG, NLS). Alternatively, the sender can specify existing or invented subcollections, which allows a sender to categorize his input according to subjects named as subcollections. Index programs are run for the large subcollections, to provide ARC, NIC, and RADC indexes, and the same capability exists to retrieve any subcollection, but is seldom used at this time.

Titlewords are used as subject terms for Journal indexes run at the times that Author and Number Indexes are produced.

Since the Titleword Index is the principal means for subject retrieval at present, an analysis was made of the output in the ARC Titleword Index dated 6 November 1973, which covered the input of August through October 1973.

Analysis of ARC Journal Titleword Index for August-October 1973. 4a7b

An incremental issue of the Titleword Index of the ARC Journal was analyzed to determine its makeup, to draw any conclusions as to its benefits, and to look for ways in which it could be improved. In the reporting of results, these terms are used:

Items, i.e., messages and files submitted

Terms, i.e., words recognized by index programs

Citations, i.e., all one-line references to items as retrieved by terms

JOURNAL SYSTEM
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Citations appearing in the Index

Number of Journal items submitted: 645
Number of keyword citations generated: 2620
Citations per item, average: 4

Terms appearing in the Index

Number of terms: 1099
Number of citations generated: 2620
Citations per term, average: 2.4

Terms correlated to citations

Personal last names and idents, as terms: 91
Citations under personal names and idents: 143
Citations per name or ident, median: 1

Proper names of organizations and groups, as terms: 41
" " " " " " citations: 131
Proper names of systems, equipment, etc., as terms: 27
" " " " " " citations: 119
Citations per proper name, average: 3.7

Subject terms other than names, excluding plurals: 360
Subject terms occurring as plurals: 70
Citations under subject terms: 1233
Citations per term, average: 3.4

Misspelled words appearing as terms: 16
Nonsignificant terms, remainder: 510
Citations under nonsignificant terms: 994

Proportion of potentially useful to nonsignificant citations

Citations by personal and proper names: 393
Citations by significant subject: 1233
Citations by nonsignificant or erroneous terms: 994
Percentage of content which is nonsignificant: 37%

Proportion of potentially useful to nonsignificant terms

Terms for personal and proper names: 159
Terms for subjects: 360
Terms, nonsignificant and erroneous: 580
Percentage of terms which are nonsignificant: 53%

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

Benefits and Drawbacks to the Use of Keyword-from-Title Indexes. 4a7c

Benefits:

The indexing process is mechanized so that no judgment, i.e., human labor, is required.

Once programs are written and a file exists, new input can be processed at little added cost.

Drawbacks:

Retrieval effectiveness depends on how well the title reflects the information content of the item. If a key term is not in the title, the item is not retrievable from that aspect.

No cross-references are produced to remind the searcher of other forms of the word, or of synonymous or related terms under which he would find citations he would want. For example: "Online" and "Line" appear, but not "On-Line" nor "On Line" because "On" is suppressed.

Without editing, the resultant index will contain sizable proportions of citations under terms that no one would look for.

In addition to the generic benefits and drawbacks above, there are specific considerations in the use of titleword indexing programs as currently used in indexing the Journal data base. These are:

A title is sometimes omitted by the sender, and the item is not retrievable. Usually, but not always, the lack of a title occurs on items which carry little or no information likely to be desired for retrieval, where there is no substantial loss.

Many items in the Journal are informally written and unedited, and titles for these tend to be informal, even flippant, and to contain unpredictable, nonsignificant, and mispelled words which introduce garbage into the index. The sample page of the NIC catalog will show the extent of this occurrence.

The length of the titleword program output for even a few months' content is currently too great to keep in one file, so the program must be run on files which are arranged by date, then the output, which is arranged alphabetically, must be merged with passes over three files covering A-E, and so forth. At present, incremental indexes cannot be merged with existing

basic indexes, because there is no way to suppress the repetition of marginal words at proper places in the printout. The result is that the mass of old raw data must be reprocessed with the new increment for a new index. This reprocessing becomes proportionately greater with each new index.

A shortcoming of all the Journal indexes is the lack of a format program to produce an online index. At present, the indexing program format is oversize. It is designed for production of a printed index suitable for reduction, so as to save on quantity in reproduction and yet include a maximum amount of information in one line. This output is used also for online viewing, and the wraparound is confusing. For online viewing, a citation formatted for two lines is needed.

Conclusions Regarding Titleword Index 4a7d

Only half the terms currently generated by Titleword Index programs on the ARC Journal are likely to be useful for retrieval.

About two-thirds of the citations generated are under terms which may be useful for retrieval. No check was made of the contents of the Journal items to find whether they were as useful as the Index made them appear. It is observable that there are random nonsignificant occurrences of words which could not be suppressed because they would be significant in other contexts. Words in the latter class are: "Help", "Query", "Message", "Text".

A conclusion difficult to document, but easy to observe, is the use of Author and Number Indexes to retrieve by scanning, where the Titleword Index fails, and where a good subject index would better serve the purpose.

There is no evidence that users cannot eventually find items they remember. A study would be needed to establish what is found and what is missed. Studies made on other data bases have shown keyword indexes to be far inferior to human-edited subject indexes, and a study of the adequacy of this retrieval tool could point to the need for more sophisticated programs or for human editing to fill out the record for complete retrieval capability.

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MODIFICATIONS DEEMED TO BE DESIRABLE 4a8

The following modifications are summarized briefly, based on the foregoing discussion and conclusions. 4a8a

Modifications to Input Provisions 4a8b

1. The Journal needs better automatic prompts and feedback for input, specifically a reminder for all needed items. Input procedures should include a reminder, if not a requirement, that a title be supplied. Lack of a title makes retrieval so difficult as to be impractical and usually not attempted. Other items desirable for input, but which the system does not demand, are special subcollections, keywords, and comments.

2. NIC as a subcollection entry should be made automatic for all items logged from NIC to Sites over the ARC utility, unless the design for the utility makes subcollection NIC a redundancy. In case automatic entry is the option, it should be echoed and allow overriding. The user is often not aware of the provisions for and the present results of subcollection entry, and subcollection indexes therefore do not contain all items they could be expected to.

3. A correspondence log system should be implemented to work in conjunction with the Journal, to provide desirable links to offline dialogue of similar content and to remove routine transmittals from a record of substantive dialogue.

4. Numbers should always be assigned and fed back to the user at the time of input, so that the sender can use them for referral immediately. The number can be obtained on request, but should not have to be specially requested.

5. Provision should be made for two dates to be recorded: the date of writing and the date of Journalizing, because these are often not the same. Older files which are Journalized at a much later date should so indicate.

Modifications to Delivery 4a8c

6. A temporary note, designated as such, should be placed in the author's initial file at the time of submission.

7. The format of the delivery notice should be improved, perhaps as suggested above.

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Modifications to Hardcopy Provisions 4a8d

8. Journal formatting programs should be more easily overridden. An item submitted to the Journal should appear in the exact format the author designed, with the Journal information supplied in the upper and right-hand margins outside the formatted areas. At present it is not possible to set arbitrary statement numbers to conform to an outline, with the result that an Introduction becomes statement 1, and Section 1 becomes statement 2 and leads to confusion.

9. Hardcopy for mailing should be redesigned to reduce the unnecessary bulk and to present all information about sender, recipients, comments, and the first page of the message.

10. Two formats of hardcopy output should be available and presented to the user as options.

A formal document such as a report would be preceded by a one-page transmittal sheet:

To: Name(s) of recipient(s) DATE NUMBER

From: Sender

Title:

Comments:

A informal file or message such as a memo would be supplied with a heading of the above, preceding the file or message.

The journalizer could be given the format options:

REPORT format (separate transmittal letter)

MEMO format (To, From, heading)

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Modifications to Subject Indexing Programs and Procedures 4a8e

11. Index programs need a slightly longer stoplist, perhaps 40 or more terms, to suppress the most common useless terms. Beyond these, the anticipation of useless terms is so difficult for this text as to be impractical?

12. Because the input will always be uncontrolled, and because the Journal files themselves should be unmodifiable, the output from index programs will always contain useless and redundant and incomplete entries. Therefore, the output from index programs should be human-edited to remove and insert material which will increase the usefulness of the indexes.

13. A format for online viewing of the finished index needs to be designed.

JOURNAL SYSTEM
Critique of the Journal and Its Indexes

RECOMMENDATION FOR USE IN A WORKSHOP OFFICE 4a9

The Journal system is essential to any augmented Office. As conceptually designed it is an ideal vehicle to support the dialogue in research information. As currently implemented it has some characteristics which detract from its complete satisfactoriness and these can be remedied. 4a9a

Additional user aids (scenarios, improved prompts, more frequent and more readable indexes) are all needed to make use of the Journal easier and more useful to the worker, and with these aids the Journal can gain wider acceptance. 4a9b

Several features are known to be needed which are not now implemented, principally because of resource limitations: 4a9c

1. Capability of annotating or commenting upon existing Journal items in situ. It is not now possible to add comments in the logical place, i.e, following the Journal item commented on.

2. References in an existing document to later documents which may modify or update it. While Journalized items themselves should not be modifiable, there should exist the capability to append such information. This feature is needed to alert the reader to the continuing dialogue.

3. Facilities for privacy. The Journal can be browsed by anyone, making the contents of all communications public to others than the intended recipients. Such facilities are to be implemented very soon.

4. Secondary distribution, the sending of previously Journalized items to addressees, is not yet well implemented.

5. A Boolean search capability is needed to make retrieval fully satisfactory.

The Journal is a tool whose full potential will be realized only as Workers become so comfortable with it that they use it continually. With increased use will come demands for further Journal features not now implemented and surely some not now even envisioned. 4a9d

USER PROGRAMS
Critique of the User Program Capability 4c

INTRODUCTION 4c1

As a user gains experience with NLS, he often finds that he has repeated need for a particular series of actions which he could perform with less effort if he combined them into a small program. The need that prompted the writing is often a need common to others, and users are encouraged not only to write these programs, but to place them in a file called (user-progs,-contents,) to make them available to others. ARC also has written a guide to use of these programs (user-progs,-userguide,). It appeared productive to investigate the extent of use of such programs and of their documentation, and a questionnaire was designed and given to 15 ARC members at random to provide information on program use. The questionnaire is given here, with cumulated results from the questioning. The directory of programs is given also. 4c1a

USER PROGRAMS QUESTIONNAIRE 4c2

1. What User Programs Have You Used, and How Often? 4c2a

Respondent	Programs used	Times per month
(analyst)	append	unsatisfactory
	inrun	not online
(analyst)	inmes	30
	seqgraph	4
(secy)	letter	8
(sys progr)	append	very seldom
(sys progr)	changed	1
	filter	
	(other personal)	
(sys progr)	trace	30
	(many others)	
(sys progr)	letter	1
	trace	a lot, in bursts
(analyst)	inmes	30
(analyst)	deldir	seldom
	inmes	
(t writer)	address	5

USER PROGRAMS
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	addtext	4
	append	4
	deldir	2
	inseqh	6
	jform2	20
	notabs	3
	sortnocase	1
(operator)	--	
(programmer)	append	1
	letter	1
	trace	2
(user progr)	(many special)	often
(user progr)	addtext	6
	append	4
	deldir	6
	format	12
	inmes	2
	showdir	20
	toc	4
(t writer)	addname	uses another
	addtext	3
	deldir	2
	format	8
	letter	1
	showdir	3

3. How Did You Learn to Use These? 4c2b

(Numbers are quantities of respondents, out of 15 total.)

