MDK 20-FEB-74 14:39 22001

uppercase only terminals

Dirk ... Would you please read (kudlick,terminal,1:wy) and tell me if it's an accurate, complete, etc description of how to use NLS from an upper case only terminal ? I get lots of questions about this, so I plan to put this write-up in a file at OFFICE-1 accessible by NIC users.

1

uppercase only terminals

(J22001) 20-FEB-74 14:39; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /DVN; Sub-Collections: SRI-ARC; AccessList: DVN MDK;
Clerk: MDK;

Some Dialog Support Ideas for the Next Couple Years

Ideas (not fully developed) for Dialog Support development over a couple-year period. 1

JOURNAL AND IDENT SYSTEM RE-WRITE 2

Absolutely the most important item on the list!! If this project doesn't get top priority, we will one day -- sooner or later -- see the world come crashing down upon us! 2a

Should assume a multi-host environment as we've discussed and partially designed, with well defined modules -- cataloger, archiver, recorder, publisher, registrar, etc. -- distributed and replicated throughout the Net. 2b

Flexible access controls are to be built in from the start. 2c

This topic has been labeled 'Multi-Site Journal System', but it's important to realize that the Ident sytem (i.e., its replacment) is intimately involved -- it's probably the most important and complicated of all the modules, in my view of the world. 2d

BACKGROUND NETWORK JOURNAL SUBMISSION AND NLS FILE RETRIEVAL 3

It turns out that there's too much overhead associated with submitting a Journal article or formatting, converting, and retrieving an NLS file to require that it happen in-line with the Network request that initiates it. 3a

I therefore suggest that we create a background process running NLS to respond to such requests, interfaced to the outside world via the mail system. That is, permit a user to submit a journal article or request a copy of a specified NLS file, formatted in a particular way (e.g., via the Output Processor) by sending an apropriate message via Network mail to JOURNAL@NIC. The message would specify a Network return addr to which the background process would make reply, and, for the case of file retrieval, the host and filename (along with login parameters) where the file is to be sent. 3b

Journal submission by this mechanism would provide full flexibility with regard to specification of comments, preassigned catalog numbers, RFC numbers, etc. 3b1

JOURNALIZATON OF SEQUENTIAL FILES 4

We've long been aware that many journalized documents originate as sequential files. We've long been aware of the difficulty of converting sequential files to tree-structured ones in a reasonable way. Alghough I know that much more work can be done

in the area of defining and implementing a variety of clever conversion routines, I believe that that's not the real answer to the problem. In general, you don't make a guy, who's spent time and effort formatting his file, happy by massaging it -- by ANY program (programs don't come that clever). 4a

I suggest that we permit sequential files to be journalized (and stored as such), just as there are handles for journalizing hardcopy documents. 4b

PERSONAL MAIL-MANAGMENT SUBSYTEM IN NLS 5

No work has been done by us in this area. We need an equivalent of READMAIL, but presumably even more powerful. 5a

DRAFTS, COMMENTS, AND ACKNOWLEDGMENTS 6

Formalize the notion of drafts, comments, and acknowledgments, so the journal can make decisions (e.g., about routing) on the basis of whether or not a document has been acknowledged by certain individuals, etc. 6a

GENERALIZED ROUTING FOR JOURNAL DELIVERY 7

We can, I think, give the user a great deal of flexibility about the routing of a document to the people in its distribution list (I would expect sequential, and, of course, the current parallel delivery to fall out of this). 7a

A distribution list would, in the general case, be more complicated than it currently is. For example: 7b

Distribution: (CHI JDH DCW) then (RWW or 25-FEB 5PM) then ack JEW 7b1

meaning: 7c

Distribute in parallel to CHI, JDH, and DCW; when and if positively acknowledged by all of them, send to RWW. Then send finally to JEW, either when RWW has acknowledged or by 5 pm, Feb 25, whichever comes sooner. 7c1

Both the syntax and example are contrived, and more constructs could be defined, but the idea, I think, is clear. 7d

DELIVERY OF NETWORK MAIL TO INITIAL FILES 8

MESSAGE.TXT files can be eliminated for those NLS users who desire

it. All network mail sent to them would be reformatted and placed in their initial file, like journal mail. 8a

SNDMSG SUBSTITUTE IN NLS 9

I've 90% completed an NLS command which replaces SNDMSG, in that it does exactly the same thing as SNDMSG (in terms of the mode of mail delivery), but operates on NLS files and allows both 'User@host' and ident forms for addressees. 9a

GENERALIZED JOURNAL ADDRESSES IN THE IDENTFILE 10

Instead of the current hardcopy, on-line, and network mailbox address, permit each user to maintain N such mailboxes. Each would be of one of those three types, and each would admit only mail which met certain criteria, e.g.: 10a

Authored by one of a specified list of users. 10a1

Meeting certain specified size constraints. 10a2

Containing specified keywords in the title. 10a3

Etc. 10a4

PROMPTING MECHANISMS 11

Allow the user to be modified (at login, or if already logged in, by NOTIFY) when, e.g.: 11a

mmail arrived at a particular mailbox. 11a1

On a pre-specified date and time of day, with a specified message. 11a2

Etc. 11a3

VIEWING WHAT'S BEEN CHANGED IN A FILE 12

Provide the ability for a user to visibly distinguish on his screen between a file and the changes contained in its partial copy (with underlining, italics, or whatever, perhaps under user control). Allow a file to be viewed through any of several PCs. 12a

This, to my mind, is the way to implement (at least one form of) comments on a journal document. A user could then send a draft to N other users for review, each of whom would create his own partial copy for the file, and return it via the Journal to the

originating user, who could then view the N partial copies against the original file, and produce a final copy. 12b

AUTOMATIC GARBAGE COLLECTING OF INITIAL FILES 13

Allow the user, via the identfile or his profile, to specify a garbage collecting algorithm for his initial file, involving parameters like: 13a

Time it has sat in the file. 13a1

Who it's authored by (e.g., 'Discard after 30 days anything not authored by RWW or JCN'). 13a2

Etc. 13a3

UNRECORDED MAIL 14

No definition required. 14a

Some Dialog Support Ideas for the Next Couple Years

(J22002) 20-FEB-74 15:50; Title: Author(s): James E. (Jim) White/JEW; Distribution: /RWW NP; Sub-Collections: SRI-ARC NP; AccessList: RWW NP JEW; Clerk: JEW;
Origin: <WHITE>RWWMSG.NLS;5, 20-FEB-74 15:49 JEW ;

RFC #623
NIC #22004
references: RFC # 606, 608

Mark Krilanovich
UCSB
February 22, 1974

Comments on On-line Host Name Service

Peter Deutch in RFC # 606 pointed out the desireability of having a single host maintain a data base containing official host names and host addresses, as well as other information of secondary importance. Mike Kudlick in RFC # 608 agreed with the concept, and proposed that the NIC would implement Peter's ideas. I would like to add my voice to those in support of such a service, and express a few ideas for its modification.

The notion of having a single host maintain this data base clearly has the weakness that anyone wishing to obtain a copy of the data may be faced with the situation that the serving host is not available when the data is desired. It is true that each host could save a copy of the most recently obtained data, such that whenever a current copy cannot be obtained, at least a very recent copy is available. This is not a particularly attractive idea, since it requires a non-trivial amount of bother on the part of everyone. Therefore, I propose that the NIC maintain the master data base, and one other host be responsible for maintaining a secondary copy, which is to be updated to be equal to the NIC's at periodic and often intervals, such as once a day. This way, anyone wishing to obtain the data can first try the NIC, and if that fails, try the secondary host, thus much reducing the probability that the data cannot be obtained, while requiring additional software to be written at only one additional host. Further, I volunteer UCSB to be that secondary host.

The proposal currently underway calls for the host names data base to have the format of an ASCII file. RFC 606 makes the point, with which I comletely agree, that this data base should be formatted in an easily machine-readable form. To this end, I propose that the data base be retrievable in binary form rather than ASCII. Using this concept, for example, <host-address> would be a one-byte (eight-bit) binary number, <host-name> would be a one-byte length field followed by that many ASCII characters, and the possible <attribute-values>'s for the STATUS <attribute-name> would be one-byte binary numbers. This modification would clearly make the data base unintelligible to a human user, and, just as clearly, much more easily interpretted by a program.

RFC 608 states that the data base will be maintained as a

file, and retrievable through FTP. I question the wisdom of basing such a simple process as keeping a host table up to date on such a complex protocol as FTP. Therefore I propose that the data base be available via a program running under its own socket at the NIC and at the secondary host. This also avoids the necessity for the accessing program to know the login parameters for the guest account at the serving host, which in fact might not be the same at the two hosts. Again, the motivation is to make things easy for accessing programs.

Anyone with comments about any of the above is encouaged to make them known.

NWG/RFC# 623 MCK 26-FEB-74 16:21 22004
Comments on On-Line Host Name Service

(J22004) 26-FEB-74 16:21; Title: Author(s): Mark C. Krilanovich/MCK;
Distribution: /RFC; Sub-Collections: NWG NIC RFC; RFC# 623; Clerk: MCK;
Origin: <UCSB>HOSTNAMES.NLS;2, 26-FEB-74 14:00 MCK ;

PSO Meeting

PSO will meet Thursday the 21 at 2:00 in the Parsley to exchange information. I hope as usual the meeting will be brisk. I expect Kirk, Jeannie Leavitt, Mil, and Sandy Johnson to attend; everyone else is welcome.

PSO Meeting

(J22005) 20-FEB-74 16:34; Title: Author(s): Dirk H. Van Nounuys/DVN; Distribution: /SRI-ARC PSO; Sub-Collections: SRI-ARC PSO; AccessList: SRI-ARC PSO DVN; Clerk: DVN;

Don't Mind Your Own Business in 2088

The window office is hectic at best. But frequently people who come in to work briefly with Jeannie or Sandy or to get coffee, meet other people and take the opportunity to begin conversations that have nothing to do with the work there. These unrelated conversations make life quite a bit harder for Jeannie and Sandy. It would help them if people stopped doing that. 1

Don't Mind Your Own Business in 2088

(J22006) 20-FEB-74 16:40; Title: Author(s): Jeanne M. Leavitt, Dirk H. Van Nounuys, Kirk E. Kelley, Mil E. Jernigan/PSO; Distribution: /SRI-ARC; Sub-Collections: PSO SRI-ARC; AccessList: SRI-ARC PSO DVN; Clerk: DVN;

The most immediate bugs from several intensive sessions in XNLS

When I logged in as kelley, in tnls, connected to NIC and then loaded and modified a busy file in a third directory, it locked the file as (NIC)kirk in directory kelley and wouldn't let me upate it. 1

Copy sequential says "illegal string destination" 2

The repeat character doesn't work after typein in the insert, replace, or append commands. 3

Copy with a level filter doesn't work. It copies all levels. 4

It takes 2 CA's to get out of viewspec status mode. 5

Jump to Name doesn't work across a split screen to an empty window. 6

Insert Branch doesn't work when addressing the source. 7

Insert group says "Illegal string designation" when bugging the group. 8

The default address for a link containing no address, only viewspecs, should be the statement containing the link. The arc and nic locators operate on this principle. Currently the CM doesn't move. 9

"Jump to Item <↑U> name <SP> .1 CA CA" takes you to the name, but does not jump to the link contained in the named statement. The arc and nic locators operate on this principle. 10

Space recognition for second level commands in expert recognition mode is not fedback in TNLS. The user can't tell for sure if he typed a space or not. 11

KIRK 20-FEB-74 17:57 22008

The most immediate bugs from several intensive sessions in XNLS

(J22008) 20-FEB-74 17:57; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /BUGS DCW NEWNLS; Sub-Collections: SRI-ARC BUGS NEWNLS;
AccessList: BUGS DCW NEWNLS KIRK; Clerk: KIRK;

KIRK 20-FEB-74 18:00 22009

A list of six complaints concerning the new nls

Why doesn't the load file commad allow viewspecification as in the old system? 1

The prompt for Insert statement is wrong at L:. It should be L:/T:/B://[A:] 2

I should be able to turn Feedback off and get 6 more lines please. 3

When names are turned off, the substitute command writes in garbage and gives you a bad file. 4

The illegal text entity message in xnls does not allow backspacing for mistakes. Is this a BUG? It's sure not much of a feature. 5

Logout command should be changed to Logout Job. 6

A list of six complaints concerning the new nls

(J22009) 20-FEB-74 18:00; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /NEWNLS; Sub-Collections: SRI-ARC NEWNLS; AccessList:
NEWNLS KIRK; Clerk: KIRK;

Harvey,
I was wondering if the Execute Editor command would work in a meaningful way from QUERY or HELP subsystems. This would be very valuable in debugging the database. If it is going to be possible, how far away in time do you think it is?

1

(J22010) 20-FEB-74 20:04; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /HGL; Sub-Collections: SRI-ARC; AccessList: HGL KIRK;
Clerk: KIRK;

DCE 21-FEB-74 09:21 22011

letter to A. Kelley, UCSC, sending literature

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

Mr. Al Kelley
Mathematics
University of California at Santa Cruz
Santa Cruz, Calif.

Dear Al:

Here's the literature that I promised to send to you in our phone conversation of February 13, 1974. If you have any questions, or want further information on any aspects of our work that interest you, please don't hesitate to contact me. 1

Sincerely,

Douglas C. Engelbart
Augmentation Research Center

DCE/srl

letter to A. Kelley, UCSC, sending literature

(J22011) 21-FEB-74 09:21; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /DCE; Sub-Collections: SRI-ARC; AccessList: DCE SLJ; Clerk: SLJ;
Origin: <LEAVITT>KELLEY.NLS;2, 20-FEB-74 11:14 SRL ;

NDM 21-FEB-74 11:00 22012

Line Feed problem on Terminette terminal

Elizabeth: We are having trouble on the terminette printer/terminal: apparently it has a slow Line Feed, so that when Output Device Teletype sends out a series of LFs, every second one is ignored. Thus, YBS=1 does not produce a blank line between statements. The mechanical clutch which constitutes the line feed mechanism must be just recovering from the first LF when it gets the second. The problem does not appear with pagination Line Feeds. I think you can solve the problem by sending out CR LF instead of just LF for extra lines between statement (and lines between lines). Then the TIP will put in the necessary padding characters according to its Device Code specifications. I hope this is a modification that can simply be made and forgotten (a rare breed). Let me know what you think.
--Dean

1

Line Feed problem on Terminette terminal

(J22012) 21-FEB-74 11:00; Title: Author(s): N. Dean Meyer/NDM;
Distribution: /OPIG JCN DVN; Sub-Collections: SRI-ARC OPIG; Clerk: NDM;

KEV 21-FEB-74 11:56 22013

office-1 and imlac files

the above is a copy of a sndmsg i've received which i am relaying on to you for action. if you feel i shold deal with it let me know, but i do not exist at office-1.

office-1 and imlac files

15-FEB-74 1515-PST UCLA-NMC at OFFICE-1: <imlac>at office-1
Received 15-FEB-74 15:14:40 1

Most of the good stuff from <imlac> wasn't
transferred to office-1. Who's responsible, and when
will it be moved. We especially have use for PACKER and
IMTSE.UCLA-NMC. 1a

KEV 21-FEB-74 11:56 22013

office-1 and imlac files

(J22013) 21-FEB-74 11:56; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /JDH; Sub-Collections: SRI-ARC; Clerk: KEV;

KEV 21-FEB-74 12:04 22014

mit-dms imnls

Dave, 1

First, I'd like to apolgize for taking so long to get back to you. 1a

Second, if you will read NIC:<IMLAC>IMLAC-USERS-GUIDE.NLS and get a completed copy of the configuration questionnaire to me, I will do my best to get the necessary packages put together for you. 1b

If you have any further questions and/or problems, please don't hesitate to get in touch with me. 1c

