Message Service Group Teleconference

Here is an NLS version of the Message Service Group's ongoing teleconference. I put it together on September 3, but it is not quite up to date. Output processor directives are included.

Transcript of the Message Service Group Teleconference

Dialogue to September 3, 1975

prep. by Ra3y Panko

7-JUN-75 1432-PDT FARBER at USC-ISI: MSGGROUP# 1 TCTALK
Distribution: MESSAGEGROUP:
Received at: 7-JUN-75 14:37:46-PDT 2

Message-ID: <[USC-ISI]7-JUN-75 14:32:54-PDT,FARBER> 2a

There is a distributed network teleconferencing facility oriented to networks experimentally avilable called TCTALK, It was the result of a thesis of Jim Calvin at BBN, It can be accessed at the ISIA site via <network-help>TCTALK, questions relative to it can be answered by Calvin or Geoff at SRI-AI, I would recommend that you try it if you have not, Improvements are being made on a time available basis by Calvin, 2b

The full discription of TCTALK is available via the net and is in essense Calvins CASE thesis, Contact CAlvin for that, 2c

Dave 2d

8-JUN-75 1629-PDT DCROCKER at USC-ISI: MSGGROUP# 4 Use of a Teleconferencing system, in place of Net Mail
Distribution: MESSAGEGROUP:
Received at: 8-JUN-75 16:36:09-PDT 3

I have spent the better part of this past spring looking at our teleconferencing capabilities (part of a seminar at ISI) and, as a result, suggest we continue to use Network mail as our communications tool, rather than using TCTALK or FORUM. 3a

TCTALK is essentially a real-time system in which participants must painfully watch the typist, who has the "floor," enter his comments. It is a very inefficient process, currently. 3b

Forum has a long start-up curve and requires that all participants have access to the same machine. (TCTALK currently only requires access to a Tenex.) 3c

Use of Net Mail a) is extrememly convenient for most, if not all, of us, since we already exercise it for other activities; b) allows passive observation of the dialogue, rather than forcing everyone to explicitly catch up on recent comments (5 of us recently blew off any casual observers to our seminar by doubling the size of our online transcript, in the space of 10 days. It became too much work to catch up); c) mail is easily deleted and so "junk" mail is not really a serious problem. Most, if not all of us, have mail reading systems which allow a "menu" review of mail, prior to reading the contents. 3d

For the record, I happen to like the promise of teleconferencing, but do not believe our current tools are appropriate for use by other than computer hackers. (cf. the suggestions by PBARAN last week.) 3e

Dave. 3f

10-JUN-75 1145-PDT DCROCKER: MSGGROUP# 6 Re: Mail to Mealy@HARV-10
Distribution: MEALY AT HARV-10, walker, farber, stefferud, ellis, kirstein, iseli, pbaran,, vittal at usc-isib, stotz at usc-isib, uhlig at office-1,, watson at office-1, vezza at mit-dms
Received at: 10-JUN-75 11:45:42-PDT 4

In response to your message sent 10-Jun-75 11:19 4a

This may seem like a small point, but it could have some impact on development: A number of subsystems (I am specifically aware of SAIL and XOFF) run on Tenex and NON-Tenex sites, with only one copy of the source. Compile-time switches differentiate code for the differnt systems. So it would seem possible, if the basic mail program is sufficiently modular, to provide it for the DEC monitor systems, too. 4b

10-JUN-75 1458-PDT PATTI at USC-ISIB: MSGGROUP# 7 MESSAGE COMMITTEE INFO
Distribution: MESSAGE SERVICES COMMITTEE:, ellis
Received at: 10-JUN-75 14:58:14-PDT 5

A testable message system has been provided by BBN/ARPA at ISI as "XMAIL" and BBNA, B, C and D as "MAILSYS." These subsystems are there per our recommendations for a reasonable period to be evaluated and constructively critiqued to aid finalization for public release later. I urge all Message Committee members to actively participate in the testing phase along with other "selected" testors. Steve Walker has asked others to join a wider group called "Message Group" for which a list is available in: 5a

[ISI]<FARBER>MESSAGEGROUP.LIST 5b

Incidentally, an alternative system called NMSG is available at ISI and I invite your comments/suggestions on this system. 5c