6 learned from demonstration only

5 from a combination of demonstration and documentation

4 wrote the programs themselves

0 learned from documentation alone

4. Have You Read the Documentation? 4c2c

4 reported there was no documentation on ones they used

USER PROGRAMS
Critique of the User Program Capability

4 did not indicate knowledge of location of documentation

3 had placed instructions in their initial files

3 indicated approach through <user-guides> or <documentation>

2 named the correct directory <user-progs>

5. Have You Shown Anyone Else How to Use a User Program? 4c2d

10 have shown others how to use a User Program

6. Have You Written Any User Programs? 4c2e

8 have written no User Programs themselves

Most programmers had written one or more for specific purposes. About half of these programs were written for general use and were included in the <user-progs> directory. About half were undocumented and not submitted to the directory.

7. Did You Write Them Alone or With Help? 4c2f

2 reported having written a User Program without assistance

8. Comments and Opinions 4c2g

"Can be a real help when you have a repeated process to do." (analyst)

"Found the documentation impossible to implement; when was shown how to use a commonly-referred-to program, found the demonstrator had difficulty and the documentation was agreed to be inaccurate." (analyst)

"Not sure whether it is a time saver but feel LETTER is a hopeful feature for future use when idents are known to the system." (secretary)

"Currently good for professional programmers only since L10 knowledge is needed; also poor because there is no documentation on procedures available; minimal diagnostics and error checking." (systems programmer)

"Do a lot of work with the use of User Programs, testing part of the system and in research on additions or modifications, simulation of changes." (systems programmer)

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"Don't really know what's available" (systems programmer)

"Think they're great" (analyst)

"Can rarely run them in the daytime; many don't work satisfactorily. There is no clear mechanism to use to get the program written and maintained." (analyst)

"Have found them very helpful and greatly improved with the REL file (to keep a compiled file around)." (programmer)

"Fantastic potential; augmented accessing would be nice; L10 should be getting more usable, as userguide, sysgd, etc. develops; some programs aren't used for a long time, then are absolutely necessary; the use of the system of user programs depends on having the right program at the right time archiving them has discouraged people in the past; I have got repeated requests to make all user programs permanently available." (user programmer)

"It's more useful to write one for a particular purpose than to use the general ones, however the format ones are really great." (technical writer)

DIRECTORY OF USER PROGRAMS 4c3

PROGRAM	FUNCTION
addname	Adds name to nameless stmnts from first word in stmt
address	Asks for ident, inserts the address at the bug
addtext	Adds text to front/back of stmts in plx/brnch/grp/st
append	Sequentially appends stmnts in group, text between
appendlist	Like APPEND, but leaves substructure
changed	Marks statements changed since a given date
delcol	Deletes bugged column, assuming next col lined up
deldir	Deletes Output Processor directives
delname	Deletes statement names
delsp	Deletes leading spaces from statements

USER PROGRAMS
Critique of the User Program Capability

format	Add print directives to a file
index	Creates a word index for st/br/plex/group
inmes	Inputs all of message.txt file into NLS file
inseqh	Does a sophisticated Input Sequential file
inrun	Inserts TENEX RUNOFF file into NLS file
jform1	Reformats journal references
jform2	Reformats journal references
letter	Puts file in letter form, adds dear-- & sincerely--
lowercase	recovers from an erroneous XSET UPPER CASE
makeref	Scans for journal links and makes ref branch
notabs	Replace tab keys by spaces in plex
showdir	Shows only stmnts with Output Processor directives
sortnmskp	Sort key extractor: as usual but disregards st names
sortnocase	Sort key extractor: alphabetic regardless of case
sortnum	Sort key extractor: sorts by first number in stmnt
sortrev	Sort key extractor: exactly the reverse of usual
sriform	Puts in O/P dirs and spaces to SRI standard format
sublist	Does substitutions on list of files given links
tblpts	Adds periods to end of st out to given col
toc	Generates Table of Contents with stmnt num refs
trace	NLS call return tracing system for micro-analysis
truncate	Truncates st/br/plx/grp to one line-assume 3/lev ind
wordcount	Counts visibles in st/br/group/plex

4c3ag

USER PROGRAMS
Critique of the User Program Capability

CONCLUSIONS 4c4

The capability for the user to write small programs for repeated use is a potentially important one. The concept of sharing these progams with others to assist them or to prevent their having to write their own is clearly in line with the principle of resource-sharing and with the whole concept of dialogue support in a Group or Community. 4c4a

The results of this survey of half the members, selected randomly, of a fairly experienced Group showed: 4c4b

Even a program meeting a common situation, such as "inmes" to process SNDMSG files for online reading and retention, and "append" for turning seqential files into NLS files, was not used by more than one third of the Group. The existence of a program for a common situation doesn't result in its widespread use. 4c4b1

Most users did not access the documentation in learning or in reminding themselves of the programs they used; demonstration is the present learning mode. It may be assumed that the documentation alone is inadequate for training inexperienced users. 4c4b2

Half of the Group had written programs themselves, but almost all had had assistance in doing so. It appears that writing of user programs is not a common habit, even for experienced users. 4c4b3

Enthusiasm for present user programs was reported by 6 of the users, 4 responders were critical of present shortcomings, almost all appeared to appreciate the potential of such programs. 4c4b4

A factor not clearly brought out in the questionnaire is the difficulty of invoking user programs. The user must give separate commands to get the program, set buffer size, and run the program, and sometimes additional commands are needed. The possible steps needed to employ user programs are numerous and hard for the novice to execute successfully. 4c4c

USER PROGRAMS
Critique of the User Program Capability

RECOMMENDATIONS FOR USE IN A WORKSHOP OFFICE 4c5

A single command should load and run a user program. 4c5a

Existing user programs and the procedures for using them should be documented in explanations and scenarios written for the non-programmer. Then they should be publicized to bring their existence and usefulness to the attention of the Group. 4c5b

Those people with programming ability should be encouraged to write programs for general needs, and to have them described for use by all who might want them. 4c5c

Every means should be explored to make the writing of user programs, as well as their use, easy for any Office member. 4c5d

PERSONAL FILES
Critique of Their Use in an Office

4a

INTRODUCTION

4d1

Any person working with information feels a constant need to organize the information he expects to use so that any piece of it can be recalled when it would be useful.

4d1a

To achieve this recall, most individuals create some kind of ordered collection in which to store items for future use. Usually, the person assembles a collection of books, papers, notes, and correspondence, and as it grows larger, designs a filing system, simple or complex, for arranging these items where memory will remind him to look. As the filing system becomes unwieldy, he makes an index to it. Usually, he finds the system less than satisfactory, and redesigns it to better fit what he now sees he needs. If it is complex, he finds input tedious and output inadequate. He would really like an automatic system by which he would be relieved of the labor of marking, recording, and filing, and by which he could usually locate items he vaguely remembers. Using a computer, which is more orderly and less fallible than a human brain, is an attractive possibility.

4d1b

Various systems have been designed to provide a framework within which a user can create his personal collection of references from which he expects to retrieve what he needs. No system is currently widely used, and few are known to be praised by other than their designers. A bibliography of items on personal file making is appended.

4d1c

The three components of a file system are the body of information to be stored and retrieved, the tags or keys by which this information is identified, and the means by which these tags are manipulated. A system will be satisfactory to the extent that these components are well-designed and the links between them are strong. The information stored should be the complete information, not citations for which the original information must be located in less controlled storage. The keys and tags, such as subject terms and names, should be reflective of the stored information. The means of manipulating the keys and tags should be flexible, available, and understood by the user. Introducing numbers into the system to make the keys and tags more manipulable or to simplify filing of the stored information must be seen as placing additional links in the retrieval chain, and their usefulness must be examined to be sure it outweighs the potential handicap they present. Numbers used as surrogates seldom carry any intrinsic information, and need to be used invisibly, as in computer manipulation, or used in conjunction with information-bearing items.

4d1d

As dialogue grows, the the individual feels a need to find ways to sort and store references to this dialogue to keep track of the

PERSONAL FILES
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information he has received and to flag some items for action. He is prompted to create personal ways of storing these references. 4d1e

In (17394,), Outline of a Personal Information Management System, Paul Rech at ARC has defined the problem and suggested the features of a system using the ARC online system, NLS. Features include: provision for general categorization of items, provision for personal categorization of items, flagging by subject and date for purposes of retrieval and deletion, and automatic deletion of older items not accessed. 4d1f

NLS is well-suited to the creation of such reference files by its provision for links between files and by its provision for hierarchical grouping of categories of references. There exists also the capability for identifying and deleting materials which are unused for a specified period. 4d1g

To investigate the experience of ARC users in creating and using such files a survey was made of 15 randomly-selected members, using a questionnaire. The tallied answers are given, with annotations. 4d1h

PERSONAL FILES
Critique of Their Use in an Office

PERSONAL FILES QUESTIONNAIRE 4d2

The same 15 ARC users surveyed for their use of User Programs in the previous critique were questioned about their use of personal files. (Numbers shown in these tallies are quantities of correspondents.) 4d2a

1. What files do you maintain for your personal record of: 4d2b

a. Journal items received and sent?

All those questioned receive Journal citations online in their initial files. The questions relate to their disposition of these citations.

How are these files organized?

7 leave in form and order in which Journal system transmitted them.

6 rearrange items by topics; 5 by subject, 1 by action needed.

2 delete all Journal items after reading.

How often are these updated?

4 who reorganize their Journal item files update them daily, the others less often.

How often are these used for reference?

6 seldom or never use the Journal item citations saved.

2 who reorganize their items report they refer to them less than weekly, but find the files extremely helpful.

7 refer to Journal citation files occasionally, probably less than weekly.

b. Notes of schedules to be met, actions to be taken, actions taken?

9 keep a branch in their initial file for tracking actions.

How are these files organized?

1 uses an elaborate scheme for his total activities, and

PERSONAL FILES
Critique of Their Use in an Office

updates it daily. One person started a detailed scheme for recording status of work-in-progress, but does not keep it current.

2 keep in random arrangement.

Methods of organization range from "to do" and "done" branches, to highly categorized and task-related branches.

How often are these updated?

2 update theirs daily; others updated irregularly.

How often are these used for reference?

3 reported more than daily reference to these files.

c. Reports of visitors?

4 make a record of visitors.

How are these files organized?

2 keep a file with a branch for each visitor.

1 keeps in branch of initial file.

1 records in Journal only

How often are these updated?

Secretary reported a file to be filled in by others, and hence updated by them.

How often are these used for reference?

All 4 reported these were rarely used for reference, one stated was for record only.

d. Notes on personal reading, bibliographic references?

4 people keep such files, 1 keeps two files.

How are these files organized?

1 keeps a branch in initial file

PERSONAL FILES
Critique of Their Use in an Office

3 keep separate files, by subject.

How often are these updated?

Approximately weekly.

How often are these used for reference?

Approximately weekly.

e. Other personal record files?

9 keep other personal files.

How are these files organized?

3 keep idea files

2 keep files of sendmessages.

1 keeps file of user programs, 1 keeps record of relevant files created, 1 keeps phone directory.

How often are these updated?

Input to these files was fairly steady, deletion was not studied.

How often are these used for reference?

Varied according to type of content; most seemed to be active.