KEV 21-FEB-74 12:04 22014

mit-dms imnls

(J22014) 21-FEB-74 12:04; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /PDL; Sub-Collections: SRI-ARC; Clerk: KEV;

KEV 21-FEB-74 12:11 22015

imnls and imload problems

Mike, 1

Sorry to have taken so long to get back to you about your imload problems. 1a

This message is just to find out if the problem still exists, before I go off trying to find anything. Let me know your current status of the problem(s) and I will try to get to it immendiately upon receipt of your response. 1b

KEV 21-FEB-74 12:11 22015

imnls and imload problems

(J22015) 21-FEB-74 12:11; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /MPU; Sub-Collections: SRI-ARC; Clerk: KEV;

DIALOG Online Bibliographic Searches in SRI Library

The SRI Library has installed a terminal for online searching of the bibliographic data bases covered by the Lockheed DIALOG system. These data bases include: 1

National Technical Information Service file
350,000 citations with abstracts 1a

ERIC files
150,000 citations with abstracts 1b

Psychological Abstracts
125,000 citations with abstracts 1c

INSPEC
American Institute of Physics and British IEE abstracts 1d

Engineering Index COMPENDEX
75,000 abstracts per year 1e

These can be searched by the Library's Lit Search staff, at a cost of $25 to $50. If you have need of a search, call Ardra Fitzgerald, 2177. 2

DIALOG Online Bibliographic Searches in SRI Library

(J22016) 21-FEB-74 12:31; Title: Author(s): Jeanne B. North/JBN;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: JBN;
Origin: <NORTH>DIALOGTERM.NLS;1, 21-FEB-74 12:22 JBN ;

Suggestions for Functions for an Expanded NIC Staff

Without referring to all the old Journal items on what the NIC could do that it is now unable to do, the following are suggested as present candidates: 1

A User-Assistance service available at all times the NIC is scheduled to be available. One person always available by phone and online, to assist Network users who have questions or problems. 1a

An expansion of the Reference service for Networking documents, internal and external. This would imply more effort in obtaining and processing site documents and non-site documents on networking. 1b

Programs for better online documents. 1c

JBN 21-FEB-74 12:46 22017

Suggestions for Functions for an Expanded NIC Staff

(J22017) 21-FEB-74 12:46; Title: Author(s): Jeanne B. North/JBN;
Distribution: /MDK; Sub-Collections: SRIARC NIC ; Clerk: JBN;
Origin: <NORTH>NICSUGG.NLS;1, 21-FEB-74 12:32 JBN ;

Phone Log: 21 Feb 74, Len Troncale, Cal Poly at Pomona

Len tried to cal Jim Norton; Jim travelling until next week, so I took the call. Len affirmed that the NSF grant fell through. Still working at getting launched in AKW experimentation, though. He now has an access port into Caremont College's PDP-10, and that one will be connected by next month to Cal TEch's PDP-10. Len has 7 staff, three at grad-student level in EE, and four professor level -- equivalent to 2 full-time people, who will be working on that system. 1

Still aiming for a sort of AKW goal, now interested in knowing how to go ahead and still try to track with us -- not re-invent. Still will try to push the same proposal that NSF turned down (e.g., wth Kellog Foundation). 1a

His big project is "snowballing" successfully. Interdisciplinary teams still need the basic AKW support processes. 1b

On PDP-10, what to do with the two FTE staff resources? Some good competency in terminal development -- e.g. now doing some with built-in microprocessors. Standard DEC operating systems -- TECO, etc. To me it seems that NLS wouldn't be appropriate in that environment. 2

Troncale sincerely wants to do some collab with us, to enable us to get some value from their work that could compensate for the effort we'd take in getting them launched. 3

He will get $40K next year to apply in this direction, but most of it would go toward supporting staff that he has to cultivate in order to get his "AKW" program going. 3a

Be into April before they get going on their machines. 3b

I explained the pressure on us these days -- formulating new proposals, etc. We can't become involved now; probably in April we could begin to see a more specific timing and funding for our primary involvements, and could begin to consider any possibilities then for collaborating with them. 4

He will be in San Francisco next week. He will give me a call then to see if there are any more thoughts either of us have had. 5

DCE 21-FEB-74 14:32 22018

Phone Log: 21 Feb 74, Len Troncale, Cal Poly at Pomona

(J22018) 21-FEB-74 14:32; Title: Author(s): Douglas C. Engelbart/DCE ; Distribution: /jcn dvn ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DVN 20-FEB-74 16:34 22021

PSO Meeting

PSO will meet Thursday the 21 at 2:00 in the Parsley to exchange information. I hope as usual the meeting will be brisk. I expect Kirk, Jeannie Leavitt, Mil, and Sandy Johnson to attend; everyone else is welcome. 1

DVN 20-FEB-74 16:34 22021

PSO Meeting

(J22021) 20-FEB-74 16:34; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /SRI-ARC PSO; Sub-Collections: SRI-ARC PSO; AccessList: SRI-ARC PSO DVN; Clerk: DVN;

Don't Mind Your Own Business in 2088

The window office is hectic at best. But frequently people who come in to work briefly with Jeannie or Sandy or to get coffee, meet other people and take the opportunity to begin conversations that have nothing to do with the work there. These unrelated conversations make life quite a bit harder for Jeannie and Sandy. It would help them if people stopped doing that. 1

Don't Mind Your Own Business in 2088

(J22022) 20-FEB-74 16:40; Title: Author(s): Jeanne M. Leavitt, Dirk H. Van Nouhuys, Kirk E. Kelley, Mil E. Jernigan/PSO; Distribution: /SRI-ARC; Sub-Collections: PSO SRI-ARC; AccessList: SRI-ARC PSO DVN; Clerk: DVN;

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DIALOG Online Bibliographic Searches in SRI Library

(J22023) 21-FEB-74 12:31; Title: Author(s): Jeanne B. North/JBN;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: JBN;
Origin: <NORTH>DIALOGTERM.NLS;1, 21-FEB-74 12:22 JBN ;

imnls

John, 1

I've created an IMNLS.PURDUE and made a new IMLOAD so you should be able to try loading IMNLS. 1a

I would appreciate it if you tried first and let me know what happens. If it doesn't work, I'll work with you and hopefully between the two of us we'll be able to get it up. 1b

(If you need assistance in doing the first load, get in touch with me.) 1b1

imnls

(J22024) 21-FEB-74 15:36; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /JWB2; Sub-Collections: SRI-ARC; Clerk: KEV;

Visit Log: 21 Feb 74, Donald Clements, ARPA NMRO

Don has been with NMRO since 1960. His current involvements are in the seismological research area, with universities and industry. Works with the Vela Seismological Center in Alexandria. Objective of today's visit to ARC: to gain backgrond on our AKW techniques, the Utility, etc., as potentially applicable for support of the Seismic Data Management System's 'Design Center' (cf. our recent proposal to them -- nnnn,). 1

He has some specific possibilites in mind, for use of NLS/Utility applied to some of the program management. Keeping track of contracts, their status. Interested in input, output, retrieval, indexing, etc., as applicable to those needs. Flexibility of organization; 2

Initial period spent wth DCE and JHB. Outline basic notion of AKW 'exploratory applications' approach. Note that privacy isn't too tight yet; that it really is for exploratory use, but the service is designed to be as solid as possible in support of the exploration. Special processes, such as automatic indexing, would be extensively available via enlisting specalists in such an area to add their specialized tools. The Utility economics, availability, and purpose were described. 3

After lunch with DCE and RWW, the remaining part of the day was spent covering the overview of the system as presented in the interlinked demonstration that is used for major introductory AKW descriptions (bair,demo,1). All the major concepts were covered with a "feel" established for the power and limitations of the system. 4

Don expressed interest in the application of NLS to the Seismic Data Management problem. The role of NLS will be clarified by the proposal for the SDMS, the writing of which is now being collaboratively supported by NLS. The NLS data management software now being written and our proposed interface with the trillion bit memory were mentioned. Application strategies and programs were emphasized, particularly in support of managers. 5

JHB 21-FEB-74 18:11 22025

Visit Log: 21 Feb 74, Donald Clements, ARPA NMRO

(J22025) 21-FEB-74 18:11; Title: Author(s): James H. Bair/JHB ;
Distribution: /rww jcn mdk dvn dce ; Sub-Collections: SRI-ARC ;
Clerk: jhb ;

SRL 22-FEB-74 09:58 22026

ARC's current proposed feedback mechanism

Just read 21683, "Network User Feedback System Report", thought it was very good especially the rsexec feedback command. Thought you might be interested in our latest proposal. Any comments are certainly welcome.

ARC's current proposed feedback mechanism

Assumptions and Goals: 1

This file was created as part of an attempt to develop a methodology for collecting, analyzing, storing and retrieving user feedback. This methodology has not been finalized but is described in its present form below. 1a

It has generally been observed that a "suggestion box" capability is needed to take advantage of user feedback that will allow the user to be easily informed of the status of his suggestion and would provide some scales of measurement for analysis and development decisions, The algorithm below is a way of augmenting this process with the specific intent of avoiding any extra burden on the already over-burdened people involved. 1b

There are several steps in the following algorithm. These have been customized for the internal ARC feedback process concerning software development and documentation. However, they can be generalized for any knowledge workshop that wishes to augment their feedback process. 1c

It is assumed that the process of organizing, analyzing, and keeping track of user feedback, bugs, needs, possibilities, and thinkpieces is important enough to the decision process in a bootstrap community to warrant the allocation of the necessary initial setup and continuing maintenance time. 1d

The mechanics of analyzing and deciding contention items is not specified here, as the primary goal is to just get the feedback loop started and functioning. After it has been tried for a while, the need for more specific methodology in these areas will become more apparent and presumably easier to specify. 1e

Algorithm for a Proposed User Feedback Mechanism 2

USERS: 2a

Send comments through SNDMSG to FEEDBACK@SRI-ARC or send them through the Journal to the ident: FEEDBACK. 2a1

Utility members send comments to their architect who will forward them or send them directly to ident FEED or through SNDMSG to FEEDBACK@OFFICE-1. 2a2

SOFTWARE DEVELOPMENT: preliminary decisions 2b

[A Feedback coordinator is available to help with this process. An asterisk indicates items that could be completed by this coordinator.] 2b1

ARC's current proposed feedback mechanism

*Reviews the Unclassified Items branch in <FEEDBACK>FDBK and makes an attempt to move trivia, Needs and Possibilities, and implemented items to the appropriate place and consolidates duplications. 2b2

Reviews each item resulting from the previous step, and classifies it as 2b3

Future NP, 2b3a

Executed, 2b3b

Rejects it, or 2b3c

Assigns it to an implementer. 2b3d

*Moves Unaccepted items, Accepted and Executed tasks to their assigned branches in FDBK. 2b4

[An optional step depending on the available time allocated for Feedback purposes would be to forward this current status information to the user(s) who made the suggestion.] 2b4a

Updates the Accepted tasks branch in the Feedback file to contain the current NLS implementation categories with the ident of the implementer responsible for each category. 2b5

*Journalizes the appropriate accepted tasks branch to each implementer with the ident of the person who assigned the tasks (CHI) as author. 2b6

ANALYSIS: 2c

Analyzes information in this file and integrates it with other data for the purpose of making suggestions to user-development, help-development, operations and software-development and for determining problem areas to be followed up with further studies. 2c1

Places items in the Future Needs & Possibilities branch in a suggested order of execution and each month prints it out and gives it to development supported by other analysis data and suggestions if any. 2c2

Analyzes feedback mechanism for possible improvements. 2c3

SOFTWARE DEVELOPMENT: future NP decisions 2d

ARC's current proposed feedback mechanism

Reviews each item in the Future Needs & Possibilities branch and either 2d1

confirms its current position, 2d1a

moves it to a more appropriate place, 2d1b

rejects it, or 2d1c

assigns it to an implementer. 2d1d

HELP DEMELOPMENT: 2e

Periodically checks (once a week) for new items in the Implemented Branch and update the documentation accordingly <See -- documentation, manual,>. 2e1

*Notifies the users interested in each suggestion of its implementation. 2e2

*When the Implemented branch gets too big, everything that has been implemented for over a month is journalized. A link pointing to the journalized file is placed at the end of the branch. 2e3

SOFTWARE to augment this Algorithm: 3

Insert Opinion A:/B: (in favor?) Y/N OK
This command would allow anyone to insert their initials in front of an item classified in FDBK without giving them write access. A minus sign would preceed the idents of those that said "no". 3a

ARC's current proposed feedback mechanism

(J22026) 22-FEB-74 09:58; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JI KIRK(fyi); Sub-Collections: SRI-ARC; Clerk: SRL;

JEW 22-FEB-74 10:14 22027

Comments on Draft of Proposed Network Standard Pathname Document

Dave-- Your NSDP RFC looks good. Some comments: 1

Your restriction that a pathname can never contain just, for example, a directory field, seems to me quite arbitrary and, in some obvious cases, a lose. E.g.: 1a

In the context of a list-directory command in FTP, a pathname with only a directory might make perfect sense, implying: 1a1

<directory>*.*;* 1a1a

You've left out FILE in your 'Explanation of <key>'s' section. 1b

How do you envison things like version numbers, protection and accounting fields, ';t', etc. being represented; as SITEPARM fields? 1c

You have no explicit provision for addressing any 'collection of bits' smaller that a file, e.g. a page of a TENEX file; a group, a plex, or statement of an NLS file; is it your intent that they be specified when necessary as a SITEPARM field? 1d

The keyword PRETTYPRINTER is cute, but would get on my nerves after awhile, especially every time I had to explain it to some one. 1e

You should explicitly state what your examples imply, i.e., that a single pathname can contain MORE THAN ONE (for example) DIRECTORY field. 1f

Your first example contains what looks like a typo -- 'FF(MESSAGE)' -- two 'F's? 1g

Your document is excellent, and badly needed. --Jim 1h

Comments on Draft of Proposed Network Standard Pathname Document

(J22027) 22-FEB-74 10:14; Title: Author(s): James E. (Jim) White/JEW; Distribution: /DHC; Sub-Collections: SRI-ARC; Clerk: JEW; Origin: <WHITE>DHCMSG.NLS;2, 22-FEB-74 10:12 JEW ;

Your Requests

Steve, 1

Sorry to take so long answering but I've been super busy this week. 2

In any case, I'd be delighted to enter your group in the identfile. I'll need a membership list (preferably the idents of the people involved). Would the name be UK Users Group?? We can distribute working notes for the group but nothing too large (like user guide type things) -- notes should be approximately inder 20 pages but this number is flexible of course. 3

About the Arpanet News, we have a very large distribution list which makes it very difficult for us to single out certain people to receive multiple copies. I can certainly put you on the mailing list but you'd only get one copy. Still that's better than none, I suppose. I will also add Sylvia Kenney to the distribution list. 4

Your Requests

(J22031) 22-FEB-74 11:32; Title: Author(s): Marcia Lynn Keeney/MLK;
Distribution: /SRW; Sub-Collections: SRI-ARC; Clerk: MLK;
Origin: <KEENEY>WILBUR.NLS;3, 22-FEB-74 11:31 MLK ;

RWW 22-FEB-74 15:36 22032

Initial ARC Working Paper Toward Development of a MST Five Year Plan

Seven people representing MIT, BBN, USC, CCA, SRI, RAND,and IFF ae preparing working papers for the MST five year plan development. This is our first cut at it.