Both systems should be self-instructing! 5d

Regards, Tom 5e

TOE/ph 5f

825 : Message illustrating lack of security
Distribution: PANKO
Received at: 10-JUN-75 17:35:54-PDT 6

TO: INTERESTED PERSONS
FROM: Whoever I want to claim to be
RE: THE MYTH OF SECURITY 6a

One reason that some people keep security on their directory, rather than simply on sensitive, individual files, is to force the delivery of mail to be by mailer, rather than by SNDMSG. I believe that it is their perception that mail so delivered is somehow 'authenticated'. This note constitutes proof that such authentication does not, in fact, take place. I could as easily have stated that the message was from LICKLIDER. 6b

This is not meant as a criticism of the current mechanism, since I do not believe it has ever been touted as 'secure', rather, I just wanted to clarify the point, in some people's minds. 6c

DAVE CROCKER. (Note that this is local mail to some people. The 'hole' is not net-specific.)
MSGGROUP# 911-JUN-75 10:13:13-PDT,288;000000000001 6d

Mail from USC-ISI rcvd at 11-JUN-75 1013-PDT 7

Date: 11 JUN 1975 1013-PDT 7a

From: ELLIS at USC-ISI 7b

Subject: MSGGROUP# 10 NEW "MSG" VERSION 7c

To: MessageGroup: 7d

THE NEW VERSION OF "MSG" AT ISI IS CALLED "NMSG", 7e

IT IS IN THE TESTING PHASE BUT SHOULD BE USEABLE 7f

BY THIS GROUP. 7g

------- 7h

12-JUN-75 0549-PDT WALKER at USC-ISI: MSGGROUP# 12 NMSG Complaints, Addendum
Distribution: MESSAGEGROUP:
Received at: 12-JUN-75 05:49:53-PDT 8

Tom, 8a

? ? in NMSG gives a nice summary, 8b

I'll admit that "#" is labeled "news" and perhaps there is no "news" yet, but why isn't there a file which says "No news yet" instead of "Not Available"? 8c

*Will there be a "five"page (not 25 page) description of NMSG commands?When? 8d

*First impressions of NMSG are good, I still don't understand why"Answer" works only on the current message, while "Forward"allows a <message-sequence>. Don't change Forward, change Answer! If this were done, is there any need for the Go To command? 8e

I'm bugged by user interaction details like "no documentation" and the differences between the way answer and forward work. I note with great joy that NMSG now prints the message number at the beginning ofthe message print out. Great! 8f

Steve 8g

12-JUN-75 1329-PDT VITTAL at USC-ISI: MSGGROUP# 15 NMSG
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 12-JUN-75 13:38:23-PDT 9

There is a new one on <subsys> on all the ISI machines.
It fixes some of the questions Walker had about the news feature.
If you are interested, the manual (almost up to date) resides on
<VITTAL>NMSG.MAN and the news (which is extracted from the help file)
is <VITTAL>NMSG.DOC. If you would like a hard copy mailed to you,
let me know (on ISIB, please), and I'll ship you one. My appologies
for the correct documentation not being on line; as excuses go,
it seems like an old help file somehow got in the way. We will be
extra careful in the future. 9a

John 9b

12-JUN-75 1826-PDT WALKER at USC-ISI: MSGGROUP# 16 More on NMSG
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 12-JUN-75 18:26:56-PDT 10

*I really like the "TO: First Addressee" feature for messages which I originate, Very nice! 10a

*I think user prompting features in Bananard are still better then NMSG, Giving the user a prompt for what to do next after tying a command should be easy, For example: Forward (message seq): 10b

We're getting there! Thanks for fixing the help files, 10c

Steve 10d

13-JUN-75 0925-PDT FARBER at USC-ISI: MSGGROUP# 17 a query re terminal speeds
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 13-JUN-75 09:29:33-PDT 11

Message-ID: <[USC-ISI]13-JUN-75 09:25:52-PDT.FARBER> 11a

I would like to point out to those who are blessed with access that allows 2400 speed terminals that there are those of us who get our mail at 300 speed. *I wonder what the effect is on the appearance of the mailsystems, I believe that many of the ways we are doing things would change, (like the appearance of network notes -- short and sweet). Should we be thinking of this as an important issue or will our users, as opposed to implementers, have high speed access? 11b