2. Have you started such files and abandoned them? 4d2c

10 reported having started personal files and abandoned them, of these, 2 did not now maintain personal files of citations or ideas.

Reasons for abandoning them?

Reasons given:

"too much of a problem with scarce system resources"
"too much work to keep up; system limited availability"
"unavailability of system"
"cumbersome"

PERSONAL FILES
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"partly because of lack of time to maintain and partly because of inconvenience of trying to keep track of on and off line files"
"too much trouble to keep up"
"too much trouble"
"terminal time is too valuable to spend on maintaining online files of personal information"
"most if not all other schemes have been traded off for new elaborate scheme (abandoned old schemes for new one)"
"lack of usefulness"
"change in interest, archive process, etc."

3. What do you do with Journal references in your initial file, if you do not reorganize them or move them? 4d2d

All respondents deleted these references occasionally, some deleted nonsignificant items as they were read.

PERSONAL FILES
Critique of Their Use in an Office

ANALYSIS OF THE RESULTS OF THE QUESTIONNAIRE 4a3

Extent of Use Made of Capability 4a3a

Less than half of the sample group, 6 of 15, utilize the citations received from the Journal for other purposes than announcement. Some who move or reformat their Journal citations report they seldom refer to them later.

Over half, 9 of 15, maintain a branch in their initial file for keeping track of personal work and schedules.

The secretary and 3 others of the 15 surveyed recorded some information about visitors.

Only 4 people reported keeping online references to articles, books, or documents read.

Reasons G IVEN FOR Lack of Use 4a3b

The most common reason given, by 5 of 12 respondents, for having dropped previous efforts in personal file maintenance was that the work was too much trouble. It is the common experience that creating personal files of information is not worth the effort, in the benefit derived from the time-cost. In no case was it indicated that any other feature of online use had made personal files unnecessary; conversely, the files of user programs and phone directories were created where they would seem to be unnecessary in view of the directories of user programs and the Identfile.

The second most common reason given, by 4 out of 12, was the limitations imposed by the system, particularly the uncertainty that files would be online when desired. This is presumed to be a temporary hindrance?

Several explanations for disinclination to keep online references to materials were explored in follow-up discussions with the responders, although no tallies were made:

They find no added value in keeping references or notes online, when they do not lead to online files?

Literature is not of much importance in their work.

Lack of space, coupled with a low priority placed on such files, discourages preparation of such files.

PERSONAL FILES
Critique of Their Use in an Office

RECOMMENDATIONS FOR USE OF PERSONAL FILE SYSTEMS IN AN OFFICE 4d4

The capability to prepare and maintain personal files of information, both that received online and information input by the Worker for his own memory aid, is clearly an important one. That few Workers seem to be using the capability to its full power seems due in part to present system limitations. Lack of use also seems to be the result of lack of personal inclination and to difficulties in constructing adequate retrieval systems. It is also possible that the need for files of personal information may not exist for most people in this environment, doing the kind of work they do. 4d4a

To create a climate in which the full usefulness of the personal file capability would be realized, it would be possible to: 4d4b

Suggest formats for such files

Prepare thesauri to suggest subject classes for the interests of the Office

Make lists of bibliographic citations available

Give clerical support to maintain the files according to instructions from the Worker.

PERSONAL FILES
Critique of Their Use in an Office

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RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE 4e

INTRODUCTION 4e1

The Augmented Knowledge Workshop facilitates the capture and storage of information from all sources, as seen in Section 3.

Capture methods are designed to interface with the particular sources: external publications, the human mind, office dialogue, formal reports, correspondence, phone, and visits.

Storage methods are designed to place items in manageable units and modules, based generally on the type of item, and having distinctive data elements:

Online storage

Journal, for individual records, for dialogue, internal reports, phone and visit records, all in full text

Document catalog for citations to external documents

Correspondence log for citations to incoming correspondence

Hardcopy storage

Journal hardcopy, in binders

External reports and articles, in vertical files

Books, in author arrangement on shelves

Correspondence, in vertical files

Each piece of input is tagged with numbers supplied, individually or in batches, from a sequence of unique numbers.

Thus the input follows branching paths, easily selected for the source or format, into categories, each of which is consistent within itself.

These procedures clearly suit the convenience of an information center in accomplishing capture and storage. And they were designed to facilitate the production of various indexes for retrieval and to assist in retrieval of identified hardcopy.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

However, they will be satisfactory for a Workshop to the degree that they can be integrated into a system that meets the total retrieval needs of the Worker as he functions in his Office. In this section, the retrieval needs of the Worker are examined and the means by which they can be met are discussed.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

IDENTIFYING THE RETRIEVAL NEEDS OF THE WORKER 4e2

As the worker logs in at his terminal, he receives citations for his recent mail. If he gets Network delivery of his mail, he receives citations in EXEC for mail that has been sent him. He also receives SNDMSG items that he would like to transfer out of his message file into separate files.

NEED 1. Means to retrieve full text of files sent him as mail in EXEC.

In his initial file he receives citations for mail sent him through the Online Journal.

NEED 2. Means to retrieve full text of mail received in NLS.

He would like to save the citation for later reference, but he wants to keep the mail branch of his initial file cleaned up.

NEED 3. Means to classify and store useful references to Journal mail for later reference.

In the body of a Journal file he is reading, there are references to other numbered items, with links that give him the expectation they are online.

NEED 4. Means to retrieve items by number, without other identification of the item.

He remembers that he has seen other dialogue on the subject of the item he is currently reading, but does not know the file numbers of the dialogue items.

NEED 5. Means to retrieve items by subject from the Journal dialogue.

He wishes to reply, and to keep the online letter in sight for reference, and perhaps to look at other files for reference.

NEED 6. Means to hold one file in view for reference while creating another.

While looking at a document, he needs to know what other documents reference it, update it, supersede it, or make it obsolete.

NEED 7. Means of placing links in an existing document when new information relevant to the document is created.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

He recalls a letter sent to him which he would like to see again.

NEED 8. Means to retrieve offline correspondence.

He is ready to answer a letter he received in the mail, and wants to refer to the notes he made about it when he received it.

NEED 9. Means to tie the record of incoming mail to notes made about it, to retrieve both at once..

He remembers having seen a report issued by National Science Foundation which contained data he would like to quote, and he would like to get hold of the document.

NEED 10. Means to locate an actual document which exists only in hardcopy, knowing only the issuer and the general subject.

He wishes to cite the NSF document in a report he is writing.

NEED 11. Means to retrieve a proper bibliographic citation for external documents.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

HOW THE RETRIEVAL NEEDS OF THE WORKER ARE MET 4e3

NEED 1. Means to retrieve full text of files sent him as mail in EXEC.

Provision: Using FTP according to the scenario in Appendix C, the recipient can create a copy of a Journal file received in his Network mail which can then be printed out on the line printer.

Provision: By the user program INMES, the recipient can convert a SNDMSG file into an NLS file which can be read online or printed out.

NEED 2. Means to retrieve full text of mail received in NLS.

Provision: The recipient can jump to the file referenced by the link given in the citation, and read or print the file.

Provision: He can give the command to print Journal mail, and get formatted printout of all files in the Journal mail branch of his initial file.

NEED 3. Means to classify and store useful references to Journal mail for later reference.

Provision: He can selectively move the citations to a different branch of his initial file or to another file and can use the sort program or place them where he likes. He can add his comments about them. Later he can retrieve from the stored file by content analysis.

NEED 4. Means to retrieve items by number, without other identification of the item.

Provision: Online, the Worker gives the command to jump to the link which, if the item is currently online, brings him the complete text of the file, for reading or printing.

Note: If, due to lack of storage, the file has been deleted, and resides on tape, he can interrogate archive and ask to have the computer operator read it in for him, after a short delay. If he then finds it is not of interest, this is wasted effort.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

Note: Finding a number in link format, i.e., "(12345,)", does not guarantee that the full text of the item referred to was ever online. It may be a reference to a hardcopy document which was cataloged, in which case the number appears as part of a statement name "A12345" in a catalog file of coded input and essentially is not retrievable. It may be a number selected for a document that has not yet been journalized, in which case only the number system knows to whom the number was assigned. With the institution of a correspondence log, it may be a number assigned to hardcopy correspondence.

Provision: He can assume the number is for a Journal item and can refer to the hardcopy of Journal items in binders.

Provision: He can load the online number indexes to the Journal, to get author, title and date. If he finds the citation, this may tell him whether he wants to pursue the item.

Provision: He can search by statement name in the document indexes, if they are online, to discover whether the number was assigned to an external document.

Note: Statement names of external document citations are the number prefixed by "A".

Added Provision Needed: When presented with a number in link format, the Worker should be able to query the system with one command, to find out what the number refers to.

NEED 5. Means to retrieve items by subject from the Journal dialogue.

Provision: The user can access an online copy of the Titleword Index run on the recent content of the Journal. He can search by asking for likely terms as statement names, or he can do a content search on the titles for words or for word stems. From the citations found he can select numbers of items he would like to retrieve, and he can load the files or print them out.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

Note: He can only retrieve items which contain the subject term in the title.

Provision: He can run a program to retrieve by keywords inserted by the sender.

Note: At present, few keywords are input.

Provision: He can run a program to retrieve by subcollection, when the subcollection capability is utilized to form a set of items by subject.

Note: No practice exists at present to facilitate use of this capability except by the individual user; he may make subject groups of his own input, but input by others will be put into such a subcollection only by mutual agreement.

Added Provision Needed: A thesaurus of selected keywords should be prepared, for the user to refer to in assigning keywords that will be most useful for retrieval. This can be constructed, with thought and care, based on the keywords used by national data bases and by local catalogers in coding the external documents, and taking into consideration the titlewords found in Journal dialogue.

Added Provision Needed: Catalog files for external documents need to be accessible as a class, just as Journal links lead to Journal items across directories.

Added Provision Needed: All files which are indicated to be online should be available online, without needing to be retrieved from archive.

NEED 6. Means to hold one file in view for reference while creating another.

Provision: Using the "split screen" capability, he can divide his screen into two or more parts, and may load a file for reference while he creates another file, or sends a message or file to the Journal.

NEED 7. Means of placing links in an existing document when new information relevant to the document is created.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

Added Provision Needed: There is currently no provision for adding such important information to a document which has been Journalized.

NEED 8. Means to retrieve offline correspondence.

Provision: Online correspondence logs, for the individual and for the Office, will contain citations, including abstracts, to correspondence received only in hardcopy. The user can retrieve from these logs by content search, or by running a content analysis program to filter the citations for items likely to meet his desire. From numbers in the citations, the user can go to his own or the Office hardcopy correspondence files and retrieve the items.

Note: Content analysis may be slow on these files, as on other large files.

Provision: Indexes to Office correspondence can be run and kept online.

NEED 9. Means to tie the record of incoming mail to notes made about it, to retrieve both at once.

Provision: In both the Office correspondence log and the individual correspondence log, comments may be added as substatements.

Note: It will be necessary to include the number of the item in the comment, because content retrieval programs at present will retrieve only a single statement, and the substatement will be individually retrieved.

Added Provision Needed: For retrieval from catalog and correspondence files, and possibly other files of two-level formats, programs are needed that will search by content from the second-level and retrieve both levels, or retrieve items such as statement name from the upper level.

NEED 10. Means to locate an actual document which exists only in hardcopy, knowing only the issuer and the general subject.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

Provision: Online TitleWord Indexes may help, if the subject term is in the title.