Initial ARC Working Paper Toward Development of a MST Five Year Plan

INTRODUCTION 1

The communications and computer technology to be used and developed within the Management Systems Technology (MST) program contains both the potential for significant increases in the efficiency and effectiveness of clerical, administrative, and management functions; and the potential for dislocations and negative side effects. This new technology will not automatically increase efficiency or effectiveness by itself. Technology must be made effective. To gain the full benefits latent within the new technology and to avoid or minimize the negative effects will require development of new individual and group skills; new information handling and communication methodologies; and new organizational roles and structures 1a

ARPA-IPTO has primarily a computer science and digital communication charter. The MST program is going to provide either the opportunity for an extension of this charter or provide the opportunity to enlist the collaboration of other ARPA offices and DoD-research supporting agencies to deal with the social and management science issues above. 1b

MST PROGRAM OBJECTIVES 2

The prime MST objective is: 2a

1) CREATION OF AN MST SYSTEM 2b

Create an MST system that has demonstrated its ability to significantly enhance the effectiveness of DoD managers and staffs. The system must have a number of important attributes. 2b1

The system should be in a form in five years that it can be delivered to other agencies for direct use or for final polishing before wide spread utilization. The system should be reliable and secure. It should be designed in a modular fashion such that new functions can be easily introduced or older functions replaced. The system should be as self teaching as possible, easily documented, adaptable or "packagable" for different classes of users and organizations, contain a wide range of functions, and should be accessible through a coherent well human engineered user interface(s). 2b1a

There are four important secondary objectives worth achieving: 2c

2) LEARN HOW TO ASSESS IMPACT 2d

Determine what effectiveness values to achieve, at what costs,

and develop the measures, tools, and methodologies for their assessment. 2d1

Effectiveness can only be assessed against well defined objectives and measures of value and cost. The determination of these objectives is going to be a difficult task. An assessment is needed of the expected impact of widespread MST system usage on the DoD. ARPA-IPTO will have to define clearly what contribution it can make in this whole area. 2d1a

3) ACHIEVE NEEDED BREAKTHROUGHS 2e

Determine and achieve the needed breakthroughs that can have a large impact on improving the capabilities of an MST system. 2e1

Some of these areas may be within ARPA-IPTO's charter, others may not. For the latter, other ARPA offices may be encouraged in supporting work. 2e1a

4) CREATION OF A TECHNOLOGY TRANSFER PLAN 2f

Develop a plan for how to transfer the results of the MST program to wide spread DoD use in a way to achieve the impact determined in 2) above. 2f1

Technology transfer is not a well understood process. Some experimentation with alternative strategies should be part of the MST program. 2f1a

5) CREATION OF AN EFFECTIVE LARGE SYSTEM EVOLUTION PROCESS 2g

Develop a more effective way to conduct and manage the evolution of a large system. Deliver with the MST system the technology and methodology to support this process. 2g1

Development, application, and assessment of an MST system will involve many organizations, and individuals of diverse professional backgrounds. The MST system will be large and contain ARPANET connected geographically and organizationally distributed components. Such a system, we believe, can only be built in an evolutionary manner. At the end of the five year MST program the system will still need to continue its evolution in a coherent manner. One would like to deliver with the system a well understood and functioning process to enable this evolution to proceed smoothly. 2g1a

Todate large systems are generally either built in a linear

fashion -- objectives set, designs created, implementation completed, and product delivered with little feedback between the phases -- or evolution is largely unconscious, implict, and without adequate support. 2g1b

Given the central importance that MST systems are going to play in our organizations in the future, we can not afford that they become static and not evolve easily. It is an important research objective to understand the evolutionary MST system building process and how to explicitly support it. 2g1c

APPROACH TO ACHIEVE MST PROGRAM OBJECTIVES 3

PROGRAM MANAGEMENT 3a

There are many aspects of the management of large system evolution that need clear specification at the outset. Items that seem particularly important have to do with the processes of how requirements get set, designs get reviewed and approved, and priorities get established among the collaborating contractors. Related is the establishment and clear definition of management roles and functions. 3a1

Global MST program budget guidelines are required in a number of areas in order to indicate relative priorities. Each of the areas below needs a separate budget. Indications are needed on relative amounts to be expended on increasing the value of the MST system, the number and capability of its functions, ease of use etc. versus amount to be expended on decreasing its computer and terminal usage cost. The relative amounts to be expended for more basic research versus development of existing technology needs indication also. 3a2

CREATION OF AN INITIAL MST SYSTEM 3b

There already exist within the ARPANET environment a number of systems containing capabilities required in an MST system. It would seem important and possible to quickly pull these together with an appropriate "frontend system" user interface within the first year of the program. Such a system would get the MST program launched early toward achieving its objectives. It would provide a vehicle for experimentation and exploratory use in pilot DoD environments, enable experimentation with a variety of user interfaces, provide a concrete instance for study of modular and distributed system architecture, provide support to the MST system building community, and provide a framework for trial use in a whole system context of functions and techniques being researched. 3b1

After the initial MST system has been in operation for a year, studies in the application domain are yielding results, work has been proceeding on more basic research and development, and the community of MST system developers and exploratory users has developed some coherence and common experience; it will be appropriate for a thorough review of initial experience and for planning of the next stage MST system. The results of this study could indicate that a thorough redesign is in order or that continued gradual evolution is most appropriate. This major review would occur at about the 24 to 30 month point in the program. 3b2

APPLICATION AND TECHNOLOGY TRANSFER 3c

There are two main areas of early MST system application, one to representative DoD organizations and the other to the MST system development community itself. The former is discussed in this section and the latter below. 3c1

The applications and technology transfer component will contribute substantially to all the MST objectives. Decisions should be made within the first six months as to the exploratory user groups to support. It is recommended that 3-5 exploratory areas be chosen representative of a cross section of the DoD environments considered candidates for early large scale use of the MST system. More than one application area is needed to assure that the MST system does not get skewed to a particular application domain. 3c2

A preliminary analysis should be available at the six month point of their needs and priorities. Staging of services to be provided needs to be developed. Recommendations should also be available at that point for supplying operational computer, terminal and people support (training, documentation, usage methodology, etc.) to these initial users. 3c3

At the end of the first year there should be plans for the application and technology transfer effort through to the end of the program. By the third year plans should be available for review for MST technology transfer to widespread DoD use after the 5 year program. 3c4

The goals of the candidate organizations and the present practices and activities used to meet these goals need to be understood. Methodology needs to be developed or specified to assess the present costs and effectiveness of the organizations in their activities to form at least a qualitative base for assessing the impact of applying the MST system in their environment. 3c5

THE MST SYSTEM EVOLUTION PROCESS 3d

MST objective 5 is to understand and make explicit the evolutionary system development process and to learn how to support it. Needed here is commitment of specific resources to first, identify: the types of roles needed, the kinds of interactions involved to make these roles effective, and the type of services that should be provided to support these interactions and collaboration, and second, to develop and provide the needed support services. 3d1

Besides facilitating MST system progress, it is also important that the system builders, analyzers, application planners and supporters, and managers begin to get hands on experience with the type of technology that is going to make up MST systems. 3d2

ANALYSIS AND SCIENTIFIC EVALUATION OF MST 3e

An independent analysis function is needed within the MST program to provide in a coordinated fashion the analytical support needed for all phases of its activities. The MST system will evolve through prototype stages that must be constantly analyzed and evaluated. Efforts in this area will contribute to all the MST objectives, particularly objectives 1 and 2. A few examples of the support such a function can provide are the following: 3e1

- Analysis of user needs.
- Analysis and evaluation of MST operations and applications.
- Development of the tools and methodology needed for the experimental study of MST systems and procedures.
- Provide the feedback needed for the development process.
- Conduct sensitivity analyses to determine operational bottlenecks.
- Develop tools and procedures for improving the operational control of MST systems.
- Conduct economic analyses of existing MST components and forecast trends in costs of future MST systems.
- Conduct comparative studies with alternate systems, techniques and procedures.
- Evaluate the impact MST will have on organizational structures, if any.
- Evaluate the impact MST will have on the flow of information within organizations. 3e1a

Many of these studies can be carried out in the development environment itself and within initial exploratory applications.

However, given the high impact MST is likely to have on current information handling procedures, there will also be a strong need for controlled experimentation. MST system resources need to be available for this purpose along with any other needed support such as a possible special laboratory environment. 3e2

KNOWN DIRECTIONS THAT CAN ACHIEVE HIGH IMPACT 3f

Significant gains still remain to be achieved by further development of known directions and ideas that do not depend on major new breakthroughs. Results from this component will further MST objectives 1 and 5. 3f1

USER INTERFACE 3f2

It is recommended that early in the program a number of groups experiment with different user interface approaches. With the Control Meta Language approach existing in NLS, for example, many different user interfaces and ways of packaging basic capabilities can be quickly implemented. There is much to be learned about the user interface to best meet different classes of user capabilities and needs and to adapt to the range of terminals and communication speeds that may have to be supported. 3f2a

CORE MST USER FUNCTIONS 3f3

Much more flexible and modular information distribution mechanisms are needed than now exist. If possible these should be built in a way that a variety of mail, conferencing and other functions can use them as primitive operations. 3f3a

Reasonably powerful capabilities now exist for creating, studying, and publishing text documents, and much is known about computer graphics. Present capabilities for creating, studying, and publishing mixed media materials are not now adequate. There is the potential for truly mixed media information containing text, graphics, voice, video, and microfiche. 3f3b

Improved functions are needed for handling in a coherent and easy to use manner a user's personal information, his schedule, mail, notes, reports, and memoranda (arriving online and in hardcopy) etc. It must be easy to categorize, file, recategorize, and retrieve this material. Such a powerful personal information handling capability must tie in with more formal mechanisms used by his larger organization and other MST system functions. 3f3c

Integration of presently existing management tools such as project scheduling, budgeting, etc. With the above types of capabilities need effort. 3f3d

MST BASIC FILE SYSTEM 3f4

Development is needed of a common data structure, manipulation, and description capability (MST file system) that can be used as the base for building MST function modules and for thier intercommunication. This system has to serve a wide range of needs: conventional data management functions; sophisticated data structures for modeling the system, users and their working environment; and structured files for highly interactive text, picture, voice and other media manipulation. The MST file system must contain appropriate security features that can be built on by higher level functions. It must operate in a distributed multi-level mode. 3f4a

SYSTEM BUILDING TOOLS AND CONVENTIONS 3f5

An important aspect of the MST system development is to create a system environment that will enable a ARPANET based marketplace to come into existence for MST computer tools. These tools should plug into a coherent MST user interface(s) This will require establishment of conventions for interprocess communication, translation between file structures, accounting, documentation, HELP facilities, etc. Presently existing ARPANET protocols need to be thoroughly rethought. The MST program should assign a contractor to represent its needs in the above areas in general ARPANET protocol development. 3f5a

Other agreements may be needed on common use of specific higher level programming languages, or specific operating environments. 3f5b

OPERATING SYSTEM 3f6

The need for improved protocols, an inherently distributed system, and a more powerful base file system all lead one to believe that present operating systems are not necessarily the most appropriate technical or economic vehicles for an MST system. 3f6a

HARDWARE 3f7

There would seem to be considerable room for improvements in terminal capabilities for handling mixed media and even for

two dimensional text manipulation. Other special hardware may be needed to support special MST functions. 3f7a

NEW KNOWLEDGE AND TECHNOLOGY NEEDED 3g

In order to achieve objective 3 and contribute to the other objectives, some hard thinking and study of applicaation needs is required to clearly specify early in the program where new technology and knowldge breakthroughs are needed. 3g1

There are a number of important areas within which new understanding and technology could greatly increase the power of functions available, increase the flexibility of the user interface and system adaptability, and improve the system's security and reliability. 3g2

CONTENT ANALYSIS -- SEMANTIC FILTERING -- UNDERSTANDING NATURAL LANGUAGE 3g3

Breakthroughs in this area could have a large impact on the user interface and on the types of functions that could be made available to the user. Success in this area depends on the creation of appropriate models of the domain within which understanding is desired. The goal in support of this area should be not only to create techniques to understand natural language generally, but to see what can be achieved early in the program with improvements in the user interface and other functions with very limited vocabularies and simple models. 3g3a

SYSTEM ARCHITECTURE 3g4

The MST system as it evolves is going to be a large system, under evolution by many people in several organizations, running on ARPANET connected geographically separated hosts, and used by people and organizations who need to tailor it to their own practices and environment. Further, success in exploratory usage will create the need for massive upward scaling and growth as the technology transfers out into the society. Building for reliability and survivability in case of failures at various resource nodes is another important area of system structure needing work. 3g4a

There are many issues in the above requirements for which we do not have the requisite understanding or technology. A detailed study of these issues needs to be undertaken early in the program to determine what problems the computer industry generally is likely to solve and which need special MST effort. A similar study is needed to try and determine

plans of IBM, XEROX and others in the MST area. Results should be reported for an initial study or studies by the end of the first six months. 3g4b

COLLABORATION TECHNOLOGY 3g5

The MST program will create new tools for communication and coordination and allow interconnection of tools previously used separately. There is no evidence that we presently know how to use the tools we have or that we understand exactly which tools are needed. Initial analysis and system development effort should be focused strongly in this area as it is one where high initial payoff can be expected. 3g5a

USER IDENTIFICATION 3g6

As more and more critical and sensitive information is placed in computer form issues of privacy and security need more serious consideration. All such techniques ultimately rely on assumptions about who is at the terminal. New approaches to user identification need development. 3g6a

Initial ARC Working Paper Toward Development of a MST Five Year Plan

(J22032) 22-FEB-74 15:36; Title: Author(s): Richard W. Watson/RWW;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC SRI-ARC; Clerk: RWW;
Origin: <WATSON>MST.NLS;24, 22-FEB-74 15:16 RWW ;

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The goals of the candidate organizations and the present practices and activities used to meet these goals need to be understood. Methodology needs to be developed or specified to assess the present costs and effectiveness of the organizations in their activities to form at least a qualitative base for assessing the impact of applying the MST system in their environment. 3c5

THE MST SYSTEM EVOLUTION PROCESS 3d

MST objective 5 is to understand and make explicit the evolutionary system development process and to learn how to support it. Needed here is commitment of specific resources to first, identify: the types of roles needed, the kinds of interactions involved to make these roles effective, and the type of services that should be provided to support these interactions and collaboration, and second, to develop and provide the needed support services. 3d1

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Development is needed of a common data structure, manipulation, and description capability (MST file system) that can be used as the base for building MST function modules and for their intercommunication. This system has to serve a wide range of needs: conventional data management functions; sophisticated data structures for modeling the system, users and their working environment; and structured files for highly interactive text, picture, voice and other media manipulation. The MST file system must contain appropriate security features that can be built on by higher level functions. It must operate in a distributed multi-level mode. 3f4a

SYSTEM BUILDING TOOLS AND CONVENTIONS 3f5

An important aspect of the MST system development is to create a system environment that will enable a ARPANET based marketplace to come into existence for MST computer tools. These tools should plug into a coherent MST user interface(s) This will require establishment of conventions for interprocess communication, translation between file structures, accounting, documentation, HELP facilities, etc. Presently existing ARPANET protocols need to be thoroughly rethought. The MST program should assign a contractor to represent its needs in the above areas in general ARPANET protocol development. 3f5a

Other agreements may be needed on common use of specific higher level programming languages, or specific operating environments. 3f5b

OPERATING SYSTEM 3f6

The need for improved protocols, an inherently distributed system, and a more powerful base file system all lead one to believe that present operating systems are not necessarily the most appropriate technical or economic vehicles for an MST system. 3f6a

HARDWARE 3f7

There would seem to be considerable room for improvements in terminal capabilities for handling mixed media and even for

two dimensional text manipulation. Other special hardware may be needed to support special MST functions. 3f7a

NEW KNOWLEDGE AND TECHNOLOGY NEEDED 3g

In order to achieve objective 3 and contribute to the other objectives, some hard thinking and study of application needs is required to clearly specify early in the program where new technology and knowledge breakthroughs are needed. 3g1

There are a number of important areas within which new understanding and technology could greatly increase the power of functions available, increase the flexibility of the user interface and system adaptability, and improve the system's security and reliability. 3g2