Dave 11c

13-JUN-75 0933-PDT VITTAL at USC-ISIB: MSGGROUP# 18 Re: Walker's NMSG comments
Distribution: MESSAGE GROUP:
Received at: 13-JUN-75 09:37:04-PDT 12

First, the prompting issue. There are three different type-out (prompting) modes in NMSG. There is the normal that you get when you start it up, a verbose mode which the V command will provide, and a concise mode which the K command will provide. The V command will cause additional prompting like Forward (message sequence) as Steve suggests. The only reason you want the verbose mode is when you are starting to learn msg.* After a relatively short startup time, the additional typeout becomes overbearing, but if you want it you can always type V and get it. The concise mode shortens typeout even more than the normal mode, and is sometimes very criptic -- it should NOT be used by novices. 12a

About the Answer vs. Forward. It is well understood what it means to forward several messages at once (this is allowed), but it is not understood what it means to answer several messages simultaneously. Does everybody on all lists get a copy of the response? I think that the only reasonable solution is to be able to answer exactly one message. The problem then becomes (in the MSG domain) of how do you specify the message number being answered and the sub-command (if one is given) both in a clean way that is consistent with the rest of the MSG command structure. A suggestion goes something like the following:

Answer <sub-command> in message number: xx

This is probably the closest alternative solution to the one that's implemented that is in the right 'spirit'. However, the reservation that I have is that it is probably better to know what you're answering BEFORE you specify the <sub-command>. These are about the only reasons that it's structure is as it currently exists. Any suggestions? Forward will not be changed. 12b

John 12c

13-JUN-75 1350-PDT TASKER at USC-ISI: MSGGROUP# 19 NMSG Observations
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 13-JUN-75 13:50:13-PDT 13

Dear Group: 13a

I am finding NMSG quite interesting and not too hard to adjust to from BananaRD (which was my previous favorite). I particularly enjoy the convenience the F and A commands provide: previously I had to use temporary files for such activity (especially F) and I never felt that a non computer freak would take to that. 13b

I do find the Answer command could use another sub-option, namely, one that allows the answerer to ADD a person to the address list.* Sometimes, after a dialogue with one or two we find it desirable (or necessary) to include another party. (Sometimes older messages must be forwarded to him, but as often, there is enough context in the answer to make that unnecessary.) In mentioning this to Nancy (NGoodwin@BBNC) she indicated the following: 13c

With MAILSYS REPLY is used the way ANSWER is in NMSG, I guess. The author of the reply can add to the address list, and the subject line if he/she answers NO in response to an automatic system question SEND? after the body of the message is complete. The additions appear in the second and onward lines of the message header fields, so would not appear in a SURVEY (I'm not sure about NMSG surveys). If the author adds still more text, the SEND question is not asked again, but use proceeds as usual. 13d

What do the rest of you find regarding the need for such an additional suboption? 13e

Regarding the filtering: Maybe I just don't keep enough mail on-line to fully exercise these options - but I find the subjects of the messages I receive often of VERY litle help in pointing to the contents.* This becomes worse after an extended number of messages have been exchanged on a topic.* The national level military community has come to the same conclusion and is now having systems built that construct lists of keywords from a complete text search.* 13f

However, maybe provision of these
masks will encourage people to pay more serious attention to the
construction of the subject. (This is not always the answer
since we often want to summarize our main interest or thought
in the subject for emphasis or attention-catching, thereby leaving
out any subordinate thoughts that might have been included in the
text. Furthermore, the author's keywords may well not
be those used by the recipient*.) For the present, I tend to
use separate files to keep my stuff in order.
Anyway, the military (I include the intelligence functions in that
term) has struggled with the problem* and there is, as yet,
no non-trivial solution. 13g

% is this referring to a specific activity? 13g1

I have had some problem with "Are you sure you want
to abort?" message under the TO and CC portions of
any of the commands involving SNDMSG with an environment
of two to three line hits per minute. So far, whenever a line
hit(s) has caused the abort message, I have immediately
responded with "N" and received the abort message at
least another time -- if not several more times. Is this
just a function of my noisey lines? 13h