Provision: If the topic was picked up in the abstract, or as a keyword, a content search of the online catalog files containing the full citation with abstracts and keywords will find the citation.

Note: Online catalog files in coded input form are difficult to read, and their whereabouts is not generally known; they are not public files. Online files of full citations in formatted form are not now prepared, and are too long to keep online when storage is limited. This provision is therefore only theoretically useful at this time.

Added Provision Needed: Indexes by issuing agency are needed, based on input of agency name according to a standard form, so that USC, for example, does not occur under four or five forms of the name under "U", "University", "Southern", and "Department".

NEED 11. Means to retrieve a proper bibliographic citation for external documents.

Provision: For documents that the Office has under bibliographic control, there can exist files of citations in standard format.

Note: Citations as formatted for the online indexes are not adequate for the purpose.

Provision: Online access to large national bibliographic data bases can provide a source of precise citations to use in referencing external documents and periodicals.

Note: Capability to access these data bases is still a separate operation, but efforts are being made to tie these in to an Office utility.

Added Provision Needed: Programs are needed to reformat coded bibliographic input into citations suitable for lists of references, in addition to the

programs now existing which format for indexes and for full catalog-card format.

Expansion of index concepts included in the Needs above.

It may appear initially attractive to merge citations to all forms of material into a combined index for the classes of item handled by the user: online files, offline hardcopy of documents, and offline correspondence. Making separate indexes for these categories is of benefit to the user in that:

The information to be retrieved for each of these differs enough so that the content of the citation should differ. For example, the addressee of a letter is important, the recipient of a document is not significant. Programs to extract the appropriate elements will run better if the base on which they operate is consistently formatted. Also, the output will be more readily understood #f the citations are consistent.

The expectation of the searcher is different for different categories. He does not expect to find an overall discussion of a subject in a letter as he might in a document.

Documents and books may be treated as public knowledge, Journal dialogue and correspondence may not be assumed to be public.

Because files have practical limits, and must be divided in some way, division by category is more significant than an arbitrary division based only on length of file.

From an online index to the Journal, the online text can be retrieved; an online index to correspondence or documents is a dead end as far as online retrieval is concerned. Mixing references that lead to online retrieval with those that do not is not as helpful to the searcher as separating them.

Rather than integrate citations for various forms into one index, the form of the material should be clear from the number used as address, and separate indexes should be produced. Combined indexes can always be produced from merging the separate indexes if and when this is desired.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

DISCUSSION OF ADDED PROVISIONS NEEDED 4e4

Added Provision Needed: When presented with a number in link format, the Worker should be able to query the system with one command, to find out what the number refers to.

Numbers work well as addresses, but they have no intrinsic information value. When the Worker commands a jump to link, he needs to be presented with the file for which this is the address, or he needs to be given information to allow him otherwise to find the item. This is particularly necessary if the numbered item is not in online form at all. The following are suggested provisions to meet the need.

All numbers could be given a letter prefix to indicate their form and location. As a number beginning with "A" refers to a hardcopy document which has been cataloged, Journal items should be prefixed with "J", correspondence with "C", and so on as any other categories are set up. "M" would be used for "Microfiche" when that form is machine-retrievable.

If a file has been archived, as for lack of space, the user should receive a citation to it as a response. This system should respond "Journal file" if that is what it is and give him the full information needed to retrieve it.

If a number refers to an external document, he should receive the response "Catalog file" and a citation to it from the Catalog files which indicates whether it exists in hardcopy only.

If a number refers to incoming correspondence, the message should say "Correspondence" and give an appropriate citation.

Added Provision Needed: A thesaurus of selected keywords should be prepared, for the user to refer to in assigning keywords that will be most useful for retrieval. This can be constructed, with thought and care, based on the keywords used by national data bases and by local catalogers in coding the external documents, and taking into consideration the titlewords found in Journal dialogue.

Random user-selected keywords have never proved satisfactory for good retrieval. Control of vocabulary, so that input and retrieval can be well-matched, can be achieved only by

preparing a standard thesaurus and making it easily available. The basis for the construction of such a thesaurus on subjects related to networking exists in the citations in Catalog files. A thesaurus for other Office and Community interests could be built as the files of information accumulate.

Added Provision Needed: Catalog files for external documents need to be accessible as a class, just as Journal links lead to Journal items across directories.

Although Journal items reside in separate directories, when a link is given, the directory need not be specified. To achieve good retrieval of citations, a similar capability is needed; a link referring to a citation should lead to the citation wherever it resides.

Added Provision Needed: All files that are indicated to be online should be available online, without needing to be retrieved from archive.

This will be possible only with increased storage capability.

Added Provision Needed: For retrieval from catalog and correspondence files, and possibly other files of two-level formats, programs are needed that will search by content from the second-level and retrieve both levels, or retrieve items such as statement name from the upper level.

Citations for documents would be more useful if the abstract could be inserted as a substatement. And provision could be made for insertion of other specified information in even lower statements. Then programs are needed to extract the upper-level statement, the basic citation, at the time the content search locates a match in the second-level statement.

Added Provision Needed: Indexes by issuing agency are needed, based on input of agency name according to a standard form, so that USC, for example, does not occur under four or five forms of the name under "U", "University", "Southern", and "Department".

A list of standard agency names needs to be prepared, so that bibliographic input can follow the standard name and so that index programs run on the Catalog, Journal, and Correspondence data bases can put related items together.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

Eventually, to reduce redundancy in input, an Identfile-like table might be built to allow conversion of agency idents to output of full agency name.

Added Provision Needed: Programs are needed to reformat coded bibliographic input into citations suitable for lists of references, in addition to the programs now existing that format for indexes and for full catalog-card format.

RETRIEVAL OF INFORMATION BY THE KNOWLEDGE WORKER IN HIS OFFICE

RECOMMENDATIONS FOR USE IN A WORKSHOP OFFICE 4e5

The online retrieval aids available to the Knowledge Workshop make retrieval of online dialogue a capability of great value and even greater potential. At present, there are missing components which when supplied will make the Office Worker's terminal his point of retrieval for all information which has come to his attention. Added provisions are needed as described in this section.

KIRK 17-JAN-74 08:49 21497

Status of SCHOLAR and OFFICE-1

OFFICE-1 has made it over most all of the hardware hurdles and should be up in a matter of weeks.

KIRK 17-JAN-74 08:49 21497

Status of SCHOLAR and OFFICE-1

At his request, through Laura Gould, Allan Collins (AMC) will be removed from the group: SCHOLAR. SCHOLAR's status when OFFICE-1 is available will be, like other NIC users, all files and directories moved to OFFICE-1. There will be a transition period during which everything will be backed up on SRI-ARC as well However, since new NLS will be running here at SRI-ARC but not on OFFICE-1 for some months after both are up, Dirk vanNouhuys (dvn) is taking to Jim Norton (jcn) about special arrangements for SCHOLAR people to use SRI-ARC during that time. 1

Status of SCHOLAR and OFFICE-1

(J21497) 17-JAN-74 08:49; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /SCHOLAR; Sub-Collections: SRI-ARC SCHOLAR; Clerk: KIRK;

DLS 17-JAN-74 12:21 21498

Trip to SRI...KWAC Seminar

TRAVEL DUTY REPORT 1

Name(s) of Traveler(s): 1a

Duane Stone 1a1

Name and address of place(s) visited: 1b

Stanford Research Institute
Menlo Park, Calif 1b1

Period covered 1c

From: 1c1

09 Jan 74 1c1a

To: 1c2

16 Jan 74 1c2a

# of days: 1c3

8 1c3a

Purpose of visit: 1d

To attend the first Knowledge Workshop Architects' meeting 1d1

Persons contacted: 1e

Staff of the Augmentation Research Center at SRI
ARPA--Connie McLindon
BELL CANADA--Inez Mattiuz
SRI--Tom Humphrey 1e1

Minutes available? (yes or No--if yes when and where): 1f

No 1f1

Contract Number(s): 1g

F30602-74-C-0076 1g1

Project Number: 1h

2541 1h1

Task Number: 1i

DLS 17-JAN-74 12:21 21498

Trip to SRI...KWAC Seminar

01 1i1

Commitments made? (yes or no): 1j

yes 1j1

Follow up requirements? (yes or no--if yes complete next 3 items) 1k

Date Required: 1k1

31 Jan 74 1k1a

Responsible agency or individual: 1k2

Duane Stone 1k2a

Action Item 1k3

Reply to Forms System design document 1k3a

Summary of events: 1l

The purpose of the meeting was to explore and develop the role of Knowledge Workshop Architect (KWA) in transfering the technology developed by the ARC to the organizations rpresented. The KWA serves to design procedures for application of AKW technology and methods within his environment and to feed back information about system deficiencies to the system developers. 1l1

The meeting was in the form of an intensive seminar, with talks given by the leaders of the principle functional divisions of the ARC, (Development, Operations, Analysis, and the Network Information Center). Advanced training was given the architects by various members of the ARC. Details on all aspects of the Seminar are available from the undersigned. 1l2

In addition to the KWA seminar, a meeting on the Forms system was held. SRI has not spent any appreciable time working directly on the Forms system. They have been developing a query system, which will be used with the new version of NLS. It may also be useful in the querying of data bases gathered as a by-product of filling out forms using NLS. Their current proposal for the forms system was reviewed. It includes interfacing with the Data Computer over the ARPANET. ARC management expects a critical review of this by RADC, since it involves considerably more commitment of manpower and dollars than originally anticipated. A meeting with the undersigned and FJT is requested as soon as possible. 1l3

Trip to SRI...KWAC Seminar

The Utility is still having birth pains. Different parts of the DEC hardware have failed and most recently the BBN Pager has totally collapsed. A new pager is being shipped to TYMSHARE. 1 Feb is now the earliest anticipated date for start of the Utility. 1l4

Date: 1m

17 Jan 74 1m1

Symbol: 1n

ISIM 1n1

Traveler: 1o

Duane Stone 1o1

DLS 17-JAN-74 12:21 21498

Trip to SRI...KWAC Seminar

(J21498) 17-JAN-74 12:21; Title: Author(s): Duane L. Stone/DLS;
Distribution: /JLM EJK FJT RHT2 CKM(help yourself if you can use this);
Sub-Collections: RADC; Clerk: DLS;
Origin: <STONE>TRIP.NLS;3, 17-JAN-74 12:19 DLS ;

DLS 17-JAN-74 12:27 21499

Joborder numbers

old and probably out of cdate, but need the space

DLS 17-JAN-74 12:27 21499

Joborder numbers

Job Order #	TITLE	RESPONSIBLE ENG	1
06DMODEA	DATA EXCHANGE AGREEMENT	BUCCIERO	2
60DMOIRD	IR AND D SITE SURVEY	BUCCIERO	3
06DMOPAT	PATENT REVIEW	BUCCIERO	4
06DMOUPS	UNSOL PROP EVAL	BUCCIERO	5
06DMTTCP	TTCP	BUCCIERO	6
06DMTY00	TDY FUNDS PROJ 06DM	GIORDANO	7
09670111	Net Info CTR Comp Augment	Stone	8
12660001	Microform System	Palaimo	9
1266TY00	TDY Funds Proj 1266	Osinski	10
25410101	Workshop Utility Service	Stone	11
28010001	Cirad	Tomaini	12
28010002	Cirad	Tomaini	13
28010003	Bolt Beranek Newman	Tomaini	14
28010004	Harvard Univ	Tomaini	15
28010005	Harvard U Operating Sys	Tomaini	16
28010006	PD ESD Travel Funds	Tomaini	17
28010007	Secure Oper Sys Design	Tomaini	18
31050102	Cip Stands Data Auto	Lombardo	19
31050103		Lombardo	20
31760001	Rad Test Supp Oper Amplif	Tomaini	21
31760002	Rad Test of Satelite Comp	Tomaini	22
31760003	Int Thermal Cir Aero Appl	Tomaini	23
31760004	High Effic Power Conv	Tomaini	24
31760005	Test Rad Hard Pur Supply	Bucciero	25