CONTENT ANALYSIS -- SEMANTIC FILTERING -- UNDERSTANDING NATURAL LANGUAGE 3g3

Breakthroughs in this area could have a large impact on the user interface and on the types of functions that could be made available to the user. Success in this area depends on the creation of appropriate models of the domain within which understanding is desired. The goal in support of this area should be not only to create techniques to understand natural language generally, but to see what can be achieved early in the program with improvements in the user interface and other functions with very limited vocabularies and simple models. 3g3a

SYSTEM ARCHITECTURE 3g4

The MST system as it evolves is going to be a large system, under evolution by many people in several organizations, running on ARPANET connected geographically separated hosts, and used by people and organizations who need to tailor it to their own practices and environment. Further, success in exploratory usage will create the need for massive upward scaling and growth as the technology transfers out into the society. Building for reliability and survivability in case of failures at various resource nodes is another important area of system structure needing work. 3g4a

There are many issues in the above requirements for which we do not have the requisite understanding or technology. A detailed study of these issues needs to be undertaken early in the program to determine what problems the computer industry generally is likely to solve and which need special MST effort. A similar study is needed to try and determine

plans of IBM, XEROX and others in the MST area. Results should be reported for an initial study or studies by the end of the first six months. 3g4b

COLLABORATION TECHNOLOGY 3g5

The MST program will create new tools for communication and coordination and allow interconnection of tools previously used separately. There is no evidence that we presently know how to use the tools we have or that we understand exactly which tools are needed. Initial analysis and system development effort should be focused strongly in this area as it is one where high initial payoff can be expected. 3g5a

USER IDENTIFICATION 3g6

As more and more critical and sensitive information is placed in computer form issues of privacy and security need more serious consideration. All such techniques ultimately rely on assumptions about who is at the terminal. New approaches to user identification need development. 3g6a

Initial Working Paper Toward an MST Five Year Plan

(J22033) 22-FEB-74 16:28; Title: Author(s): Richard W. Watson/RWW;
Distribution: /RWW; Sub-Collections: SRI-ARC; Clerk: RWW;
Origin: <WATSON>MST.NLS;24, 22-FEB-74 15:16 RWW ;

JMB 22-FEB-74 17:05 22034

<userguides> directory

I'm going to be working out some procedures to better control <userguides> directory, especially the archive status of the files, since I'm also going to be having to maintain a copy at Office-1. Therefore I'd like to know whoall adds (or changes, updates, etc) things to that directory. Do you? Does anyone else you know (besides JMB, DVN, KIRK, KEV) 1

JMB 22-FEB-74 17:05 22034

<userguides> directory

(J22034) 22-FEB-74 17:05; Title: Author(s): Jeanne M. Beck/JMB;
Distribution: /DVN KIRK KEV NDM; Sub-Collections: SRI-ARC; Clerk: JMB;

This note sent via "sndmsg" also.

To all users of NORSAR-TIP directory --- from Doug Engelbart and Mike Kudlick. 1

We are going to keep you at SRI-ARC for awhile. 2

All the files you created at OFFICE-1 are being moved back to ARC 22-Feb-1974 (with an "x" prefixed to the filename). 3

Sorry for any trouble; we are trying to find a way to give you special service. 4

(J22035) 22-FEB-74 17:37; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /SS2 RR3 DRM OAH PT NM AT YL DCE JCN; Sub-Collections:
SRI-ARC; Clerk: MDK;
Origin: <KUDLICK>JL.NLS;5, 22-FEB-74 17:34 MDK ;

This note sent via "sndmsg" also.

To all users of UK-ICS directory --- from Doug Engelbart and Mike Kudlick. 1

We are going to keep you at SRI-ARC for awhile. 2

All the files you created at OFFICE-1 are being moved back to ARC 22-Feb-1974 (with an "x" prefixed to the filename). 3

Sorry for any trouble; we are trying to find a way to give you special service. 4

(J22036) 22-FEB-74 17:41; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /BWM SRW SK JB2 HWB FGH DB2 HIT MPM ARD HRG PLH HAT AVS PK
DCE JCN; Sub-Collections: SRI-ARC; Clerk: MDK;
Origin: <KUDLICK>JL.NLS;5, 22-FEB-74 17:34 MDK ;

General 1

Although POST(1) deals adequately with message files for individual users, there are a few problems caused because it uses TECO to achieve the functions it performs. Most of these problems arise because TECO only has rudimentary file control and cannot test whether files exist, nor can it delete them. A further point which arises because of this is that the message files used are always version one, ie. when a new message is added or one is deleted a new version of the message file is not created. The side effect of this is that the message file size always reflects the largest size that the file ever took even though the file may contain nothing. One bug which exists and has not yet been tracked down is one in which occasionally an odd character gets left in the message files when all messages are deleted. 1a

A specific requirement which we find at UCL, is that the dingy scraps of teleprinter paper on which the messages come out are unsuitable for filing. We were thus interested in producing file copies of messages, say, once a week on the lineprinter, with a form feed between each message. 1b

To achieve these basic aims the program TIDYPOST was written in BCPL. The main functions of the program are given below. 1c

Either 1d

To condense files to the size needed to hold the actual information in the file

or 1e

To concatenate message files known to POST, (ie. those defined in IDENT.POST) into a file called MESSAGE.PRT.

To delete versions other than version one of these files.

To delete message files and recreate null files, ie. ones with no file space attached to them.

To recreate ALL.MSG, GENERAL.MSG and MESSAGE.TXT as null files if they contain less than ten characters. (Purges files left by the bug in POST.)

To treat any named files in the same manner as ALL.MSG etc. This is useful on occasions when someone is travelling and

is going to pick up their mail on-line, as it allows their file space to be minimised if no messages exist.

To create any message files which have accidentally been deleted or archived. POST must be able to access files for which it has messages, archived or deleted files cause output error 13 to arise.

TIDYPOST has two restrictions in its present version. First, when replying with the files to be excluded from the concatenation@ the file names must be in upper case letters and must not include the .MSG part. Secondly, since MESSAGE.PRT is not in the same format as message files it must not be appended to MESSAGE.TXT. 1f

Scenario 2

Below is listed a typical scenario for TIDYPOST, where both the message files for KIRSTEIN and UK are tidied up. Note that TIDYPOST works on files in the connected directory. 2a

```
ISI-TENEX 1.31.65, ISI-TENEX EXEC 1.51.2
@LOGI UK  1
JOB 7 ON TTY43 21-FEB-74 02:34
TENEX WILL GO DOWN THU 2-21-74 0300 TIL THU 2-21-74 0330
UK OVER ALLOCATION BY 11 PAGES.
@TIDYPOST

Message File Utility (2 Feb 74)

Which function? ?

One of the following:
 Condense files
 Produce printfile

Produce printfile [Confirm]

UK message files will be put in MESSAGE.PRT

Are there any msg files to be left alone? No [Confirm]

.. Running
.. Copying to MESSAGE.PRT
.. Creating null files
.. Special files
.. Finished
@CONN KIRSTEIN
```

```
UK OVER ALLOCATION BY 6 PAGES.
@<UK>TIDYPOST

Message File Utility (2 Feb 74)

Which function? Condense files [Confirm]

.. Condensing
.. Finished
@LOGO
KILLED JOB 7, USER UK, ACCT 1, TTY 43, AT  2/21/74 0237
USED 0:0:22 IN 0:2:22
```

Availability 3

The program is available as a runnable file, either as: 3a

<UK>TIDYPOST.SAV at USC-ISI or,

<KIRSTEIN>TIDYPOST.SAV at BBN.

The source BCPL version is available as: 3b

<KIRSTEIN>POST.BCP at both BBN and USC-ISI.

The Program in Detail 4

The following text represents the main comments and data declarations extracted from the program.

```
POST UTILITY PROGRAM
**** ******* *******

Stephen R Wilbur
4 Feb 74

BCPL Program to concatenate all message files known to POST
with form feeds between each message, ready for printing,
or to condense the message files.  When this is done the
message files are deleted, and expunged, then recreated as
empty files. It is possible to name one or more files to
not be added into MESSAGE.PRT; ALL.MSG and GENERAL.MSG are
always treated this way.
```

manifest

```
    ttyin ← #100            //primary input stream
    ttyout ← #101           //primary output



static
    nameptr ← nil           //pointer to next free cell
                            // in name vector
    names ← vec 500         //contains file names in unpacked
                               format
    file ← vec 50           //contains pointers to all message
                               files
                            // in conn directory (ptrs to
                               names)
    s ← vec 20              //temporary workspace string
    cdir ← vec 5            //connected directory name (packed)
    ext ← table $., $M, $S, $G, $;, $1,
    $;, $P, $7, $7, $0, $4, $0, $4  //extension
    n ← 0                   //file number index
    nx ← 2                  //number of special msg files
    terminator ← nil        //terminator from ReadWord


let Start() be
    -------

    Write out blurb to user and get the users connected
    directory name

    Put GENERAL and ALL into list of special files

    Find which function required - condense or printfile

    Output finished message



and printfile() be
    -----------

    Produces print file in MESSAGE.PRT

    If there are msg files to be left intact read them into
    first part of 'names'
```

Open input and output files

Copy contents of all files to common file and delete each file as you go

Create new files after expunging

Deal with MESSAGE.TXT, and excluded files. If they have less than 10 chars delete etc, else leave intact

and condense() be

Condenses files which do not occupy the quoted size

and msgfilenames() be

Puts message file names into names, sorting out special files etc

Set up 'normal' file count

Find all names in connected directory - once only

File is in connected directory; read in file name and check that it is terminated by a space

Check to see if file name already in list

and condensefl(s) be

Given file name in s. That file is then copied in 7 bit bytes to TMP.TIDYPOST and this is then renamed as the original file

let t ← "TMP.TIDYPOST" //temp filename

```
and getdir(n, s) be
    ------------
```

Returns connected or logged in directory into s as a BCPL string. n=2 for conn dir, or 1 for login dir.

```
let v ← vec 20          //for ACs
and u ← vec 20          //ASCIZ string
```

```
and finddir(s) ← valof
    ----------
```

Pack next string enclosed in < > into s. If eof then return value false.

```
let v ← vec 20          //unpacked dir name
and p ← 0               //pointer
```

look for < as start of string

read in directory name up to >

```
and skipto(c) ← valof
    ---------
```

Skip on primary input stream until character c found if none exists then return false

```
let ch ← nil
```

```
and match(s, t) ← valof
    -----------
```

Compares two unpacked strings; result is true if they are the same

```
and copy(v) be
    -------
```

Copies file named in unpacked string to current output stream and deletes it

```
let x ← nil
```

If file exists, copy it, otherwise warn user

```
let j ← nil
let k ← 0
```

```
and charno(lvj) ← valof
    -----------
```

A routine to find the total number of characters in each msg

```
and newfile(v) be
    ----------
```

Creates a new file which is empty. Unpacked string in v is concatenated with extension

```
and formfilename(v) ← valof
    ---------------
```

Given root file name, unpacked in v, adds extension and packs into static vector s

```
let u ← vec 50          //to hold complete file name
and x ← v!0             //char count
```

and specialfile(s) be

Deals with ALL, GENERAL, and MESSAGE files etc. If they contain less than 10 chars then they are deleted, expunged, and recreated, otherwise left intact

```
let ch ← nil                    //character read
```

and nonexist(s) be

Writes warning message to user when file not found

Reference 5

[1] Wilbur SR, POST - A British Mail System, NIC 21165, INDRA Note 330, University College, London, 1973.

INDRA Note 342
NIC 22037

TIDYPOST

A Program to Clean-up POST Message Files

Stephen R Wilbur

Abstract

This note describes a program to tidy up the files created by POST. The program allows that either all message files can be reduced in length to the minimum required to hold the messages within them or that all but selected message files be concatenated into a print file and the files themselves cleared.

(J22037) 23-FEB-74 04:40; Title: Author(s): Stephen R. Wilbur/SRW;
Distribution: /ADO JRP PK; Sub-Collections: NIC; Clerk: SRW;
Origin: <UK-ICS>INDRA342.NLS;7, 23-FEB-74 04:34 SRW ;

22037 Distribution
A. D. (Buz) Owen, John R. Pickens, Peter Kirstein,

JMB 23-FEB-74 14:50 22036

New TNLS suggestion

Could you make <control-o> stop printing the list of alternatives which prints after '? ? This would be a courtesy and encouragement to brand-new learners of TNLS, who have to type '? often, especially at the command-reset level (In EDITOR that's a long list), and want to get on with it after they see the right thing. 1

JMB 23-FEB-74 14:50 22038

New TNLS suggestion

(J22038) 23-FEB-74 14:50; Title: Author(s): Jeanne M. Beck/JMB;
Distribution: /NNLS; Sub-Collections: SRI-ARC; Clerk: JMB;

(J22039) 2-MAR-74 20:34; Title: Author(s): Jean Iseli/JI;
Distribution: /; Keywords: ARPANET News; Sub-Collections: NIC-NEWS ;
Clerk: MEJ;
Origin: <HELP>ARPANEWS.NLS;12, 2-MAR-74 20:13 MEJ ;
The Monthly Online Newspaper for the ARPANET Online Community

****

ARPANET News

March 1974

Issue 13

NIC 22039

Published for the purpose of encouraging and fostering
intersite communication and interaction
in the ARPA Computer Network

(contents) ARPANET News March 1974 Issue 13 22039 1

1a

: The ARPANET vehicle for world understanding, for forming :
: a meeting ground of the world networking community to :
: express their ideas and share their evolving will :
: toward a universal sharing and cooperative work :
: environment for world good :

1b

For Online viewing instructions, type:
-s[how]information<CR>
where letters shown in [ ] are echoed by the system,
and <CR> indicates a carriage return.

1c

(boxscores) Boxscore of NETED and ARPANET News Sites

: NETED BOXSCORE :

CASE-10 - Running a version which attempts to implement the new spec*; call as a subsystem.

Multics - Running a version which attempts to implement the new spec*.

UCSD - New version being debugged

AMES-67 - Running a version which attempts to implement the new spec*.

MIT-ITS - Rumors of own version

SDC - Will pick up CCN version

UCLA-CCN - New version being debugged

LBL - Will be implementing a version

OFFICE-1 - Up and running; NLS compatible version planned

BBN - NETED will be incorporated into new SNDMSG package

SRI-ARC - Version up and running; needs debugging

* See (neted) in this issue.

NOTE: All TENEX Systems may run NETED by FTPing a copy and installing in their subsystems. Contact Jim Calvin or A. J. Rosenfeld at CASE-10.

*** ** ***

: ARPANews BOXSCORE :

CASE-10 - ARPANews up and running;
call as:
<arpanews>news<cr>

PARC-MAXC- Same as above.

UTAH-10 - Same as above.

SRI-AI - Same as above.

SRI-ARC - Call through NIC Query as before.

OFFICE-1 - Call thru NIC Query system
as at SRI-ARC.

BBN - Call as: <poh>news<cr>

ISI - Call as: <iseli>news<cr>

UCSB - Special version being debugged

UCSD - Special version under construction

UCLA-CCN - Special version under construction
for the 360/195

RSEXEC - Special viewing for TIP-users
under construction

NOTE: Interested sites who would like to carry the ARPANET News as a local feature should contact Jean Iseli, SNDMSG address ISELI@ISI, HELP@NIC, or HELP@OFFICE-1.

(information) Information About the Publication

3

Sponsored by ARPA/IPT.
Editorial Staff:
Headed by Jean Iseli with volunteers who lend their
welcome and appreciated assistance, as occasion arises:
Mil Jernigan (SRI-ARC) Mike A. Padlipsky (MIT-Multics)
NIC Office personnel who handle mail distribution:
Marcia Keeney, Judy Cooke, Carol Guilbault

3a

New online version available on the first of the month at:

3b

NIC and OFFICE-1:
Login, then type: <arpanews>news<CR>. Type a "?" for available commands.