Re Dave's comment about speed of terminal: I agree!!
(although you might not have guessed it from the length of
this missive). The terminal speed will also have a very
significant effect on the communications (Net) and the host
loading. The way I used the 2400 bps terminal in Rob's
office was VERY different from the way I use my 300 bps
TI735. 13i

Anyway, guys, keep up the good work. You have come
a ways from READMAIL. 13j

ALOHA,
Pete Tasker
(At CINCPAC Headquarters, Hawaii) 13k

13-JUN-75 1424-PDT TASKER at USC-ISI: MSGGROUP# 20 NMSG Abort Character/Sequence
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, ngoodwin at bbnc, wilcox, pacomj6
Received at: 13-JUN-75 14:32:25-PDT 14

John: 14a

The message I just sent to you Re NMSG was aborted in the middle of transmission to the addressees. I was called away from the terminal while SNDMSG was doing its laborious thing with the distribution list and some line hits caused the abort message and also produced a "y". Presto! The rest of the addresses had to be included in a retransmittal. 14b

Extensive experience with line hits and TECO suggests to me that DEL is probably one of the poorest choices for an abort character. Furthermore, I think the abortion process at certain stages of activities (like the TO and CC and Send) should require more than just two letters. It is very unlikely that I would abort in these stages, so, as a result, I would be very happy to put up with having to type in "YES" and then confirm with a <CR>. 14c

Aloha,
Pete
-- 14d

13-JUN-75 1515-PDT STEFFERUD at USC-ISI: MSGGROUP# 22 Message FILING Function
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, stefferud
Received at: 13-JUN-75 15:15:11-PDT 15

Greetings, 15a

NMSG certainly is a step forward. It is my choice for processing my own files of messages. 15b

In fact, I find that NMSG is really my on-line file processing system for my "Network" office. I really have two offices. One in here and the other out there with conventional fixtures and file folders etc. 15c

What I have out there, but don't have in here, is some way to make notes on the corners of my messages.* 15d

Out there, I keep track of who got copies: bcc from me, forwarded through me, etc.* 15e

I would like to see the discussion group consider that NMSG, XMAIL, HG, ETC. are really on-line message filing systems that should allow us to do the kinds of things we do with paper files,* in addition to the kinds of things we do with computer files. I don't see any reason to give up the benefits of one to get the other. 15f

I realize that this raises some difficult problems, but not insurmontable ones. The most difficult part would appear to be the means for modifying a message after it is received, in order to attach notes to the corners.* 15g

What I suggest is a FILING field that I can add, the same way that I can add a BCC field to an outgoing message in XMAIL. (I sure wish NMSG had BCC.) Then we need "String Search" on the new FILING field so we can go looking for things by our rememberence of our annotations, instead of what some sender thought I would like to have in the SUBJECT field. It should be obvious that there is no way for the senders of messages to get the desired thing in the SUBJECT field more than half the time. 15h

In terms of ISELI's Functional list, I suggest that we add the FILING function.* By the way, I endorse Iseli's list and look forward to seeing how our competing systems show up when the evaluators show us their results. 15i

Best regards to you all, Stef 15j

13-JUN-75 1900-PDT FARBER at USC-ISI: MSGGROUP# 23 stefferud 13 june 1975 1515 pdt
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST;
Received at: 13-JUN-75 19:03:18-PDT 16

Message-ID: <[USC-ISI]13-JUN-75 19:00:05-PDT,FARBER> 16a

I agree with the need expressed by Stef. I feel that I am turning into a file clerk,* As do many of us We keep separate files that we put different items into. I note the KEYWORD feature of the MAILSYS (XMAIL) system and feel that the two things are interrelated. One problem is that there is no way I can "add" a field to a message I have received and then do something with it. If I could add the KEYWORD field or for that matter a subject extention field etc then I believe that much of what stef wants could be gotten without much apparatus. In addition I think the general capability would be useful. 16b