Joborder numbers

31760006	Hughes Acft Test Plan	Bucciero	26
3170007	Radiation Test Program	Bucciero	27
404L0610	ABN Inst For AN/ARN-xxx	Reed	28
411L0002	AWACS Data Dis Conf GP	DeMinco	29
427M0101	Space Comp Ctr	LaForge	30
427M0201	Norad Comp Ctr	LaForge	31
428A0200	TIPT Support	Robinson	32
450A0101	Eng Supportloran-DSPO	Lombardo	33
481B0000	ADV ABN Command Post	Smith	34
481BTY00	TDY Funds Proj 481B	Smith	35
485L0401	Initial TACC Automation	Bucciero	36
55190125	Maint Des Dig Sys & Equip	Saparito	37
55500101	Gen Purpose Assoc Process	Reimann	38
55500102	Maint Concept Assoc Proc	Saporito	39
55500103	Large Scale Info Systems	Previte	40
55500104	Time of Arr Assoc Proc	Previte	41
55500114	Assoc Proc Cost Study	Previte	42
	Proj Mgt & Admin		43
	A.P. Operating System Design		44
	A.P. Language Studies		45
	A. P. Testbed Instrument		46
	A.P. Design Spec Level		47
	A.P. Microprogramming		48
	A.P. Eval in Comm		49
	A.P. Testbed I/O		50

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	A.P. Tech Management		51
	A.P.Auto Track Appl Prog		52
55500116	Rent IBM Comm Terminals	Previte	53
55500117	Assoc Proc Comparat Anal	Vito	54
55500119	Rent IBM Comm Terminal	Nelson	55
55500120	Assoc Prcs Appl Previte		56
55500121	Simda off Line System	Reimann	57
55500122	Assoc Process Appl Study	Panara	58
55500124	Gen Purpose Assoc Proc	Panara	59
55500302	RAD Hard Mis IO Solid ST	Panara	60
55500303	Adv CMOS Circuit Techncl	Panara	61
55500304	Int Comp Simul Modular SP	Panara	62
55500404	DM-1 Remote Query & Recov	Bergstrom	63
55500405	DM-1 Product Sys	Bergstrom	64
55500408	DM-1 Training Document	Landes	65
55500411	DMS DATA Coll JTSA	Sliwa	66
55500412	DMS Eval Methodology	Sliwa	67
55500413	DMS Security JTSA	Sliwa	68
55500414	DMS For Rel Annal Center	Bergstrom	69
55500415	WWMCCS Software Support	Sliwa	70
	cobol/Integr Data Stor		71
55500416	DM-1 Testing for AFDSC	Bergstrom	72
55500603	Netwk Info CTR and Comp	Stone	73
55500801	Cert Rel Timeliness	Panara	74
55500802	Software First Design	Panara	75

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55500901	ADP SYS Security	Panara	76
5550TR01	TDRS Proj 5550	Panara	77
5550TY00	TDY Funds Proj 5550	Panara	78
55810001	Software Reliability	Nelson	79
	Auto Verification Sep		80
	Therom Proving		81
55810002	Computer land Compilers	Nelson	82
55810003	Software Valid Document	Nelson	83
	HOL Validation Sep		84
	Documentation Support		85
55810004	Mgt Info Sys Dev Eval	Stone	86
	Baseline Mgt System		87
	M1s/ISI Branch		88
	ARPA Network		89
	AHI Training		90
	AHI Terminals		91
	AHI Eval Methodology		92
55810006	Data Mgt Sys Development	Iuorno	93
	Multics DMS		94
	Modeling Transaaction Proc		95
	DM-1 Modeling		96
55810204	Jovial Lang Spec Update	DiNitto	97
55810205	Jovial Imp Tool JOCIT	DiNitto	98
55810206	Large Scale Info Systems	McNamara	99
55810207	Math Tech Anal & Des Comp	Iuorno	100

Joborder numbers

55810208	DM-1 Implementation	Bergstrom	101
55810209	AHI Evaluation Support	Stone	102
55810210	Integration Transact Proc	Liuzzi	103
55810211	Math Tech Anal & Ees Comp	Iuorno	104
55810212	Info Retr Research Supp	Giordano	105
55810213	Large Scale Info Systems	McNamara	106
55810214	Handprint Char Recog	Palaimo	107
55810215	DM-1 ERR Anal Maint	Van Alstine	108
55810217	AHI Line Printer	Lawrence	109
55810218	Computer Facility Support	Thayer	110
55810219	Auto Verification System	Robinsonn	111
55810220	Exec 310 Terminal	Stone	112
55810221	Eval of AHI Sys Support	Bair	113
55810222	GCOS Mult File Tran FAC	Rzepka	114
55810223	Quan Meth Analy Comp DMS	Wingfield	115
55810224	Holmes Tycom AnsII Term	Stone	116
55810225	IO Serial Printer	Stone	117
55810227	AHI Eval Support	Bair	118
55810228	PD ESD Software C R and T	Robinson	119
55810229	Computer Security Techsty	Iuorno	120
55810230	Holmes Tycom 38RSR ASCII	Lawrence	121
55810231	Software Reliabil Study	Cellini	122
55810232	TI 733 KSR Full ASCII	Lawrence	123
55810233	Beehive Terminals	Normand	124
55810234	Word Proc Sys Study	Stone	125

Joborder numbers

55810235	Execuport 310 Page Printing Trans	Stone	126
55810236	NLS Service	Stone	127
55810237	Computer Security Tech sty	Iuorno	128
55810238	Anal of Struct Prog Tech	Roberts	129
55810239	Computer Rental Maint	Rossi	130
55810240	GCOS Investigations	Liuzzi	131
55810241	GCOS Simscript Model	Liuzzi	132
55810242	Secure Data Mgt Sys	Rzepka	133
55810901	Comm Multiplex Assoc Proc	Reimann	134
55811201	Jovial Reference Manual	Dinitto	135
55811202	Jovial Valid Sys Jcus	Robinson	136
55811203	Stats on Jovial Language	White	137
55811204	Jovial Lang Compiler Spec	DiNitto	138
55811205	Auto Jovial Converter	Ives	139
55811206	Comp Perf Crit Meas Stdy	White	140
55811207	Compiler Optimization Sty	Capt Ives	141
55811208	Jovial J73 Spec	Capt Ives	142
55811209	Ext of Harvard ECL Prog Sys	DiNitto	143
55811402	Software Modeling Studies	White	144
5581CM01	Execuport Maint	Stone	145
5581MS01	Rental of BR 700	Stone	146
5581MSAA	Hardware Maint	Rossi	147
5581MSAB	Supp and Equip	Rossi	148
5581MSAC	Leased Comm	Rossi	149
5581MSAD	Keypunch Rental	Rossi	150

Joborder numbers

5581TR08	TDRS Proj 5581 5581	Tomaini	151
5581TY00	TDY Funds Proj 5581	Bucciero	152
55970207	Math Tech Anal & Des Comp	Bucciero	153
55970237	Dielectric Memb Disp Tube	Bucciero	154
55970428	Airborne Group Display	Carrier	155
55970430	Plasma Display Color Tech	Carrier	156
55970437	Plasma Display Interact	Carrier	157
55970903	Interactive Graphics Soft	Carrier	158
55970904	Graphic Software Tech	Palaio	159
5597TY00	TDY Funds Proj 5597	Loreto	160
633A0001	Cobra Dane	LaForge	161
65230127	Comm Processor Sys CPS	Bucciero	162
65280105	Operation Rel Ana Center	Schramp	163
683J0001	Assoc Prcs Real Time Data	Reimann	164
93390101	Data Hand Sup Air Staff	Stone	165
99910000	Management/Supervision	Tomaini	166
99912801	Proj Form and Management	Tomaini	167
99915550	P5550 Overhead	Panara	168
99915581	Proj form and management	Bucciero	169
9991DAIS	Radc part dig av info sys	McClean	170
9991MASI			171
9991SA85	SADPR-85	Morreale	172
99920000	Administration	Tomainis	173
99930000	Technical Support	Tomaini	174
99930IRD	Ir & D Site Survey	Wheeler	175

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9993MASI	MASIS	Bucciero	176
99940000	Training	Barnum	177
9994SYMP	Symposia	Bucciero	178
9994TRNG	Training	Barnum	179
99954000	Annual Leave	Tomaini	180
99955000	Sick Leave	Tomaini	181
99956000	Other Leave	Tomaini	182
99956MIL	Military Duties	Patterson	183
99960000	Miscellaneous other	Tomani	184
R1760001	WWMCCS Testing	Liuzzi	185

DLS 17-JAN-74 12:27 21499

Joborder numbers

(J21499) 17-JAN-74 12:27; Title: Author(s): Duane L. Stone/DLS;
Distribution: /RJC DLS; Sub-Collections: RADC; Clerk: AAC;
Origin: <STONE>ROCSAVE.NLS;1, 17-JAN-74 12:25 DLS ;

TFL 17-JAN-74 14:07 21500

Base Communications Review- Attendes

Captain	John J. Ritenour, Jr.	Hq AFSC/DOMA	Autovon 465-2295	1
Captain	Douglas L. Worden	Hq AFSC/EPPB	Autovon 465-3145	2
Captain	Rodney G. Hannes	CCPC/DOME	Autovon 735-2076	3
MSgt	H. T. Middlebrooks	CCPC/DOMF	Autovon 735-2633	4
Captain	Bruce J. Bohn	Hq SAC/DOKS	Autovon 271-5351	5
Mr.	James E. Diggins	Hq ESD/DCWS	Autovon 478-5415	6
Captain	Ralph A. Ovalle	Hq AFSC/XPQC	Autovon465-2811	7
Major	Robert J. Howell	Hq AFSC/DONO	Autovon 465-3362	8
Mr.	Alfred R. Butt	Hq NCA/DONK	Autovon 587-4371	9
LtCol	Harry H. Kimball	2019th CS/CC	x-2019	10
Mr.	George E. Brunette	RADC/DCC	x-3071	11
Mr.	John Palaimo	RADC/ISIS	x-7013	12
Mr.	Richard C. Benoit, Jr.	RADC/DCLT	x7751	13
Mr.	Lawrence Doubleday	RADC/DCC	x-3071	14
Mr.	Ralph L. Marks	RADC/DC	x-2356	15
Captain	George H. Becker	RADC/DOT	x-3046	16
LtCol	Leon L. Kortz	RADC/XP	x-7052	17
DR.	CP Crocetti	RADC/XP	x-7052	18
Mr.	A. R. Pinch	RADC/XP	x-7052	19
Lt	Ronald Foss	RADC/DCCN	x-3462	20
Major	R. D. Smith	RADC/DCL	x-7667	21
Mr.	John D. Kelly	RADC/DCL	x-7667	22
Dr.	Fred I. Diamond	RADC/DC	x-4630	23
LtCol	John C. Squires	AFSC/LO	x-7809	24
Mr.	J. W. Hyde	RADC/DOT	x-3046	25