CASE-10, SRI-AI, UTAH-10, PARC-MAXC:
Login, then type: <arpanews>news<CR>; then a ? for available commands.

ISI:
Login, then type: <iseli>news<CR>, then ? for available commands.

BBN:
Login, then type: <poh>news<CR>, then ? for available commands.

UCSB:
Login, then type: <arpanews>news<CR>, then ? or help for available commands.

3c

Online version contains month's basic issue plus weekly updates. To obtain a print of the online file, login to NIC, enter NLS, load file <help>arpanews.nls; and output to your printing device or teletype. Viewspecs are already set.

3d

Hardcopy printed at SRI, mailed from NIC on the 5th of the month to: each Liaison, Principal Investigator, Station Agent, Network Associate, and certain other Network related persons. Local reproduction of multiple copies is encouraged.

3e

Contributions to the NEWS may be forwarded to JI at NIC through the NIC Journal, by SNDMSG to ISELI@USC-ISI, HELP@NIC, or to HELP@OFFICE-1; or by U. S. Mail to Jean Iseli, 8630 Winthrop Drive, Alexandria, Va. 22308. News may also be forwarded to MEJ through the NIC Journal, by SNDMSG to JERNIGAN@NIC, or mailed to Mil Jernigan, Stanford Research Institute, Augmentation Research Center, 333 Ravenswood Ave., Menlo Park, California. 94025.

3f

(editorial) Editorial - Dinosaurs, Networks, and Men

4

In April 1970, Doug Engelbart, one of the pioneer thinkers in Networking and man-computer interaction, wrote a paper for the Interdisciplinary Conference on Multi-Access Computer Networks, in Austin, Texas. The proceedings of this conference were never published and therefore his paper has not received the wide distribution it deserves.

4a

To read this important paper, see (networks) in this issue of the ARPANET News.

4b

Engelbart's paper is a significant statement of the possible effects of communication's broadened bandwidth facing man through computer networks, and what this can do to the social structure of the future.

4c

In the subsequent four years, many of the things Engelbart talked about as being planned have come into being: ARPANET is now the largest heterogeneous packet switching computer communications network in the world. Engelbart has established his "Journal" of which he speaks as an integral part of the Network Information Center (NIC) function, well known and widely used by the Network people.

4d

His concept of a "Dialog Support System" has at least partially been put into effect...such Network based systems as SNDMSG, TELNET, FTP, RSEXEC, RJE, and a number of others are an everyday reality.

4e

However, that was only superficially what Engelbart's paper is about...his real message is:

4f

(1) How is Man going to use the Network facilities?

4g

(2) How is Man going to treat Man -- and will there be realized the Network's enormous potential to create an open, honest, cooperative, and freely interacting relationship of Man to Man in his working environment?

4h

(3) Can this enormous ability to collaborate and work together be optimized in Man's relationship to his fellow worker?

4i

(4) Can widely dispersed members in many different professions and technologies and countries and cultures work together effectively in a coherent team-like action?

4j

(5) Can Man learn to collaborate, share and communicate -- REALLY communicate -- and learn to lower the interpersonal and interorganizational barriers to arrive at a fluent, goal-directed efficiency?

4k

And if Man cannot -- then like the dinosaur, once unquestioned conqueror of this earth, then Man will not have adapted to his environment and will in time become a failing experiment -- and extinct.

4l

(networks) Implications of Multi-Access Computer Networks

5

INTELLECTUAL IMPLICATIONS OF MULTI-ACCESS COMPUTER NETWORKS

A paper for the Proceedings of
The Interdisciplinary Conference
on
Multi-Access Computer Networks
Austin, Texas, April 1970

By

Douglas C. Engelbart
Stanford Research Institute
Augmentation Research Center
Menlo Park, California

5a

5b

(organizations) Organisms and Organizations

5c

I'll take an unlikely start and begin with dinosaurs. I have a six-year-old son who is tremendously impressed and intrigued with dinosaurs. We read and re-read all of the dinosaur books, and every time we go to the library we have to bring home new ones.

5c1

Consider a dinosaur (with what little we know and much we may speculate) as a big, monstrous organism whose specialized organs cooperated reasonably well by the then-prevailing standards of "organism design", but whose function was coordinated by a clumsy, crude nervous system and a pitiful little brain. My image of this "clumsy nervous system" can be characterized by the story I've heard (or perhaps this is one that I've invented for six-year-old consumption, and now believe) about an embattled dinosaur not sensing for several minutes that it was dead.

5c2

But yet apparently this was an organism marvelously fitted to its environment. The dinosaurs thrived for over 200 million years, as I remember from all those books, much longer than our race has been around. But suddenly -- suddenly in terms of geological time -- they disappeared.

5c3

My learned deduction, derived from first-grade scientific literature, is that competition from better-designed nervous systems did them in: better sensors; better sensory-data analyzers (perception); better peripheral contingency decision making (reflexes); better coordination of the functioning of organs, muscles, etc.; better rational analyses of events and history; better accumulation of learned experience; better projection, visualization and planning, etc., etc.

5c4

I want to fix in your minds an image of a biological organism that possessed formidable capability within the environment into which it evolved, but which couldn't make the grade against the competition that a continuing evolution brought into that environment.

5c5

Human organizations can be likened to biological organisms, and I find much value in considering the analogy. Organizations evolve too; their mutations are continually emerging and being tested for survival value within their environment. I happen to feel that evolution of their environment is beginning to threaten today's organizations, large and small -- finding them seriously deficient in their "nervous-system" design -- and that the degree of coordination, perception, rational adaptation, etc. which will appear in the next generation of human organizations will drive our present organizational forms, with their "clumsy nervous systems", into extinction.

5c6

It is these "nervous-system" functions, within human organizations, where I find the most significant intellectual implications stemming from the forthcoming multi-access computer networks.

5c7

(systems) Augmentation Systems

5d

For many years I have been developing a research program at Stanford Research Institute aimed at Augmenting the Human Intellect. By intellect I mean the human competence to make, send, exchange and apply to decision-making the commodity called knowledge, as applied toward giving human individuals and organizations more effectiveness at formulating and pursuing their goals. My basic formulation of such a pursuit considers a large system of things to be involved in being intellectual, and being successful at it. A rough but useful categorization of the system's components is as follows:

5d1

Biologically Provided Human (BPH) capabilities are the basic components of this "large system" -- e.g., memory, visualization, learning and reasoning, as linked to the human's internal-external environment by sensory-perception and coordinate-motor I/O systems.

5d2

Culturally Provided (CP) items are also basic to this "large system": general things such as languages, methodologies, tools, and training; in specific forms such as algebra, schools, meetings, books, computers, maps and filing cabinets. Also, such items as the value structure, attitudes, motivations, etc. which are so important to the way an individual coordinates and directs his BPH capabilities, may similarly be said to be "culturally provided".

5d3

An Effective Individual (EI) has a particular system of these CP items built atop his BPH capabilities. Our EI is like a little colony grown around the "raw-material" human, where in number and diversity of items this "ecology" of interdependent dynamics is as subtle and rich as what we are coming generally to appreciate in the "organic" world around us.

5d4

An Effective Organization (EO) is composed of a group of EI components, plus another particular set of CP items associated with their working together.

5d5

These CP items are all candidates for redesign, toward more effective individuals and organizations. To provide a new "augmentation system" for an individual, or especially for a group, is a very complex challenge. Just suppose, for instance, that a really new system had been developed, and consider the problem of checking out a group of people on their "new augmentation system" -- it would involve such as: teaching them new concepts and skills for representing and manipulating information; changing their working and collaborative methods; having them learn new roles and acquire associated new attitudes; changing the format and style for their formulating and communicating, etc.

5d6

If the system is to represent a truly significant improvement, assume that the changes to which the new users must accommodate will pervade many levels and facets of the "way of doing their daily work", and that many of these changes will represent radical departures from their prior "ways". The people being given such a new system will have a rough period of learning and adaptation. People don't generally appreciate how many are the "little ways of doing things" that comprise our workaday world, that they may be subtly or radically changed, and that among them might appear a very different distribution of usage and importance. The EI and EO systems are more complex, but therefore richer, domains for development than is appreciated even (especially?) among the technologists in the computer and communication disciplines which have so much potential for changing those systems.

5d7

My main message about Augmentation Systems is that, while indeed there are very challenging technical problems involved in supporting tomorrow's Effective Individuals and Organizations, the larger Augmentation System is much more complex than the technological "subsystem" upon which it depends. We technologists aren't equipped to perceive this sort of thing, and those who are can't generally distinguish the Sunday-Supplement extrapolations from those more probable. It has been my business to struggle with these concepts for two decades now, and the signs that I read at least tell me that the changes in our ways of thinking and working will be more pervasive and extreme than ANY OF US appreciates -- a revolution like the development of writing and the printing press lumped together. The following notions represent some of the least fuzzy elements that I perceive.

5d8

(workshop) Intellectual Workshop

5e

In the context of this Conference, it is useful to talk about providing an individual with a "private intellectual work space" -- sort of what his office is supposed to be for him now.

5e1

In using his office, an individual goes in, perhaps shuts his door, and spreads his current working information over his working surfaces. He keeps some local files there, does some thinking, some formulating and transmitting of messages to the outside, and receiving returning messages, etc. Some of these transmitted formulations are requisitions for things to be bought, made, commented upon, or etc. He sends them out and results will come back, usually in the form of information -- control feedback, substantive information from colleagues or support staff, etc. He digests, stores, reformulates, responds, and occasionally pursues reflective, creative thought.

5e2

The image I'm trying to develop is of an office being the "intellectual workshop" in which one does his collaborative bit within his working environment: one needs work spaces, tools to suit a myriad of tasks, places to store working materials, aids to hold them for examination and shaping -- and they all should be easy to reach, quick to adjust to the task, easy to keep track of, etc. Interactive computer aids will have very significant effects here.

5e3

This is the particular area that my group and I have been working on for some six years -- improving the individual's intellectual workshop -- as the first stage of exploring what augmentation might be like. By today's standards, we can demonstrate some impressive features in the workshop environment which we have created to test by our daily use (for doing our daily work). But by our own perspective, as developed through constant struggle in this domain, we have but a primitive outpost on an unbelievably rich frontier. References 1 through 4 describe our work. I invite you to become acquainted, e.g., with Reference 1. Copies of the movie (Reference 2) are available; viewing this provides the best introduction to our "augmented office".

5e4

It will take the explorers of this domain decades to even map its currently visible dimensions. The real rush hasn't begun: this Conference is a meeting of suppliers looking at the prospector trade; we haven't really been giving attention to the developments that will follow the prospecting.

5e5

My research group is now moving into a next stage of work that we call "team augmentation". Here, instead of just the individual facilitating his private domain of searching, studying, thinking and formulating, as his office place provides for him, we are exploring what can be done for a team of "augmented individuals" who have in common a number of terminals, a set of computer tools, working files, etc. (as we do) to facilitate their team collaboration.

5e6

Our major initial step toward augmenting a team is to facilitate the collaborative dialogue between its members, aiming for new kinds and degrees of collaboration that can thus be achieved.

5e7

5e8

(dialogue) Collaborative Dialogue

5f

To discuss our "Dialogue Support System", consider a shared-file space. This is a common enough thing in today's time-shared environment; but our dialogue-file space comprises "frozen" contributions from the collaborators -- i.e., it represents the "Journal" of transactional entries that make up the collaborative dialogue, entries that are part of the history of things and aren't to be changed.

5f1

Assume that you are a participant in this dialogue, as from a CRT terminal in your office. You have just contributed some sort of entry into this Journal -- some tentative formulation of a plan or design. You expect some of your collaborators to be interested. You may have installed an "attention" signal at entry time, aimed at a particular set of people. At their consoles, they either receive an "annunciator" signal to alert them, or may have come across your entry via any number of natural pathways in the course of their work.

5f2

These other people can very quickly and flexibly survey your contribution. At any subsequent time, in any passage of your contribution, one of them can attach a "comment" to any specific entity (e.g., word, string of words, paragraph, drawing, line or label in the drawing). A comment can be one word (e.g., "Congratulations "), or a reference to a contradictory passage, or a long exhortation about a better way to do the whole thing, other people will be attaching comments at other places, including comments upon other people's comments. What soon evolves from such activity is a network of contributions that represents a full-scale discourse, distributed over time and, if you wish, over space.

5f3

A good "office-support system" will provide powerful aids to improve the effectiveness with which one can participate in such a dialogue. For example, one needs speed and flexibility in studying the consequent network of dialogue contributions and in filtering out that which is relevant -- for instance to make a successive version of a plan or design. We are evolving aids for: searching through specified sub-nets and selecting upon such attributes as content, previously assigned descriptive tags, authorship, absolute or relative "publishing" time, and citation linkages; assembling passages from the dialogue, and from one's own notes, with flexible disposition of one's screen into "windows" for independently viewing different materials; easily affixing new links and tags to arbitrary segments of a given memo; conveniently copying into one's own working file a categorized compilation of extracts, etc.

5f4

One recognizes, of course, that the existing system of professional journals represents a similar mode of dialogue, distributed as it were over space and time. But the computer-aided dialogue has certain advantages to offer: interchanges in cycle times of minutes or seconds instead of years or months; accommodating more items, and items of much smaller size, without overloading the "clerical system"; accommodating more people making simultaneous accesses and contributions; providing citation followup to exact items (i.e., the computer can take you almost instantly to look at the particular item cited within another "document").

5f5

Within a team that has the kinds of tools and methods that are easily foreseeable, these features are really quite interesting and exciting to consider. We are planning to experiment with this type of collaboration in support of our own system-development activity, within our own shop.

5f6

(arpanet) Office-Sharing and Dialogue

5g

Our Augmentation Research Center, at SRI, is a participating site in ARPA's experimental computer network (see References 5 and 6). My group is hoping that here the "augmented office" approach can be applied to a fuller advantage -- i.e., we hope to see researchers at other sites beginning to use the Office for their work, work other than "studying and improving the Office" (which is what my group does). Using our Office system from his home-site CRT terminal, a researcher in computer languages for instance could do the composing, modifying and studying associated with developing his research tools, with setting up and running tests, with integrating the results into his notes, and with communicating and publishing the results.

5g1

His experimental programs and compilations may be run on the computer at his home site, or at other Network sites -- there will be means within the Office making it easy to interface to any special tools and data through the Network. The Office is the place where special attention is given to facilitating such supportive intellectual processes as formulating specifications for service requested and for how to present the results and where in the office's records to insert them; there are general needs in this regard over many activities, and the access to all of the special tools being developed in other computer-research areas will be very much heightened if they can be used from an "office" where a unified approach was taken to harnessing these tools. Examples: send your analytic formulation to MIT's Math Lab for processing; Utah's graphic-manipulation processes could construct your illustrations; and the ILLIAC IV can do your heavy computations.

5g2

In this network, my group is slated to serve as the Network Information Center, which role offers new ways to experiment with collaborative dialogue. As we ourselves learn how to deal with it within our "conjoint office space", we expect to begin offering use of our "Dialogue Support System", through the Network, to people scattered over the country who want to do collaborative things in pursuit of Network activities. For instance, two graduate students from different universities could work closely together on a project, or a professor at one site could serve as a thesis advisor for a graduate student at another site.

5g3

5g4

(market) The Knowledge Market

5h

Here is a brief extrapolation into the future and its Augmented Individuals and Organizations, looking beyond both the ARPA Network and my little experiments with an Augmented Office and a Dialogue Support System. Obviously there will be steadily widening distribution of common-resource accessibility, and a steadily increasing number of people who spend a significant amount of their professional time at terminals. The greater amount and diversity of mutually accessible resources -- human, financial, technological -- will accelerate growth along a number of dimensions. In particular, there will emerge a new "marketplace", representing fantastic wealth in commodities of knowledge, service, information, processing, storage, etc. In the number and range of transactions, and in the speed and flexibility with which they are negotiated, this new market will have a vitality and dynamism as much greater than today's as today's is greater than the village market.