Dave 16c

18-JUN-75 2242-EDT MYER at BBN-TENEXA: MSGGROUP# 25 COMMENTS ON MESSAGE SYSTEMS
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, pew, nickerson,
Message-ID: <[BBN-TENEXA]18-JUN-75 22:42:33-EDT,MYER>
Received at: 18-JUN-75 21:06:32-PDT 17

Here are some initial thoughts on NMSG and Mailsys. First off, I'd like to comment separately on what we see as the two basic functions of these programs -- reading and processing existing messages on the one hand and creating new messages on the other. 17a

*The message processing part of NMSG has an extremely clean, smooth human interface. It lets most of the essential things happen with a minimum of effort and permits the user a simple mental model of what's going on. 17b

*In contrast, the MAILSYS reading and processing commands have tended to confuse people, and make some rather basic operations quite hard to accomplish. For some time we've been in the midst of overhauling this part of Mailsys, with the aim of making it much more attractive to its user. Jim Calvin's HG program was an early experiment in this direction. In the overhaul process, we have found it profitable to draw on the good work that went into MSG and its predecessors, and the same is certainly true of NMSG. 17c

*Some things we particularly liked in NMSG and will bring out in a new Mailsys are: 17d

- the simple command language 17e
- the way of specifying message sequences and the very easy way you can get special sequences (by A,D,F, etc.) 17f
- the explicit message pointer (current message number) and the manipulations you can perform on it. 17g
- the uniformity of command groups such as PUT, TYPE, LIST and MOVE.

We also liked convenience features such as the automatic surveying of recent messages, *the inclusion of headers on message

listings, printing "+" and "-" on surveys, and the ability to specify an object file on entering NMSG. 17h

We have a somewhat different view on the matter of message creation. In company with several other systems NMSG relies on the earlier SNDMSG program as its workhorse for outgoing messages. As you all know, SNDMSG employs a prompt-driven form of input that leads the user through the steps of message creation. Our view is that this approach has several limitations:*

- You have to create message parts in the fixed order that's built into SNDMSG. 17i

- There's no way to go back and change a part once you have created it. 17j

- It's hard to see how you could gracefully extend SNDMSG to let the user select a subset of the many header fields now allowed in RFC-680.

*Because of these problems we took a "user-driven" rather than prompt-driven approach in structuring the create part of Mailsys. Hence the separation between creating a message and sending it, the ability to create message parts in any order and at the "top level" of Mailsys, and the ability to manipulate message parts, once created, through DISPLAY, ERASE, EDIT, FORMAT, ADD, and SAVE. 17k

An interesting by-product of this approach is that it's quite easy to make special prompt-driven sequences by "wiring up" groups of create primitives. The MAILSYS commands FORWARD, REPLY, and SNDMSG were all done this way, and we will soon make it possible for users to specify their own sequences. 17l

We are frankly pleased with how this part of Mailsys has turned out. However, that doesn't prove that the world will be, so we'd very much appreciate any feedback you can provide. In particular, we'd like to know how the rest of you feel about user driven vs prompted input, and how you feel about our particular implementation, specially with regard to human factors. 17m

The foregoing sums up our initial reactions. However, we're

continuing to review both systems, and I expect to have some further thoughts and questions in the next few days. 17n

/Ted Myer 17o

8504 : Mail from MIT-DMS
Distribution: PANKO
Received at: 19-JUN-75 09:48:12-PDT 18

DATE: 19 JUN 75 1207-EDT
FROM: Vezza at MIT-DMS
SUBJECT: MSGGROUP# 27
KEYWORDS: no-conference, simplicity-of-use,
message-service-complexity,
KEYWORDS: message-composer, message-reader,
third-party-record-service,
KEYWORDS: answer-message-group, high-speed-terminals, message-systems
ACTION-TO: Mealy at HARV-10, Watson at OFFICE-1, Uhlig at OFFICE-1,
ACTION-TO: Stotz at USC-ISIB, Vittal at USC-ISIB, PBaran at USC-ISI,
ACTION-TO: DCrocker at USC-ISI, Iseli at USC-ISI, Kirstein at
USC-ISI,
ACTION-TO: Ellis at USC-ISI, Stefferud at USC-ISI, Farber at USC-ISI,
ACTION-TO: Walker at USC-ISI, MClindon at USC-ISI, Tasker at USC-ISI,
ACTION-TO: Gilbert at BBN-TENEX, Myer at BBN-TENEX,
ACTION-TO: Burchfiel at BBN-TENEX
MESSAGE-ID: <[MIT-DMS]19 JUN 75 12:08:01-EDT.17739> 18a