Base Communications Review- Attendes

Mr.	G.B.Gould	NCA/EPEGD	x-7725	26
Mr.	A.J. Uryniak	RADC/DCCN	x-3041	27
Lt.	Douglas C. Hunt	NCA/DONK	x-4371	28
Mr.	David A. Griffith	RADC/DCCN	x-3209	29
Mr.	John R. Huckaby	NCA/EPELC	x-7676	30
Mr.	Robert J. Kenyon	RADC/DCL	x-2355	31
Mr.	Allan A. Kunze	RADC/XP	x-4733	32
Mr.	B. Jette	NCA/EPELC	x-7676	33
Lt	Douglass W. Donnell	2019th Comm Sq	x-3082	34
Dr.	Irving J. Gabelman	RADC/CA	x-4512	35
Major	William W. Patterson	RADC/ISCA	x-3461	36
Col	Harry L. Winberg	RADC/DC	x-4911	37
Mr.	Charles A. Strom Jr.	RADC/DCS	x-7809	38
Rank	Name	Organization	Telephone	39
Major	Dale E. Seastrom	Hq USAF/PRCON	Autovon 225-0756	40
Captain	Gary G. Moss	Hq AFSC/DOMA	Autovon 465-2295	41

TFL 17-JAN-74 14:07 21500

Base Communications Review- Attendes

(J21500) 17-JAN-74 14:07; Title: Author(s): Thomas F. Lawrence/TFL;
Distribution: /EJK; Sub-Collections: RADC; Clerk: TFL;

JHB 17-JAN-74 14:10 21501

Response to request (Bell - Feldman) for L-10

Hi Phil: There is no program to rearrange a file in such a way. This is a very esoteric job, and it would not be practical to go to the extent of writing a program to do something that may be done once or twice at the most. This is reenforced by the fact that this is a fairly easy process on DNLS...merely a matter of pointing to the old and new locations on a split screen. Since you do not have DNLS available as yet, I'll do it for you this one time (it is possible on TNLS but not as easy).
I'll be looking forward to your visit in March. The weather should still be quite an improvement over that in Montreal 1

JHB 17-JAN-74 14:10 21501

Response to request (Bell - Feldman) for L-10

(J21501) 17-JAN-74 14:10; Title: Author(s): James H. Bair/JHB;
Distribution: /PF IMM(for your information) JCN(for your info);
Sub-Collections: SRI-ARC; Clerk: JHB;

JRP 17-JAN-74 14:38 21502

post usage

steve,
i am interested in using the post facility. would you send me a message at isi care of ucsb attn: john pickens as to what i must do to get it set up? i scanned your documentation but havnt read it closely yet. thank you , john pickens

p.s. how much disk space is absolutely required to use the facility? can the program be put in a general library? 1

JRP 17-JAN-74 14:38 21502

post usage

(J21502) 17-JAN-74 14:38; Title: Author(s): John R. Pickens/JRP;
Distribution: /SRW; Sub-Collections: NIC; Clerk: JRP;

JHB 17-JAN-74 15:01 21503

Bell L-10 programming capability

Re: Development of L-10 programming capability in Bell Canada, 11-JAN-74

1

Mike: This is in response to your 3 inquiries on 11 Jan. You have already received notification that Penny Napke has her directory. 1a

We have considered the request for training for Penny as an L-10 programmer, and are in agreement that she should be trained. We do not feel it is necessary that she come to ARC for that training...it probably could be arranged if you felt that it was very important. As an alternative, we can offer online training via remote conferencing and phone link. A sharp programmer could probably pick up the necessary help beyond the users manual this way as easily as in person. Programming training usually involves writing programs and getting them to work, and then receiving coaching for difficult bugs. It would also be a good experience in using the technology we are applying as an alternative to conventional means, ie. traveling. It would also be easier to commit resources for this in the time frame you suggested. As for a March 1 deadline, this depends on many variables such as your programmer's aptitude. I do not think it appropriate to talk with you about deadlines -- that is between your programmer and you -- but rather we will commit some of the resources allocated to you to this end before March. 1b

The Hazeltine 2000 has been running a little on DNLS by now, and looks a little better than initially. It still does not have the character quality of the Delta Data. It also has a smaller screen (width = 72 cols., height = approx. 6 lines less) and the cursor leaves a trail and edge blips that are distrating. Although our programs will support DNLS on it with a fairly high recreate screen speed, I really suggest you see it somehow...perhaps you could contact Hazeltine. 1c

I hope this answers your questions, I'm waiting to hear your response so that we can work things out in further detail. 1d

JHB 17-JAN-74 15:01 21503

Bell L-10 programming capability

(J21503) 17-JAN-74 15:01; Title: Author(s): James H. Bair/JHB;
Distribution: /IMM(for your info) NDM(preliminary info) JCN(fyi) MIKE;
Sub-Collections: SRI-ARC; Clerk: JHB;

MDK 17-JAN-74 15:10 21504

NIC Programming Needs: January 1974

This paper describes many NIC programming needs, in four categories ranging from "urgent and critical" to a "wish list". The paper includes a few new ideas not discussed before.
If you are involved in or interested in the evolution of the Journal, the Identsystem, the Catalog System, the Query System, the Output Processor, or Network-related systems and interfaces, I'd really appreciate your taking the time to read this (it's long) and comment on it.

NIC PROGRAMMING NEEDS as of January 1974 1

NOTE: This list of NIC programming needs is divided into four main categories: 1a

1. URGENT, CRITICAL, AND NEEDED IMMEDIATELY IF NOT SOONER 1a1

2. VERY IMPORTANT, AND NEEDED AS SOON AS POSSIBLE 1a2

3. IMPORTANT BUT NOT NEEDED AS QUICKLY AS THOSE LISTED ABOVE 1a3

4. WISH LIST (I WISH WE COULD HAVE THEM NOW) 1a4

The context for all of these needs was described in the document "Network Information Center: Goals, Problems, Requirements" (MDK 21-NOv-73 --20439,) 1a5

Within each main category, we have attempted to list the needs in decreasing order of priority. Also, all items in the first category are of higher priority than items in the second category, etc. 1b

In response to this list of needed programming tasks, the NIC would like to have a document from Development stating 1c

- which of these tasks are going to be undertaken, 1c1

- what is the approximate start date and estimated completion date of each task, and 1c2

- who will be working on the tasks. 1c3

The specifications given for each of the needs vary in comprehensiveness. 1d

This is because these specs are by no means intended to be definitive. 1d1

Rather, they are intended to indicate the scope of the work as we see it, and to provide a basis for meaningful discussion, estimates, assignments, etc. 1d2

We would expect that further discussions are necessary on every item listed, in order to come to final agreement on what is to be done in each case. 1d3

I wish to acknowledge the contributions made by Jake Feinler, Jeanne North, Marcia Keeney, Kirk Kelley. and Susan Lee, Their

criticisms and suggestions for improving an earlier version of the document were most helpful to me. 1e

1. URGENT, CRITICAL, AND NEEDED IMMEDIATELY IF NOT SOONER 2

ARPANET DIRECTORY 2a

Format those portions of the Directory that were done by hand (or not at all) for the first issue, namely 2a1

the major individuals located at each Host and Associate organization, 2a1a

the Computers, Servers, and Abbreviations tables, 2a1b

all the Host Names and Host Addresses tables, and 2a1c

the Programs tables. 2a1d

HOSTNAMES Data File 2b

Produce a sequential ASCII text file of Official Network Hostnames, for use by other Network Hosts. The file format is to be based on the specs described in RFC's 606 and 608. 2b1

TENEX System Enhancements 2c

Provide constraints on NIC users logging in to OFFICE-1, as follows: (This idea was described by Paul Rech in --MJOURNAL,20861,1:wy) 2c1

- partition the quota slots into increments of X minutes. 2c1a

  X is initially to be about 30, but must be programmed as a resettable parameter to make it easy to modify X as usage and experience dictates. 2c1a1

  The purpose is to generate many effective slots for NIC users, given that there are only four actual slots in the group allocation scheme. 2c1a2

  Perhaps also the slots should be reserved partly for west-coast users, partly for east-coast users to remove the time-zone bias (details yet to be defined, of course). 2c1a3

- provide that auto logout occurs for a NIC user after X

minutes of connect time (the same X as above, of course), with a warning message to appear Y minutes before the logout. 2c1b

(Y should also be a resettable parameter, its initial value being suggested as 5.) 2c1b1

- provide that a NIC user cannot log-in within Z minutes of a log-out by him (except perhaps through the off-quota mechanism, or by being placed at the end of the queue in a lower priority, "bumpable" status). 2c1c

(Z is also to be a parameter, like X, with Z initially set at 60). 2c1c1

- provide that a NIC user attempting to log-in when all four NIC user slots are full would be put on "hold" if he chooses to do so. 2c1d

The model I have in mind is any telephone reservation or information system, in which the caller is automatically put on hold until an operator is free to service his call. 2c1d1

The analogous mechanism here of course would be a queue of log-in attempts, managed on a first-in first-out basis (relevant info to keep might be time of attempted log-in, log-in parameters (account, password, etc), and expected time a slot would be free). 2c1d2

The Network connection for each user on the queue should be kept open for say an hour, so that the person didn't have to go through that again. 2c1d3

In fact if he did break the connection, that would lose his place in the queue. 2c1d3a

An approximate time of log-in slot availability could be computed and made known to the user, and he could be required to take his turn within some grace interval (say five minutes) of that time, or lose his place on the queue. 2c1d3b

The queue should be interrogatable by a user who is on it: namely what's his status, how much time till a slot becomes available, etc. 2c1d3c

- provide a mechanism to allow users to schedule use of the system ahead of time: 2c1e

Allow a user to schedule his time of log-in (within say five minutes), and the amount of time to be used (not upward modifiable once logged in). 2c1e1

There should be only one quota slot (of the four NIC slots) usable by the scheduler. Users would vie with one another, no two users being schedulable at the same time. 2c1e2

A user should be able to interrogate the scheduler to refresh his memory about the committment he's made, and rescheduling should be allowed. 2c1e3

Unscheduled time, if any, should be made available (in the X-minute log-in mode described above) to ordinary NIC users at the time they try to log-in. 2c1e4

- provide a mechanism to restrict the software resources that a NIC user can access. 2c1f

Initially, I contemplate restricting ordinary (i.e., "X-minute") NIC users to QUERY, MDK's "HELP" (to be implemented imminently), the JOURNAL, and SNDMSG, with no general NLS access provided except for the scheduled users. 2c1f1

JOURNAL System Enhancements 2d

Modify Network Journal SUBMISSION to allow inclusion of preassigned Journal numbers, and of RFC numbers (both preassigned and non-preassigned). 2d1

QUERY System Enhancements 2e

(NOTE: I really don't want to wait for the new Query system before these modifications become available as the standard mechanism; but I do of course want the modifications in the new Query as well.) 2e1

Make the greeting message in current Query be taken from an NLS file, not from within the Query code as at present. 2e2

Clean up the interface to the available Query data base files. 2e3

Query should determine what files are available to it by reading an NLS file. 2e3a