5h1

It seems apparent to me that, following this increased mutual accessibility between knowledge resources and consumers, will be the development of more "depth" in the range of both. E.g., just as with the roles of specialty shops and services in some of our industries today, there will be a large number of individuals and small groups each providing highly specialized services. Since their clientele will be drawn from such a large market, they will find a good business even where they serve only a small portion of the market and provide only seldom-needed special services.

5h2

Let's look at a specific "for instance". Suppose that one person becomes extremely proficient in making small programs to generate a display or printout to show (particularly well) the status of a multi-task project. He is an independent agent in this multi-access computer network, working at a CRT console in his office at home. Perhaps he specializes in construction projects, and within this perhaps in steelwork erection. You are a management consultant working (from your home) on a short job helping to set up the production-control system for a construction project. When you realized that you might benefit from this kind of help, this is the sequence that takes place:

5h3

Your man is easy enough to find because of computer help in searching for and evaluating special products and services. Suppose that you need something he can do for you with about 45 minutes' effort. You expect immediate accessibility for negotiation -- for instance: it takes you one minute to locate several candidates, two minutes to examine their relative credentials, 20 seconds interrogation of public records to select him as being available right now for your kind of problem, two minutes of personal dialogue to determine for both of you that his capabilities and your needs match, and 15 seconds to negotiate and legalize a contract. He does his job in 40 minutes, and spends five more minutes transferring the results to you (with dialogue).

5h4

He switches back immediately to a task sequence whose contract arrangement had permitted him such interruptions. In working on this job, you have been "time-shared" with several other jobs having higher priority, and several that were running "background". During the forty minutes he was off doing his thing for you, your higher-priority task sequences took you off on other pursuits. In fact, when he was done, you weren't ready to get back to him for twenty-three minutes, but the mutual-scheduling algorithm agreed upon in your contract took care of connecting you and him, when you were both ready, for your final dialogue.

5h5

Your dialogue, of course, comprised both voice and shared computer graphics. Your mutually viewed display could be flipped back and forth between views of what he called forth on his end to show you, and what you provided to show him. As you were showing him your work domain, he was "catching" reference links into the specific items that he might later need to get at, entering quick notes on some of them.

5h6

The whole dialogue was recorded, as a matter of course and for either of you to use later. The stored speech was digitized, and automatically segmented into the alternate passages of your exchange. During your dialogue, whenever one of you referred to a displayed item in your speech, your practice was to make an explicit screen-select action in association with the spoken reference term (e.g., with a "that line" or "both of these figures" expression), so that when any given passage might later be selected for "playback", the computer could re-create for you the image you were seeing and indicate the displayed entity being referenced.

5h7

Some of the dialogue had stimulating and instructive contents for you. You wanted to save these and integrate them into your personal notes. Citations to this dialogue are easy to install in your notes, including citations to a speech passage -- where, upon later seeing such a citation and "calling for" the item it refers to, the associated bit string would be found and the speech passage played back for you.

5h8

Perhaps you consider some of the speech passages to be useful enough to have them transcribed into text. A quick designation of your desire causes these speech strings to be transmitted to a service you customarily use for doing your transcription. This service harnesses the latest speech-recognition computer aids, implemented with special-purpose hardware and software, and includes skilled clerical staff who supplement the 98% capability of the machine. Your two-minute transcription job is scheduled through their service units quite automatically, and the text strings are routed back and inserted in their appropriate places without your further attention. You have established the convention with the service agency that un-decipherable or dubious passages will be tagged, and if you had wanted to you could have designated when you sent the job off that you wanted to be interrupted to resolve such when the material returned.

5h9

When you and your contractor parted ways, you each might exercise an optional procedure which helps you record your impressions of the other. An important part of your value within this marketplace rests upon your ability to integrate effectively the skills and knowledge of others. So you pay careful attention both to your "intelligence" base which helps you keep track of appropriate people, and to conducting your negotiations and working relationships with an eye for doing well by the other guy -- because he too probably keeps an effective intelligence system and it might well be important to you later that he (or his friends) feels good about working with you. You also need to assess his potential value to you for other and different collaboration.

5h10

It is recognized rather widely that computer networks raise significant problems about the privacy of closed information. The other side of the coin is that computer networks raise rather remarkable opportunities to benefit from the sharing of open information. I am quite convinced that there is very high value to be derived within the Computer-Network Knowledge Market from a degree of openness with what have heretofore been considered as private types of information.

5h11

Among the members of a working team, this could mean keeping open as a matter of course all of their scratch notes, trial designs, etc. to their colleagues, and expecting them to browse, comment, etc. Once this is the standard operating mode, those aspects of a person's vulnerability that depend mainly upon another's lack of understanding and compassion begin to find a compensating safeguard in the fact that hurtful actions taken therefrom by another person tend also to have complete visibility. This visibility, plus long-lasting availability of notes and records, would be important to the processes by which each person evaluates his potential colleagues -- which soon becomes important to those concerned with personal growth within this market, and moves toward a lower significance otherwise hurtful actions attempted by those without mature concern for their own growth, or without ability to grow into or stay in a position where their comments and actions are trusted or seriously considered.

5h12

This may seem unduly naive, I know. But then consider an Afghanistanian villager, whose entire worldly experience is with a primitive every-man-for-himself market: what might it sound like to him to hear a peer suggest that the marketplace would benefit hugely by operating upon the basis of trusting the other man's word. "I say that I will pay you next week for a dozen buns, and I walk away without counting how many buns you put into the bag." Unreal fantasy -- talk of credit accounts, checking accounts, credit ratings, credit cards, etc. What does this have to do with getting the best price for my goat, to deal with abstractions such as accounts, promises to honor, reputation, etc. in a formalized, recorded fashion? Ludricous restrictions and dangerous vulnerability for a system to expect both me and my neighbor (adversary) to reveal our positions, stand behind the things we say and the marks we make, and depend upon the other to do so.

5h13

It seems clear that today's Western-world economy couldn't be as strong as it is if such open vulnerability didn't prevail. I only wish that I knew the evolutionary dynamics that produced the attitudes and customs necessary to make the "honest openness" work -- obviously its practice in the Afghanistanian village would lead to disaster, and yet it likely was from just such a market environment that ours evolved.

5h14

It seems not unreasonable to assume that survival value in our cultural evolution will favor institutions which support the most efficient Knowledge Markets (organisms which support the most efficient nervous systems). Then certainly the Knowledge Market will someday operate with more open trust in its knowledge interchange, to release for constructive ends a great deal of otherwise entrapped human energy. Those who grow up within such an environment will look back with pity upon the primitive fears and protective practices prevailing in 1970.

5h15

(summary) Summary

5i

I think that tomorrow's institutions can be (must be) far better adapted to their environment, much better at providing for a full life style for everyone. These changes require a very significant increase in the institutions' ability to develop, support, and integrate the intellectual power of their individuals and organizations. And, as I see it, this ability will be directly dependent upon advanced application of interactive computers and multi-access computer networks. But the following condition is very strong in this "implications" picture: to harness this technology toward these ends will require intense concurrent development of our very complex and sophisticated system of concepts, conventions, methods, skills, organizational forms, attitudes, and values. It is time, and the means are at hand, to develop a much improved nervous system for our "social organisms".

5i1

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5i2

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5i5

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5i8

(policy) Statement of Editorial Policy

6

ARPANET News
Statement of Editorial Policy

By

Jean Iseli, Editor

6 February 1974

6a

Introduction

6b

The purpose of this memo is to outline certain statements of policy considered relevant in the conduction of the business of the ARPANET News: In its creation, handling, publication, interface with the reading public, and with its sponsor, ARPA.

6c

Certain areas of intention, responsibility, and endeavor are defined:

- o Purpose of publication
- o Areas of responsibility
- o Facilities use
- o Interaction with ARPANET users
- o Long term goals
- o Short term goals

6d

(purpose) Purpose of Publication

6e

It is recognized that the ARPANET consists of an interlocked collection of nodes which are autonomous sites. These sites are involved in research, education, and development of facilities within their own framework, their facilities often predating their entry into the Network. Involvment in the widening scope of possibilities brought by Network connection is sometimes reluctant in achievement and slow to develop, chiefly because of certain human factors known to be involved in technology transfer, rather than machine factors:

6e1

(1) Primary to the recognition of the functioning of the ARPANET, is the acknowledgement that the ARPANET is a network of people who operate machines, and not machines operated by people.

6e2

(2) People tend to base their plans on known and familiar personal interactions, instead of impersonal machine facilities.

6e3

(3) Goals pre-dating entry into the ARPANET were usually based on pre-entry capabilities and relationships.

6e4

(4) Personnel of the sites are often not completely aware of the scope and depth of facilities on the ARPANET which could open to them.

6e5

(5) While a wide range of facilities are now available, people plan their work on known and trusted relationships. These relationships are various: man-man, man-machine, and man-machine-man, but in order to be viable and evolve increased development of facilities and capabilities, a sound man-man relationship must occur somewhere in the cycle.

6e6

(6) In order for a wider sharing of resources and more sophisticated use of the Network to be made, the people who plan and use the Network on a daily basis must become widely acquainted with both people and facilities in order for a true transfer of technology to take place -- a Network way of thinking must develop, a Network team-like interaction must become more widespread.

6e7

(7) This "team-like" interaction cannot be forced; it is a matter of education and transfer of knowledge to a depth of easy familiarity and in a manner designed to pique interest and present a personal friendliness.

6e8

(8) This "team-like" interaction will in turn form the firm foundation of a future collaboration in development of an enhanced and more efficient technology.

6e9

Such facilities as RFCs circulation, literature availability, the Resource Notebook, New Users Handbook, and other material are designed to announce and enable the use of machine and software facilities. However, nowhere is covered the very important area of technology transfer involved with human relationships in building a dispersed team, resident at many sites, but with established and trusted relationships which form the foundation of a coherent Network, instead of a collection of autonomous sites who sometimes use each others facilities.

6e10

This area of technology transfer -- building of a wide and easy acquaintance among the users of the Network -- is the work of the ARPANET News. The News is the meeting place, introduction, and forum of the people who use the ARPANET.

6e11

(responsibilities) Areas of Responsibility

6f

Areas of responsibility defined here include:

ARPA
Editorial staff

6f1

ARPA/IPT is the sponsor of the ARPANET News, giving encouragement and advice, and lending assistance in obtaining facilities for production, publication, and distribution of the News both online and in hard copy.

6f2

The Editorial staff, headed by Jean Iseli as Editor, presently consists of volunteer, unpaid assistance from interested persons, such as Mil Jernigan, who acts as reporter, typist, proofreader, online manipulator of data bases, and council for the Editor; and Mike Padlipsky, Multics, who lends gracious and greatly appreciated assistance in filling the News with newsworthy stories.

6f3

It is the responsibility of the Editor and Staff to find news, to judge its worthiness and applicability for the reading public, to process the data bases for publication, to contact and keep attuned to the ARPANET as an operating system and to the ARPANET as a Network-wide, distributed, unofficial, but highly vital team.

6f4

(facilities) Facilities Use

6g

Facilities used in the production of the ARPANET News are:

6g1

ARPA Computer Network - ARPA makes the production and distribution of the News possible through generous entry into the ARPANET, particularly through various distributed directories. The various sites of the ARPANET who contribute special directories to house their versions of the online current issue of the ARPANET News are making it possible for the News to become a truly Network-wide facility.

6g2

Network Information Center - The NIC has the responsibility of furnishing the printing and mail distribution of the hardcopy of the ARPANET News, and has graciously furnished online viewing facilities for their current NLS version, and archival space for the NLS versions of files as needed.

6g3

Deservant of special mention is the user program written by Josi Althouse, Jim Calvin, and A. J. Rosenfeld of CASE-10 for the processing of the News data base and its viewing at the distributed sites. Also an invaluable aid is the teleconferencing program written by Jim Calvin, which enables the News editorial staff to conduct online interviews and to contact the user public in the search, both for news articles and for keeping in touch with their interests, needs, and opinions. Without these important facilities the present character and future goals of the ARPANET News would be infinitely more difficult in achievement.

6g4

New facilities with interesting and exciting possibilities are also in process of being designed and/or implemented at UCSB, UCLA-CCN, and UCSD for viewing the News, and under consideration at several other sites for viewing and other adjunctive capabilities. These will be announced at the proper time.

6g5

The Editor and Staff consider that their most important facility is an intangible one: The goodwill and friendly, cooperative interest of the growing number of friends on the Network who lend their assistance and effort toward making the production and dissemination of the News a joint effort of the ARPANET itself.

6g6

(interaction) Interaction With ARPANET Users

6h

Since the viewpoint of the News inclines toward a humanistic ideal in the transfer of technology from the creators of the ARPANET to the ultimate users and implementers of the Network, it follows that the approach to interaction with the users and finding and dissemination of the news stories would bear in mind

6h1

(1) The journalistic tradition: "It is the people who make the news", translated into: "It is the users who make the ARPANET".

6h2

(2) The user population of the ARPANET ranges all the way from systems programmers and computer designers to students, secretaries, librarians, and file clerks who are being trained in handling data bases.

6h3

(3) Every type of user of the Network is important -- all are needed in order to build a strong and versatile Network. Something is to be learned from each of them. Even informal and apparently far afield uses become relevant in a global viewpoint -- it is well known in the computer industry that the development of the game Spacewar speeded the growth of computer graphics by at least an order of magnitude.

6h4

(4) Only through learning of the special uses, needs, and skills represented in that user population, can the designers and implementers of the Network understand fully the potential and scope of the Network -- as it now is, and as it will become. The ARPANET is a pioneer effort, and as such, the uses found for it, either formally or informally, will serve to dictate the directions of its future growth.

6h5

(5) It follows then, that some means should be found whereby both the designers and implementers of the Network, and the users of the design may interact, become acquainted, share experiences, make discoveries about each other and about the Network which they are jointly building.

6h6

(long-goals) Long Term Goals

6i

The primary objective of the ARPANET News and its evolving adjuncts are to form a basis for the dynamic interaction of the people who comprise the Network to form themselves into a distributed team wherein all the benefits of true resource sharing at all levels will accrue to them.

6i1

In the view of the News staff, the ARPANET of the future will become a coherent system wherein users may obtain and use resources without regard to their location or local usage attributes. Interaction on a personal level should be easy and fluent, whether a team member is on a display terminal in New Zealand or a teletypewriter at Rutgers University, and the functions performed on this network system should be of a greater universality and sophistication than presently conceived. This is possible and will be realized if the users and implementers of the Network become acquainted with each other and learn to interact easily and effectively.

6i2

The ARPANET News holds as its goal the building of these personal relationships based on the technology sponsored by ARPA and its affiliated collaborators.

6i3

(short-goals) Short Term Goals

6j

As a near term step in the direction of achieving these goals, the following plans are under development

6j1

(1) completion of the distribution of the News to ARPANET sites.

6j2

(2) evolving a more comprehensive vehicle to support the distributed News and its forthcoming adjuncts.

6j3

(3) develop a controlled and public "forum" of dialog in the News to bring out such highly relevant issues as:

- o the social consequences of networking,
- o the technology consequences on the social structure,
- o the philosophical and belief-structure of people and how networking will change it,
- o possible "futures" - alternative futures to come from such concepts as "wired communities," and
- o ability to use networking and the consequent collaboration support techniques in world structure re-building.

6j4

(4) augment the News vehicle to allow its evolution into a network-user information service.

6j5

(5) act as a forum for discussion by invited experts concerning the characteristics, and how to achieve them, for the ideal work environment for specialized tasks, such as would be envisioned in relation to the paper "Design of a National Software Works", by R. Balzer, et al, abstracted in the January issue of the ARPANET News.