That NLS file would contain a list of available Query files, one per statement, each statement to include 2e3b

a) the letter used by the Query user to get Query to access that file (like "a" for arpanet news, "r" for resource notebook, etc), I'm not sure we will want to continue to take this approach in the new Query, given the "menu" capability. 2e3b1

b) the text that gets echoed to the user when he types an o.k. letter, and 2e3b2

c) the NLS link to the file, 2e3b3

d) the text that the users sees when he asks for a list of available Query data bases (clearly, something like "SHOW QUERY DATA BASE" would easily get the list for the user). 2e3b4

Make NIC QUERY work on NIC LOCATOR 2e4

That is, a user need not use LOCATOR at all, but would get all the same stuff via QUERY. 2e4a

This includes getting into files that are not formatted for QUERY "showing". 2e4b

(Non-Query files could be merely typed out in toto, the typeout being stoppable by something like <control-o>, which would put the user back under control of QUERY. 2e4c

(Or, if ordinary NLS viewspecs were obeyed by new Query for file links, then probably nearly every NLS file would be amenable to access from Query, given the appropriate viewspecs, as pointed out by Kirk Kelley.) 2e4d

IDENTSYSTEM Enhancements 2f

We need to expand the content of the IDENTFILE, and expand the capabilities of the IDENTSYSTEM, as follows: 2f1

- Need to include Liaison, Station Agent, and Principal Investigator under each Host or Associate branch; 2f1a

the information would be MAINTAINED there by the identsystem automatically when a NIC staff member modified the Network Liaison, Station Agent, or Principal Investigator Groups.; 2f1a1

the same information would be automatically copied into the relevant individual's "Function" category by the

identsystem, for example in the form "Liaison for SRI-ARC". 2f1a2

the individual would not be allowed to modify his "Function", except by notifying NIC staff 2f1a3

- Need to make the identsystem automatically do the right things in an individual's branch when he is added to or deleted from a NIC ident GROUP 2f1b

Doing the "right things" means DYNAMICALLY MAINTAINING a "Group" subcategory within each individual's branch, which contains the idents of all groups to which the individual belongs 2f1b1

- Need to make the identsystem easier to use. For example, 2f1c

The present stuff with respect to mail address is abyssmal; although it has been reprogrammed almost to my satisfaction, the new mail address stuff has never been brought up in the running system, for reasons that are unknown to me. 2f1c1

In addition there are some cryptic prompts which could be much clearer, such as 2f1c2

" ... [type] LE ... " 2f1c2a

I presume that means "literal escape"; why not just say "<control-v>" 2f1c2b

- Need to remove the capability that allows a user to OBTAIN an ident and to enter new data about it. 2f1d

I think we should continue to let a user MODIFY his data, but only after the NIC staff has entered it initially in the correct form 2f1d1

NIC CATALOG System Enhancements 2g

Improve the on-line format (and hence readability) of the files generated by the Catalog system. For example, author and title-word indexes. 2g1

(Ultimately this area of on-line files needs much more support than merely reformatting, but that is not covered in this document of needs because I haven't got my head clear on this yet.) 2g1a

2. VERY IMPORTANT, AND NEEDED AS SOON AS POSSIBLE

3

IDENTSYSTEM Enhancements

3a

Modify the identfile and identsystem to include or (perhaps better) automatically update in situ some of the information currently duplicated and separately maintained in Feinler's "HOSTADDR MASTER" file. This info is Host name and its US Mail address, liaison and his phone number, etc.

3a1

In other words, what I envision is that, in response to an update to the identfile for these parameters, the identsystem would also open the HOSTADDR MASTER file and update it appropriately.

3a1a

In addition, the identsystem should create a file that could be used by a separate, yet-to-be-written, user program to update the Personnel sections of the Resource Notebook

3a1b

Generate an ASCII sequential file of pertinent (though as yet not fully defined) ident and address information for use by any Network Host via FTP.

3a2

Design and implement a mechanism to more efficiently and expeditiously handle "deadwood" in the ident file.

3a3

I think it's deterimental to the running system that such deadwood is currently carried around on-line to burden the Journal and NLS every time these systems access the identfile.

3a3a

It seems far more approriate to carry that data in a separate "deadwood" file. For the problem of not wanting to re-assign already used (but effectively dead) idents, the identfile could retain a terse list of such idents as it does at present; but it need not retain the address and other info of these "dead" idents, as it still does.

3a3b

JOURNAL System Enhancements

3b

Make the Journal subcollection field automatically record the subcollections of the ADDRESSEES, as well as the subcollections of the author as is done at present.

3b1

This is particularly important when items are sent from ARC to NIC users in response to items originally generated by those NIC users. In these cases at present, the NIC users'

documents get into the NIC subcollection, but the ARC (or NIC staff) responses DON'T, an unacceptable dialog support "feature". 3b1a

Make the category "non-recorded mail" automatically include ANY document submitted without a title, as well as ALL messages (the title-word and other Journal indexes are cluttered with junk; this I believe would remove a large portion of that junk). 3b2

In addition, of course, a note should be made in the origin statement of the Journal document that it is "non-recorded"; and this label should be printed in the upper right-hand corner along with the standard Journal identification data. This would greatly alleviate filing problems at the NIC. 3b2a

Speed up the "number" system by having a set of unassigned numbers be siphoned off daily from the master file and placed in an easily accessible small file or table. The checking of pre-assigned numbers could still proceed as at present, with all the attendant delays; but the use of non-preassigned numbers would be significantly speeded up by this approach, in my opinion. 3b3

This would also (obviously) immediately make available to the sender the number assigned to the Journal item he has just sent. ... That is, there would be no "deferred" numbers any more. 3b3a

Have a mechanism for introducing comments on a document, and for capturing user-designated references (links) to other documents and incorporating them as backlinks that are viewable with the referred-to document (I'm aware that DSK is doing this now; I include it here as a NIC need for the sake of completeness). 3b4

TENEX /NLS System Enhancements 3c

Fix the bug that makes INTERROGATE and some other ephemeral Tenex subsystems wipe out the address space of DNLS, when you escape via <control-c> to use these ephemeral commands. 3c1

Provide for high-queuing of jobs during the entire process of log-in and of gaining access to NLS and NIC/QUERY 3c2

This would prove psychologically bountiful, I believe. 3c2a

Modify the "WHERE IS" Tenex command to allow searching for individual users by IDENT 3c3

This would let you know where an INDIVIDUAL is located, when he's otherwise effectively hidden behind a site log-in directory such as MITRE-TIP 3c3a

Provide the missing Tenex JSYS that would allow JOBS to be created by running processes, in order to be able to create jobs such as output processor for deferred (background) execution 3c4

Ken Victor has told me that BBN has steadfastly refused to provide this JSYS, for reasons unknown to me. 3c4a

Surely we've got the need to do it and the weight to prevail on BBN to put it in their standard system 3c4b

It would be a very natural, and to me necessary, adjunct to the work KEV is currently doing on making it possible to create new parallel tasks from a running process. 3c4c

Design and build a more elaborate disk space management procedure that includes these concepts (some of these were suggested by Paul Rech): 3c5

a distinction made in the Journal's catalog of numbered documents as to whether a number has been used for an on-line document, an off-line document, or is a pre-assigned number that hasn't been used yet (as opposed to just saying curtly "file not on-line; use exec's interrogate command") 3c5a

and of course, the jump-to-link mechanism should pick this info up for numbered files, and relay it to the user, 3c5a1

perhaps the info could also include the LOCATION and other descriptive data about an off-line document, if this were input by the clerk who "journalized" the document. 3c5a2

IMMEDIATE archiving capability (say within one to four hours) 3c5b

a weekly reminder (perhaps via a subsystem designed for this purpose) to directory owners about the status of their on-line and off-line files, with opportunity via this mechanism to recover and/or archive files 3c5c

an archive status indication that a file's archive status is "pending" ... i.e., has been designated for archiving, but archiving hasn't yet happened 3c5d

a human engineered interface to the archive system whenever the "not-on-line" message is appropriate 3c5e

that is, let the system walk the guy through the archive system's interrogate procedures, rather than leaving him cold to do it on his own 3c5e1

a reasonably large pool of unallocated temporary space that users can use even when their allocation is exceeded, the files in such a space to diasappear at time of log-out (with appropriate notification being given to the user, of course). 3c5f

automatic recovery of files and programs from the archive system when these files/programs are requested by running processes 3c5g

Provide for inter-host file links 3c6

Such links would automatically --- i.e., transparently to the user --- open (and subsequently close) the appropriate FTP and/or TELNET connection, and cause transfer of the file to the directory the user specifies. 3c6a

This should certainly work for NLS files stored elsewhere, but it should especially work for non-NLS files that were stored in some agreed on sequential or hiearchical format. 3c6b

This concept is especially important to the evolution of the Query system and the Resource Notebook, with requirements to access files that are maintained at other Network sites. 3c6c

One interesting associated problem is that a file transferred from Host A to Host B and then from B back to A (no changes having been made, say) should look and function exactly as it did before the double transfer was initiated. 3c6c1

There are MANY design problems here, I know; but this item should receive reasonably high priority for implementation and I wanted to get it on this list of NIC needs, for completeness. 3c6d

NIC CATALOG System Enhancements 3d

Generate and maintain the Group Membership lists and other Group information automatically, not by hand as at present. 3d1

Add MANY additional "stop-words" to the Title-Word indexing programs. 3d2

The present list, used of course to prohibit certain simple words from appearing in the title word index, is egregiously small. 3d2a

NEW NIC Document 3e

Implement a procedure to take certain attribute data from Feinler's "HOSTADDR MASTER" file and prepare a paperback document that is somewhat like the old ICCC scenario booklet (except without scenarios) 3e1

That is, the paperback would contain all the nitty-gritty aspects of using each host ... what is needed to do a backspace character, to delete a line, escape to exec, login and logout, get help, call subsystems, etc. 3e1a

This idea is due to Dave Crocker and Nancy Neigus, among others. I'm not sure we will get USING's agreement to do it; but it sounds to me like a much needed document and I would consider it a "very important need, to be done as soon as possible", if we get agreement to do it (I'm obviously in favor of it). 3e1b

HARDCOPY OUTPUT Processor System Enhancements 3f

Improve the efficiency and usability of the output processor. 3f1

Suggested approaches are: 3f1a

- provide a means to let the o.p. know that there aren't any directives embedded in the text, only in the origin statement. 3f1b

Concurrently, of course, modify the o.p. so it doesn't look for these non-existent directives. 3f1b1

The NIC generates lots of files that meet these conditions. All journal files meet these conditions, also. 3f1b2

- provide new directives to allow, for example, 3f1c

all statements at level one to begin a new page, eliminating the need for .LBS; in the text body; 3f1c1

all single-line statements HAVING SUBSTRUCTURE to begin a

new page if otherwise they would be the last line on a page (this would remove the ugly appearance of so-called "widows", without requiring .LBS; in the text body) 3f1c2

something like Walter Bass' .FAST; directives for special but often occurring situations, 3f1c3

.FAST; had special applicability to certain types of files, making o.p significantly faster for these files 3f1c3a

(these files contained only single line statements, or were files satisfying certain minimum structural organization) 3f1c3b

but .FAST; was never fully debugged 3f1c3c

- provide a means for MACRO directives to be defined by a user, so that he need not type all the directives needed to do an often-occurring task. 3f1d

When this Macro Directive was encountered by o.p., it could get its expanded definition from a library of "canned" macro directives that is available to it, or from a branch in the document that was reserved for such macro definitions but that didn't of course get printed or "obeyed" by o.p. 3f1d1