6j6

(6) In projects of a global nature, such as mentioned in (5) above, act as a medium for intercommunication among dispersed members of a working group who for convenience may find a stabilized intermediary and message/opinion/dialog organizer of assistance. In such tasks as this, it would be appropriate for the News to act as entrepreneur; the work and dialog envisioned would come from many sites and the assistance of the News would be in the form of conducting and encouraging an ongoing dialog.

6j7

(rutgers) Rutgers University Computer Science Department

7

.....by Saul Amarel - Chairman and ARPA Project PI

7a

The Computer Science Department of Rutgers University is located in the Hill Center for the Mathematical Sciences, which is on the Busch Campus in Piscataway, New Jersey, just north of New Brunswick. Also located in the Hill Center are the RUTGERS-TIP and a 360/67. A PDP-10I will be added soon. The machines are maintained by CCIS (Center for Computer and Information Services). Access to the network is through the TIP, to which an ODEC 2423 line printer is connected. The TIP has been operational since mid-November, 1973. Prior to that time, foreign exchange lines to the MITRE-TIP were used. It is expected that the PDP-10 will be connected to the TIP at some future date. The 360/67 is available for local computing.

7b

In recent years the department has undergone rapid growth. It offers programs leading to B.A., M.S., and Ph.D. degrees in Computer Science. At present there are 21 full time and 8 part time faculty members. A total of about 800 students, of whom about 120 are majors, are enrolled in undergraduate courses offered by the department and there are about 250 graduate students, of whom 50 are in the Ph.D. program.

7c

Current research by the faculty is in areas of artificial intelligence, computer aided design, description languages, language processors, operating systems, theory of programming languages, theory of algorithms, automata theory, graphics, instructional systems, numerical analysis, computer modeling and optimization problems.

7d

Our initial grant from ARPA began in March 1973. Research under this grant falls into two main areas: secure data bases and operating systems and automatic programming. Within the area of secure systems work is being done on the protection and integrity of data bases. This research has taken two forms. One is the design of a system which will allow the integrity of the data base to be maintained in a multi-user environment without requiring lockout mechanisms that prevent access to the data base for extended periods. The other is the development of a schema to allow the specification of protection in a data base system. A pilot data base system will be implemented to test these theories.

7e

Another aspect of the secure operating system research is the development of guidelines for producing programs which are easy to verify due to the way in which they are structured. Parts of the HYDRA operating system will be recast in a suitably structured form so that their operation may be more easily analyzed.

7f

A number of projects associated with automatic programming are also underway. One area has to to with the use of finite state machine theory to synthesize efficient programs. Work is proceeding on programs to generate state encoding schemes for these finite state machines. Another area is the formulation and manipulation of enumeration based algorithms. A system which accepts the recursive definition of an enumeration algorithm and transforms it into a "good" iterative program is being developed.

7g

Work is also being done in the design of non-adaptive coparator algorithms and the development of programs to generate algorithms in this domain.

7h

The synthesizing of programs to solve sorting problems is being investigated, with efforts being concentrated on creating a system which accepts a statement of a problem in non-procedural form and proceeds to form a program for solving the problem by using AI methods of problem solving.

7i

In addition the uses of the Meta-Description System for Automatic Programming are being studied and the data management system of the MDS is being implemented.

7j

The Department of Computer Science is also the center of the Rutgers Research Resource in Computers in Biomedicine, supported by a grant from the N.I.H. Its main goal is to develop, through interdisciplinary collaboration, innovative applications of Computer Science to problems in medicine, psychology and environmental systems. Work on computer-based consultation systems in ophthalmology has been carried out in close collaboration with the Mt. Sinai School of Medicine in New York. Recently, collaborations have been established with Washington University (St. Louis), and Johns Hopkins, and the ARPA Network may soon be used to enable the researchers to share effectively in the Rutgers Resource. Work on modeling in social psychology has also developed to the point where Network interaction with collaborators at Yale is being planned.

7k

Thus far our Network computing has been rather limited, due both to the fact that the project has just gotten underway and most of the work is in the theoretical stages and also because satisfactory arrangements for computing have not yet been made. Most of the work so far has been in PL/1 on Multics (finite state machines) and INTERLISP at BBN (translating the MDS from LISP 1.6 to INTERLISP). Network computing has been picking up of late with some work in program correctness being done in SNOBOL at BBN and ISI.

(bryan-ucst) Interview With Roland Bryan, UCSB CSL

8

Roland Eryan, Principal Investigator, Computer Systems Laboratory, University of California at Santa Barbara, discusses some of the activities at UCSB with the ARPANET News. The interview took place 22 February 1974, online at OFFICE-1.

(rb) is Roland Bryan
(ji) is Jean Iseli, Editor of the News
(Mil) is Mil Jernigan, staff reporter for the News

8a

(Mil) We thought we would like to talk to you about some of the interesting things that might be coming up at UCSB. Looks like a lot of ideas are stirring there.

8b

(rt) We are attempting to interest the faculty at UCSB in the use of computers at every level. We are pushing very hard at the assistant and associate professor level to interest them and their grad students.

8c

(ji) Roland, in your promoting this, have you laid out a program of informing them about the Network and its resources, including demonstrations; and if so, is there a way in which the Network might be of assistance to your endeavor?

8d

(rb) We began with an interactive, graphics, On-Line system (OLS). This has been used for some time on the campus in teaching complex arithmetic and statistical courses in psych and sociology. That work began about 10 years ago. Entering the Network was a natural transition since ARPA provided the major support for the development of the OLS.

8e

The Network has been the basis of our more recent thrusts into the establishment. We have the cooperation of the computer center and we added several custom 360 channel attachments, such as a multi-line controller to attach many diverse consoles and mini-computers. We made it possible to reach the Network from any one of the user's machines or consoles and we entered into a study of the impact of the Network upon the University of California. This study allowed us to distribute questionnaires to the faculty at every campus and to give seminars on the potential of Network use. The results were still short of expectation. However, the fears of future user's about remote systems came to light.

8f

(Mil) Perhaps one of the basic problems in getting faculties to use computers is that they think of monstrous number crunchers, and do not realize the truly exciting promise of computers and networks in communication and effects on the social structure.

8g

(rt) Your use of the word promise, brings up the possible reason for their reluctance. Many potential users have been told of the "promise" of computers for many years. As time has passed they became frustrated and unwilling to use computers unless forced to. The younger educators have been caught up in the direction that systems are now going; so, micro- and mini-computers are taking over their interest and use. I feel certain that the introduction of these small processors and their increasing power will make it easy to bring up the new generation.

8h

Networks will still be necessary though, but not as we have them now, I think that networks will become more like the telephone system and a user will request access to large data bases, large library files, and possibley for inter-user communication, just as we are doing now. The emphasis, at least as I see it, will not be on reaching large, number crunchers.

8i

(ji) Roland, are you at UCSB exploring the augmentation of mini's with the types of "functionally-dedicated" resources that are evolving on the network, like the Datacomputer [and its potential for large file residence and access, the NLS and its many subsystems, ILLIAC-IV and its application to large matrix formulated problems, and the like] so that users never have to worry about the idiosyncracies of login procedures, network procedures, and all the other frustrating user annoyances.

8j

(rt) Let me give you a list of our present work. This may answer your question.

8k

We have a local interactive signal processor. It was used for speech analysis and has within it the basic operators of the OLS. It has a link to the Network and has a program that simulates a TIP for some applications. We have an IMLAC and several of the staff have been adding some local power to edit and work with files, this in hopes of making it easier for a certain class of users tc work locally. We have worked on the concept of creating libraries of machine-language programs for mini-computers, the libraries residing in the 360, to be called by a laboratory experimentor when he connects the mini to a particular piece of lab equipment, the point being that he need not be a programmer.

8l

The OLS was made with a special keyboard so that the user need only work in mathematical terms from single button pushes. The idea is that we have been trying to make user interfaces that eliminate the need for knowledge about the machine that one is using, perhaps not even be aware of connection to a machine at all.

8m

As for your question about using Network resources, and introducing them to users: We presently support an image processing research project in the Electrical Engineering Department by helping the researchers to reach the digitizing equipment at USC. We have arranged for an account on the ILLIAC-IV so that our local Quantum Institute and the Chemistry Department can perform large-scale calculation.

8n

We have asked in each case that the user assign a grad student or researcher to the task so that he will be the consultant for future users. We have provided a console and an account to the Library so that they can experiment with library services available on the Net, such as MEDLINE. This has grown into a large project since the librarian has now arranged for many accounts (not on the net) to experiment with.

8o

These are all on-going at this time. As for your question about the Datacomputer and its large file service, I have some comments regarding its use as a library resource: I am not sure that they will be able to offer the kind of access necessary for library use, such as authors, abstracts, citations, etc.

8p

(ji) From our prior use of OLS here when we had an IMLAC, I would say your direction there is a good one indeed...many users will require the type of consideration implicit in your approach. With respect to the Datacomputer, could you maybe cite some of the problems you see which may act as barriers to its use?

8q

(rt) That may be difficult, since we have not studied it as much as required for an educated answer. Our requirement would be to have a repository of references for use in many areas of research or interest. MEDLINE, which is available on at least three systems throughout the USA, has about 600,000 titles. A user sets up a single, or combined "keyword" query and the file system responds by giving him as many cross-references as it has. The response is very rapid.

8r

Similarly, the Chemical Abstracts, the Psych Abstracts, the American Petroleum Industry Abstracts, and Gifted Children Citations -- the list goes on and on. These do not all reside in a single machine or under control of a central governing group. I believe that it might be physically difficult to update this material as often as necessary and it might be politically difficult to bring all of their "private" or "privately owned" information into a single source such as the Datacomputer.

8s

(ji) Do you think a concept like a mini-computer retail outlet that connects to these services [the ones available on-line and that will emerge] where a user may cite his requests in a common language, that the mini in turn maps to the desired services language, is a viable alternative to that?

8t

(rt) I very much like the idea of the "intelligent" mini for a non interested user. By non-interested I mean one that has no time to learn the fundamental interactive needs of a site, and is only interested in results that support his interests. That is about all I have to say on that subject, except that I believe that more research must go into developing the "intelligent" mini or micro.

8u

(ji) Roland, are there other areas of your current endeavor that you would like to address. For example, we would be most interested in knowing the status of your PLATO terminal adaptation for Network use and the potentials you see for it outside of the PLATO system?

8v

(rt) Our assignment was to make it possible to attach a plasma terminal, specifically the one produced by the University of Illinois for use on PLATO, to the Network. The plasma terminal -- we now refer to it as the ARPA Plasma Terminal (APT) since we all deal in acronyms -- the APT would be used for access to PLATO by way of the Net and for general purpose use on the Net.

8w

We built a prototype unit that connects the APT to the Net through our SEL machine, which simulates a TIP, and another piece of hardware to connect between ANTS and the PLATO system. These hardware units are required to disect the PLATO formatted data and to make it compatible with Network protocol. We have had a good deal of cooperation from the people at ANTS, particularly Jody Kravitz who has spent many hours at their end tailoring the ANTS programs to accept this strange new front-end.

8x

The problems were not hardware, as might be expected, but in the fact that the PLATO system is very dynamic and expects a smooth flow of display information. It is a very powerful CAI system and many of the lessons count on a dynamic presentation to the student. Not just animation but things like mercury rising in a manometer, and rotating engine parts that the viewer is required to stop at certain heights or positions. In order to accommodate the PLATO output we have to move the display info through the Net without breaks. Luckily the problem was already on our list of areas to research. We are interested in, and have been dealing with the need to send some Network data which must maintain time-integrity on a bit-by-bit basis and the work dove-tailed exactly.

8y

(Mil) I know that some systems have the ability for a constant refresh of the display, but doesn't that put quite a load on the system? Most CRT's refresh display only about every 15 seconds or so, or on demand.

8z

(rt) In the case of the APT there is no refresh problem. It is just like a storage CRT except that the display is produced by discrete selection of a point within the glass surface. Once a point is selected by the sending processor, it is ignited and sustained locally. The terminal is perfectly suitable for use in applications such as we are now using. It has a local character generator and posts text as character codes are received. Graphics are easily accomplished by direction of the sending computer, and the displays are locally maintained. The problem only comes when the stucent must directly respond to a presentation that is changing according to some lesson plan.

8a@

(Mil) Are the departments at UCSB utilizing your facilities in CAI to any extent?

8aa

(rb) As before, we are bringing professors and others in the community around to learn about PLATO. We have several on the faculty that worked on the CAI system at Stanford with Suppes. They are most interested in using PLATO.

8ab

First, you must realize that a terminal as it stands today is very expensive and we have to be very careful of our "promises" since the local grammar school educators think that all they need is to acquire one of these neat diplays. Not true, as you and I know, and the real power lies in Illinois no matter which display is used.

8ac

The plasma display, by the way, is not a CRT but a flat, glass surface. It has at least two laminations, between which are small pockets of gas and a matrix of selection wire very much like a core memory. The computer need only select a cross-point and it ignites to produce an orange glow. The glass is transparent so that slide images may be superimposed on the plasma display as well.

8ad

(Mil) It would be interesting, I should think, for you to plan an open-house "ARPANET DAY" and invite the faculty to see a really good demonstration of all the facilities of the ARPANET. Some of them I am sure, not only have never seen the full power of the ARPANET, but do not even know it exists. Even Jean and I, as much as we travel around the Network, are constantly finding something new.

8ae

(rt) We have been approaching that from the direction of involvement; that is, we are bringing in selected researchers to pursue a given proposal or the production of a paper for a journal article. So far we have a large group of neurophysiologists using the interactive signal processing system and they have been able to bring out phenomena that they were not aware existed, due to the ability to react with the data as a user in direct control of the numerical processes.

8af

The idea of a Network demonstration day is good, but again must be handled on a very careful basis. Maybe only a few would show up. It really becomes a marketing problem and we have to be sure of the results we wish to gain.

8ag

By the way, we are planning to hold our 2nd Annual Computer Music Festival here shortly. We are asking music researchers around the country to "sit-in" and it should be a great public relations effort as well as a lot of fun. We will publish a report and maybe even a recording.

8ah

(Mil) That is great. I have some suggestions of very interesting research going on around the country in that area if you want to contact them. One is Dr. Prentiss Knowlton in JPL in Pasadena. Another you would be interested in is Dr. Herbert Brun at University of Illinois and a friend of the ANTS people.

8ai

(rt) We are already in contact with Dr. Brun, I believe. We will see about Knowlton, perhaps he will be interested. The neuro-people that have been using the signal analysis system are interested in the following: Drug addiction, the site of action of certain narcotics such as heroin; Neuroacoustics, the nervous system's technique for sorting out the pulse-streams that move from the ear to the brain (a very interesting logic problem, since there is amplification, combination, negation and many other pre-processing occurrences in the conduction path); muscles action, and even one man from Ergonomics interested in the human factors of console design.

8aj

(Mil) Did you know that Professor (Music) Brian Channing at Stanford has a computer program that simulates natural sounds that are absolutely (mathematically) indistinguishable from the natural sounds? I think that some of the work being done by Brian Channing in that area holds much promise toward utility in solving the very large problems in computer understanding of natural continuous human speech.

8ak

(rt) Several of our former researchers are now at SCRL (Retz and Pfeifer) they have done some interesting work in the area of speech recognition and understanding as well.

8al

Our neuron people are more interested in finding out how the human or animal system works and hope to add to the knowledge in that area. They use small sensors embedded in the nervous system to pick up the pulse signals which are recorded on tape for later insertion into our signal processor.