(The analogy to assembly language macros should be obvious.) 3f1d2

NLS Command Language Enhancements 3g

Provide for Sort/Merge capabilities as described in (MDK --JJOURNAL, 17234, 1:w) 3g1

3. IMPORTANT BUT NOT NEEDED AS QUICKLY AS THOSE LISTED ABOVE 4

IDENTSYSTEM Enhancements 4a

Provide for a new identfile subcategory in the "individuals" branches called something like "user-interests". 4a1

This would contain keywords that only the NIC staff could generate for the individual's branch in the identfile. 4a1a

These keywords would be the basis of a "selective document dissemination" system (SDI); the keywords would be SMALL in

number (i.e.,, covering rather broad categories), and the same ones would be used to categorize Journal docments as well, thereby providing the tie for an SDI system of the near future. 4a1b

MUCH discussion needs to take place on this and the closely related needs discussed elsewhere in this document, but I want to get on record as expressing the seriousness of this need, and the usefulness of consequent mechanisms to implement it. 4a1c

JOURNAL System Enhancements 4b

Modify Network Journal DELIVERY to allow smallish multi-line documents (say up to 20 to 40 lines' worth) to be delivered over the Network to the recipient of Network Journal Delivery. 4b1

(Requested by Jerry Burchfiel, BBN). 4b1a

Have Journal system subcollections generated automatically, based on the new categories of "user-interests" 4b2

i.e., based on the keywords that are entered (by someone, probably NIC staff) for a Journal document. 4b2a

This, together with additions to the NIC Catalog system, the Identsystem, and the Journal Distribution mechanism, would enable a "selective dissemination of information" system (SDI) to be implemented. 4b2b

Speed up the ident checks 4b3

The ident checks could be speeded up by giving self-designated "confident" Journal system users the option --- perhaps one of the set of "user options" --- of bypassing the checks entirely. Then such a user would simply LOSE OUT (i.e., document not sent) for those addressees that subsequently were determined not to have a legitimate ident with journal mail delivery specified. 4b3a

Improve the Journal's delivery citation format. 4b4

Work on this evidently stopped some time ago; I think it's an important need. 4b4a

The "status" information that is provided when submitting a Journal item on-line needs these additions: 4b5

- the name of the file, or SID of the statement, plex, or branch that is being submitted. 4b5a

- ALL default values that the system assigns. 4b5b

- the MESSAGE that has been submitted (if that's what's been submitted), shown in its entirety. 4b5c

Journal formatting programs should be more easily overrideable. 4b6

An item submitted to the Journal should appear in the exact format the author designed, with the Journal information supplied in the header (and footer?) positions, outside the user-formatted areas. 4b6a

This probably includes the need to be able to submit more formal identification of authors (what orgzn?) and of submittal data (when was the document PREPARED, what research contract, etc.), and possibly other data that should go into the origin statement for inclusion on the Title Page of formal documents. 4b6b

Hardcopy for mailing needs re-design. 4b7

One problem is the unneccessary bulk (extra pages). 4b7a

Another problem is that a distinction could appropriately be made between formal documents and informal ones, the format requirements being different for these two cases. 4b7b

NIC CATALOG System Enhancements 4c

Provide a capability to have address labels printed directly from the identfile. 4c1

The labels would be produced on our own printer, using special forms that would be inserted for this purpose (only to be done at night, of course) 4c1a

The need also includes an ability to SELECTIVELY ask for particular labels, for example by a set of idents, including Group idents. 4c1b

The present method of doing this is MANUAL (a card file is maintaine)d, and consequently it is an error-prone procedure, prone to result in incorrect or out of date labels, erroneous group idents, etc. 4c1c

Redesign the Catalog system to run on a more suitable system,

such as UCSB's IBM 360/75 (design specs forthcoming when it's known that this effort will receive committments) 4c2

HARDCOPY OUTPUT Processor System Enhancements 4d

Modify output quickprint and all other hardcopy output procedures to recognize and take the appropriate actions dictated by "Query Links" and "Query viewspecs" ... appropriatte actions to be based on a specific "PATH" to be followed (this path being typed in by a documentation person who would know what the off-line document should look like). 4d1

This will facilitate production of hardcopy documents from a file that is formatted for on-line viewing via Query 4d1a

For example, User Guides could be published directly from the on-line NLS HELP system, and the Resource Notebook similarly. 4d1b

Modify the mechanism of inserting and manipulating Output Processor and Output COM directives, as described in my note on Quasi Partial Copies (IJOURNAL,20574,1:wy) 4d2

The intent is twofold: 4d2a

1) to make directives invisible to viewers (unless they WANT to see them), but without a sacrifice in display refresh time consumed, such as I think would result for example if one of the alternatives being considered for this purpose, namely viewspecs, were used to make directives invisible (think of all that text scanning) 4d2b

2) to make it possible to gain an appreciable speed-up in the output processor itself, since the directive info would be separate from the text (in my opinion, this is quite analogous to having file structure info separate from the text, as we do of course) 4d2c

TENEX /NLS System Enhancements 4e

Make Partial Copies transparent to users, by 4e1

a) not including PC's as output from any of the "DIRECTORY" commands unless the user explicitly asks to see PC's, and 4e1a

b) automatically deleting, copying, etc a PC when the file for which it is a PC is deleted, copied, etc. 4e1b

4. WISH LIST (I WISH WE COULD HAVE THEM NOW) 5

TENEX /NLS System Enhancements 5a

Make NLS available on all (or all Server Host) Tenexes 5a1

Provide for interfile content searching capabilities during a single instance of content searching (I have no specs for this, just a particular need which reflects a more general need for many uses, namely, a higher level language interface to the power of NLS that judiciously combines several current language capabilities into one command) 5a2

QUERY System Enhancements 5b

Provide appropriate interface mechanisms so that RSEXEC or its successor (CCL ?) can connect a user into NIC QUERY. 5b1

Provide inter-host links through FTP/TELNET to other Host on-line documents and subsystems, with an appropriate escape mechanism back to Query 5b2

Provide a command language and appropriate interface mechanisms to enable NIC users to be connected through QUERY to such systems as Lockheed's DIALOG. 5b3

This would be a kind of mini-RSEXEC mechanism that gets a NIC user logged into a system that is operational elsewhere than at the NIC. 5b3a

NIC CATALOG System Enhancements 5c

An "indexing" subsystem could allow a user to scan a document, bug text (specifically, file links in a Journal index, together with author/title perhaps), and thereby cause cross reference info -- namely an index --- to be created. 5c1

The cross ref info could automatically include bugged text and file link, within a designated index category or categories. 5c1a

The categories could be simultaneously displayed on the screen in an automatically generated "category window" that is separate from the file being scanned. 5c1b

These categories themselves could be modifed and edited with appropriate commands directed at the category window. 5c1c

[Note: I don't anticipate that there will be many index categories. These categories would comprise the same set as described elsewhere, under Journal system and Identsystem enhancements, for "selective dissemination of information" (SDI) I don't think we can afford to be comprehensive, just very useful and if necessary redundant.] 5c1d

This mechanism could also provide a basis for the concept of "Personal Information Management System" that Paul Rech has proposed elsewhere (see --JJOURNAL,17394,1:wy). 5c1e

Further discussion and analysis is needed on the specs for such an indexing system, of course. 5c2

HARDCOPY OUTPUT Processor System Enhancements 5d

O.P. must become human engineered so that a user never need know ANY directives, but instead does the whole thing interactively by bugging the screen to indicate for example what words are to be boldface, where the margins are to be, where and what is header and footer info, etc. 5d1

I believe that one could make an entire printed page of info appear on the screen if judicious use were made of level and line viewspecs to eliminate the text that is irrelevant to formatting. 5d2

I imagine this system ultimately in use on a Xerox type of terminal with multiple fonts available on-line to determine layout, etc. 5d3

NIC Programming Needs: January 1974

(J21504) 17-JAN-74 15:10; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: MDK;
Origin: <KUDLICK>NICPROGR.NLS;15, 17-JAN-74 14:53 MDK ;

demo of author branch

(EJK) 15-JAN-74 08:43 21403 trial stuff
(GJOURNAL, 21403, 1:w) 1

(EJK) 15-JAN-74 08:35 21402 Request from Dr. Gabelman for information on MIS
(GJOURNAL, 21402, 1:w) 2

(EJK) 4-JAN-74 08:35 21282 AFCS/NCA/RADC Memo of Agreement - RADC REPLY
(MJOURNAL, 21282, 1:w) 3

(EJK) 28-DEC-73 14:21 21234 Statement of Agreement AFCS/NCA/RADC - (Draft two)
(MJOURNAL, 21234, 1:w) 4

(EJK) 28-DEC-73 12:27 21230 Statement of Agreement NCA/AFCS/RADC (DRAFT)
(MJOURNAL, 21230, 1:w) 5

(EJK) 21-DEC-73 13:24 21162 Greeting
(MJOURNAL, 21162, 1:w) 6

(EJK) 19-DEC-73 12:21 21025 Status of EJK's wife (hit control o if you are not interested)
(MJOURNAL, 21025, 1:w) 7

(EJK) 5-DEC-73 13:59 20722 Info on mtg with barnum+
(MJOURNAL, 20722, 1:w) 8

(EJK) 29-NOV-73 13:53 20636 Supply Summary for Maintenance Purposes
(IJOURNAL, 20636, 1:w) 9

Comments: Bobbie how's about running this out on your old TYCOM. Ifyou feel lucky, do it on bond. Viewspecs nw. 9a

(EJK) 28-NOV-73 14:30 20605 ARPANET Maint.
(IJOURNAL, 20605, 1:w) 10

(EJK) 27-NOV-73 08:37 20570 System Access
(IJOURNAL, 20570, 1:w) 11

(EJK) 19-NOV-73 00:27 20365 ARPA Net Maintenance - ISF letter
(IJOURNAL, 20365, 1:w) 12

(EJK) 18-NOV-73 23:42 20364 viewgraph
(IJOURNAL, 20364, 1:w) 13

Comments: Stoney would you please ask Anne to make a viewgraph out of the stuff I put to gether. At this moment it is highly unlikely that I will be in for the pitch. The best substitute would be FJT if he can be talked nto it. 13a

EJK 17-JAN-74 15:11 21505

demo of author branch

(J21505) 17-JAN-74 15:11; Title: Author(s): Edmund J. Kennedy/EJK;
Distribution: /EJK; Sub-Collections: RADC; Clerk: EJK;

EJK 17-JAN-74 15:15 21506

objective

The objective of all dedicated employees should be to thoroughly analyse all situations, anticipate all problems prior to their occurrence, have answers to these problems, and move swiftly to solve these problems when called upon.... 1

HOWEVER 2

when you are up to your ass in alligators it is difficult to remind yourself that your initial objective was to drain the swamp. 3

objective

(J21506) 17-JAN-74 15:15; Title: Author(s): Edmund J. Kennedy/EJK;
Sub-Collections: RADC; Clerk: EJK;
Origin: <IJOURNAL>20204.NLS;1, 13-NOV-73 13:18 XXX ; Title:
Author(s): Edmund J. Kennedy/EJK; Distribution: /EJK;
Sub-Collections: RADC; Clerk: EJK;
Origin: <KENNEDY>FOBJ.NLS;1, 13-NOV-73 12:46 EJK ;