8am

The reason I mention this is that in proceeding toward development of new probes, we sponsored a seminar by Prof. White of Stanford, during which he described his work in creating new micro-stimulators for insertion into the same nerve bundles, just past the ear, so that deaf people can hear again. The probes have micro-circuits on them and are driven by a small detector/amplifier circuit located under the skin behind the ear. An external sensor is used to drive the receiver which is under the skin, and this in turn drives the probe, thereby pulsing the nervous system in a manner similar to the real source. Since this is done just past the ear, the preprocessing by the neuron bundle is still effective.

8an

(Editor's Note: This concludes Part One of a two-part interview. Next month the ARPANET News will explore with Roland Bryan UCSB's plans for future developments, including a re-vamping of their approach to Network connections, allowing for easier Network accessitility.)

8ao

(netsystems) NETSTAT and SNDMSG Systems Changes 9

New NETSTAT Release by BBN 9a
==========

The following announcement by Johnson at BBN accompanies an announcement of new NETSTAT changes. For those who are unfamiliar with the TENEX NETSTAT subsystem, it is employed to develop a socket map of connections to the local TENEX Host and also supplies other information such as the current status of other ARPANET sites. The text of the announcement follows: 9b

Date: 5 FEB 1974 1032-EDT
From: JCHNSON
Subject: NETSTAT 9c

New features: 9d

Half-duplex terminals should be handled correctly.

Semi-colon can be used at the start of a line to indicate a line to be ignored. 9e

New specification commands to select connections involving specific sockets:

"LOCAL.SOCKETS" or just "SOCKETS" to select connections with specific local socket numbers.

"FOREIGN.SOCKETS" to select connections with specific foreign socket numbers.

The specification arguments for the SOCKETS commands can be any of the following (all numbers are octal): 9f

SKT	A single specific socket:	S = SKT
SKT1-SKT2	Any socket in range:	SKT1 <= S <= SKT2
SKT+INCR	Any socket in range:	SKT <= S <= SKT+INCR
<SKT	Any socket in range:	S <= SKT
>SKT	Any socket in range:	SKT <= S

Comments or complaints to JOHNSON@BBN.

9g

The New SNDMSG at USC-ISI

9h

BBN has rewritten SNDMSG to improve its reliability, correct a number of known bugs, and improve its error diagnostics. The new version is available at ISI by typing NSNDMSG to the EXEC (instead of SNDMSG). A new compatible version of RD is also available by typing NRD to the EXEC. If no problems are encountered with NSNDMSG and NRD by the beginning of March, they will be renamed to SNDMSG and RD. A brief summary of the changes follows. Please report any problems to Pipes or Hoffman.

9i

A. New Features

9j

1. Control-O (↑O) will stop typeout, for example, after you have seen the part of a help message of interest or during the typeout of a long message in response to control-S.

9k

2. The distribution list feature as described in the user list help message now works properly.

9l

B. Improvements in User List Input

9m

1. Leading and trailing blanks in user names, host names, and distribution list names are ignored.

9n

2. A carriage return in a file of user names being inserted will not terminate the user list. Only a carriage return from the terminal will do so.

9o

3. If the last character on a line is a comma, the user list can be continued on the next line.

9p

C. Miscellaneous

9q

1. Many bugs have been fixed and error messages have been improved.

9r

2. Confirmation of inserted files; for added safety when inserting files with control-B, after the name is typed (or recognized with escape), you will be required to confirm it. Carriage return will confirm, rubout will abort.

9s

3. The format of the mail headings (especially the date) has been changed, and the new NRD works with both the old and the new formats.

9t

(neted) Current News About NETED

The following note was received from Mike Padlipsky, MIT-Multics, concerning the current status of the NETED implementation:

Date: 26-FEB-74 1044-PDT
From: MIT-MULTICS
Re: NETED
- - - -

NETED Status

There are two pluses in this month's NETED status summary, so let's take them before grudgingly noting the one minus:

1) Jerry Burchfiel of BBN has asked me for copies of the two PL/1 versions of NETED, with the intent of doing a BCPL version for inclusion in the new TENEX "SNDMSG/READMAIL" package.

As "SNDMSG" is probably the most often used Server program on the Network, NETED's presence in it must be accounted a distinct plus for the common context editor concept (and, I'd like to think, for its users).

2) I've also had a request for the PL/1 listings to be used as models for an implementation at Lawrence Berkeley Labs. As I understand it, they'll be coming on the Net soon with a CDC-6600 which front-ends to a CDC-7600; even if I've misunderstood the lash-up, the result is that NETED will be available as a means of getting at a really big number-cruncher sometime soon.

Unfortunately, the time scale on all this is not only a bit up in the air because of BBN's and LBL's internal schedules, but also because of the one minus which must be mentioned this month: We still haven't completely agreed on all the details of the new spec. It's not a major impasse; more along the lines of do you leave the pointer at the last line merged after merging a file, or put it back where it was. The problem is that there are about a dozen such issues, and it's proven to be rather difficult to reach a concensus through the "mails", as there are always more pros and cons to be considered.

10h

Oh, well, if we can't get the implementers together in the same room (with a blackboard) soon, and the mail route continues to be a hassle, I'll just have to undertake a phone survey and -- if need be -- lie about the "votes" so that we'll have things sewn up by next month. (It's by no means a profound observation, but it is worth mentioning that the transition from a preordained spec -- even though it was known to be deficient in some respects -- to a set of extensions "designed by committee", does open the door to this sort of delay. I believe the result, reflecting as it does several points of view, will be more healthy than a single prescribed version, but it will take longer.)

10i

.....Mike Padlipsky

10j

(calendar) Events of Network Interest

11

(short-list) Short List of Conferences

11a

3/13-15 74	7th Ann Simulation Symposium, Tampa	11a1
3/28-29 74	Princeton Conf, Info Sciences & Systems	11a2
3/28-29 74	(sigpl)Very High Level Lang Symp, Santa Monica	11a3
4/15-17 74	Nonlinear Programming Symp, U Wisconsin	11a4
4/22-23 74	Workshop on Machine-Independent Graphics	11a5
5/23 74	(trends) IEEE Comp Soc Trends and Applications	11a6
5/6-10 74	NCC 1974 National Computer Conference	11a7
6/17-19 74	IEEE Intl Conf on Communications ICC74	11a8
6/24-26 74	(undrgr)Conf, Computers in Undergrad Curric	11a9
7/15-17 74	(graph) Conf on Comp Graphics	11a10
7/29-8/1 74	(jerusalem)2nd Jerusalem Conf,Info Tech	11a11
8/5-10 74	(ifip) IFIP Congress '74, Stockholm	

* Meeting sponsored by an ARPANET interest group.
Details of some meetings are given below. To view, type the "-show" request, i.e.:

-show (meetingname), where
the "(meetingname)" is the parenthesized
entry in the above list.

Additional information on the above meetings may be obtained from the professional/technical literature as given below:
Computer
Communications of the ACM
Computerworld

11a12

(sigpl) ACM SIGPLAN, Symposium on Very High Level Languages, Miramar Hotel, Santa Monica, California, 28-29 March 1974.

11b

Four sessions of 15 papers, nonprocedural and specification languages, data structures, optimization, and automatic program synthesis. Also short presentations on relevant topics. Contact: Burt Leavenworth, Conf. Chmn., IBM Thomas J. Watson Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598.

11b1

(trends) IEEE Computer Society, Trends and Applications Symposium, Gaithersburg, Md., 23 May 1974.

11c

A symposium in Trends and Applications in Computer Networks, sponsored by IEEE Computer Society Eastern Area Committee and the Washington, D.C. Chapter. Papers invited describing trends in computer network design and economics, tradeoffs in network design and applications of existing and proposed networks. Abstracts of approximately 1000 words due by 15 December 1973 to Kevin Casey, Catholic University, Computer Center, Washington, D.C. 20017.

11c1

(undrgr) Conference on Computers in the Undergraduate Curriculum, Washington State University, Pullman, Washington, 24-26 June 1974.

11d

National conference on multi-disciplinary forum for disseminating information about educational uses of computers. Sessions: refereed submitted papers; panel discussions; demonstrations, exhibits. Inquiries to: Ottis W. Rechard, Computer Science Dept., Washington State University, Pullman, Wn., 99163.

11d1

(graph) Conference on Computer Graphics and Interactive Techniques, July 15-17, 1974, University of Colorado.

11e

This will be a formal conference with papers later published in the Journal of Computers and Graphics or in the proceedings. Ira Cotton will chair a session on Graphics and Networks, Jim George of Colorado State University will chair a session on Standards, and Andy van Dam of Brown University is planning one on Division of Labor between Central and Satellite Computers. Robert Schiffman of the University of Colorado, Boulder, Colorado 80302, is the Conference General Chairman, and Jon Meads of Tektronix, Delivery Station 81-872, Box 500, Beaverton, Oregon 97005, is the Program Chairman. Contact any of these if you have suggestions or wish to submit a paper.

11e1

(jerusalem) The Second Jerusalem Conference on Information Technology, 29 July-1 August 1974, Jerusalem, Israel.

11f

Papers are sought on: operational environment of computers, including, not limited to: personnel systems, management information systems, health care delivery systems, financial, process control, manufacturing, and a number of other subjects. Original research, successful computer applications, or state of the art reports are requested. Mms. deadline 31 Dec. '73. Contact Dr. Herbert Maisel, Director, Academic Computation Center, Georgetown University, Washington, D.C. 20007.

11f1

(ifip) IFIP Congress '74, Stockholm, Sweden, 5-10 August 1974.

11g

To cover the whole range of information processing, including computer hardware and architecture, software, mathematical aspects of information processing, technological and scientific applications, applications in the social sciences and the humanities, systems for management and administration and social implications of computers. Dr. Herbert Freeman, Chairman, Programme Committee IFIP Congress '74, c/o AFIPS, 210 Summit Ave., Montvale, N.J. 07645.

11g1

(abstracts) Abstracts of Recent Documents of Interest

12

These documents are announced for the interest of the ARPANET Community; however, the NIC is not able to supply copies.

12a

D. M. Atkinson (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). Three Papers on Telecommunications and Social Environment With an Impact on Business. Business Planning Paper #11. April 1973. 35p. NIC 21061.

Contains: "The Changing Nature of Our Social Environment and Business Beyond 1973" (based on a talk to TEA, 1 March 1973); "Communications Environment of the 1980's" (presented to A Symposium for Canadian University Deans of Engineering, Heads of Electrical Engineering, and Computer Science Departments); "The Impact of the Social Responsibility of Business on the Internal Auditor" (presented to the Montreal Chapter of the Institute of Internal Auditors, Montreal, 16 April 1973).

12b

Lawrence H. Day (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). The Future of Computer and Communications Services. Business Planning Paper #6. Presented at the National Computer Communications Conference; Session: Views of the Future, New York, 4-8 June 1973. February 1973. 37p. NIC 21063.

Emphasis is on uses of computer technology in several fields: CAI, travel substitution, business communication, communications in the home, message transmission, social impact. Computer communications is beginning to have an impact on the social structure. The conclusion of the research into cross impact potentials is that the potential acceptance of these services will be dependent on behavioral, institutional and financial factors, not upon the availability of technology or technological breakthroughs.

12c

Lawrence H. Day (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). The Future of Man-Machine Information System Use by Non-Computer Professionals. Business Planning Paper #3. December 1972. 44p. NIC 21060.

Copies of slides used for presentation of a paper at the Fourth International Symposium on Computer and Information Science (COINS-72), Miami, Florida, December 1972. Non-computer professionals are defined as people who use the computer as an adjunct to their regular professions (such as medicine, law, business, etc.) and such individuals as students and housewives. Possible futures, and alternative use environments are suggested; Delphi techniques are used to probe public acceptance of a computerized society.

12d

Michael T. Bedford (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). A Technology Assessment of Future Home Communications Services - A Study Proposal. Business Planning Paper #12. May 1973. 17p. NIC 21062.

The role of societal and psychological pressures in affecting the rate of adoption of any particular technology has become the major concern of a number of groups working on alternative futures. New research methodologies such as cross impact analysis reflect the interest of research institutes in measuring such relationships between technology and environments. The Bell Canada BPG proposes to assess the impact of future communications technologies on human behaviors, with individuals and interactions centered around the home, and involving communications with individuals and institutions outside the home.

12e

Lawrence H. Day (Bell Canada, Business Planning Group, H. Q. Planning Department, Montreal, Quebec, Canada). Dimensions of Future Travel / Communications Substitutability. Business Planning Group Paper #18. October 1973. 29p. NIC 21065.

Forces creating interest in travel-communications substitution are new computer and communications technologies and the exponential growth in information generation and transfer activities in the central institutions of modern society. This paper argues that the application of economic cost/benefit analysis to the substitution question ignores far too many other relevant issues, including behavioral analysis of the reasons underlying travel and communication decisions and a consideration of the secondary environmental costs.

12f

Michael T. Bedford (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). Technology Assessment and the Future of Educational Technology. Business Planning Paper #14. May 1973. 23p. NIC 21064.

A discussion of Technology Assessment (study of impact of a technology), the Technological Imperative (if a technology becomes available, it will be implemented and used, whether actually needed and/or harmful or not -- the concept of the overkill), Technological Servitude (an "enslavement" by particular technologies, alluding to the fact that we go out of our way to serve and nurture our enslaver). The exact dividing line between the extremes of advantageous and disadvantageous consequences for society of any particular technology and its level of magnitude depend on the planning and technology functions that precede the widespread introduction of that set of technologies into society. How close we come to the optimum will depend on whether we give lip service to planning for the future, or whether we make a conscious effort to understand these technologies and their impact on individual behavior and group interaction.

12g

Lawrence H. Day (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). Electronic Mail Services in the Information Age. Business Planning Paper #1. October 1972. 22p. NIC 21059.

A discussion of the possible alternatives to regular mail services now in high usage, such as replacement with TWX, Telex, computer based message switching services, corporate private line telegraph services, facsimile transmissions, Mailgrams, Telepost, voicegrams, message switching computer networks, micropublishing of journals and books. Predictions are made of possible approaches that may be taken, and some dates are suggested.

12h

Philip Feldman (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). Cross Impact Matrix Applications in Technology and Policy Assessment. Business Planning Paper #15. Setpember 1973. 35p. NIC 21058.

Purpose of this paper is to illustrate various applications of the cross impact matrix technique in technology and policy assessment. It shows how many interrelationships of events can be summarized concisely for optimum decision-making. The conclusion is reached that even though modelling does not lead to absolutely correct answers, successive runthroughs on a computer may identify new and often counter-intuitive action options available to the decision maker.

12i

Philip Feldman (Bell Canada, Business Planning Group, H.Q. Planning Department, Montreal, Quebec, Canada). Group Judgmental Data in Cross Impact Analysis and Technology Assessment. November 1973. 30p. NIC 21066.

A secondary analysis of raw data collected from a cross impact study using group judgmental data as input. The focus is on quantitative validity of expert group opinion. Early Delphi literature is examined to show effects of the underlying assumptions of the poll takers and shows a partial validation of statistical combination of judgments. Conclusions: There are sound reasons the experts should be consistently more accurate when averaged over a group; increase in group expertise leads to large increase in accuracy; responding experts make more accurate predictions through Delphi techniques than conventional forecasting; and more research into forecast accuracy and techniques should be undertaken.

12j

(extra) ARPANET News Supplement

13

The "EXTRA", ARPANET News Supplement, is designed to:

. Provide an online repository for past ARPANET News articles deemed of longer term informational value.

. Provide a forum for articles not directly aligned with the regular articles of the ARPANET News, either because of length or peripheral subject matter, directed toward a smaller subset of readers.

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The "EXTRA" Supplement will not be distributed in hardcopy, and is available presently only at the NIC and at OFFICE-1. To view online, when in NIC Query language, type:

b[ring]<help>extra<CR>, or for viewing and/or printing in NLS, L[oad] F[ile] <help>extra<CR>.

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(extra-cont) Contents of ARPANET News Supplement

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