Sorry to have been silent for so long. I think I finally caught up with what has transpired thus far, so I'll add some of my comments to this potpourri. 18b

There certainly are things you can do with a high-speed terminal that are at best painful with a 30 or 60 character/second one. It admits to a different modus operandi. One is not so worried about compressing things into one line. One scans and searches data bases differently.* I don't mean brute force, but at each point in the search, more information about the situation can be presented to the user. For instance, because I typically use a 2000 character/second terminal, I don't mind printing out 20 or so message headers including the subject field when I am searching for a message in my data base (which, by the way, currently contains over 600 messages). 18c

Also, one of my pet peeves is that no message system (including the DMS message system) expands the TO field so that one can see who was sent a copy of a message when the TO field was specified by a list-name instead of by a list.* Again, because of the high speed terminal I use, I don't mind having the list expanded and seeing all the names. However, I realize that those with low speed terminals would object, and rightly so. This is a

problem because the list of names is modified by additions and deletions; therefore, it is not always possible to ascertain exactly who has obtained a copy of a paticular message. I think you can see what I am getting at. It is often important for coordination purposes to know who has been sent what. This is especially true at the executive decision making level. 18d

*Solution: Transmit the list name and the list. Modify message reading systems to inhibit printout of the list per se, but allow the user the option of requesting the list when he desires it. 18e

*A person composing a message should be able to modify any field at any time except those fields that are stamped by the message system, i.e., sender for athentication purposes, date, time, and message id fields. Likewise the recipient, for the purpose of adding notes, keywords, comments, etc. Why is it not this way? I suspect that there is some notion in the minds of message system implementers about message integrity, the idea being that a message system which allows users to tamper with messages could not be used for record traffic. Thus, I suspect many of the difficulties associated with adding notes, changing fields, etc., is really a design decision. I don't know this for a fact, but I suspect it's true. One solution would be to provide a third party recording service for record traffic. Thus, when anyone wants to send a recorded message, he would send it indirect through the third party recording service which would stamp the message, send it out to each recipient, and keep a copy of it for record purposes. Although this seems cumbersome, I think it would be far easier to get such a mechanism certified than it would be to get message systems and operating systems certified. 18f

*Someone, I believe Vittal, raised a good issue about using one message to answer several. (As I am doing with this one.) Clearly, we want to be able to do that. Perhaps it wants to be a different command, such as "answer group", where the arguments to that command are either a list of mesages or a group name for a set of messages that have been collected under that group name. Reply to and references want to have all the reply to and reference numbers in those fields. The subject field probably doesn't want to be stuck in automatically. The To and Carbon Copy fields probably do, but again, the sender must be given the option of editing them. 18g

*I think Paul Baran had a good point about making a simple system. We indeed should have the capability somewhat like the one

he described, but the system shouldn't stop there. That is to say, if a user of such a system wants more capability and is willing to learn how to use it he shouldn't be prevented from doing so. It has been my observation that once people get hooked into one of these systems, even "non-computer types", they demand more, not less capability, and nothing is more frustrating than to discover that one can't perform a seemingly simple task because the system doesn't provide the capability. The difficulty lies in getting over the initial hurdle so that the person can see for himself that use of the system provides a pay off. Having done something very similar once before -- that is, from the DMS, automatically log in to another computer on the ARPANET, activate A program and obtain results from that program, all without the user knowing the details of how it was done or for theat matter hiding it so that he didn't know that another computer system was being used. It can be done. It would be interesting and useful to develop such an adjunct to the message services, but for such a system to be made operational a great deal of cooperation is necessary. For instance, I have noticed that recently ISI had a global change of account numbers. If systems like ISI still wanted to maintain such flexibility and there were many terminals on the Net that logged in automatically, each terminal's program, micro-code or whatever, would need to be updated to change account numbers. This is only one simple problem. There are many others. I don't mean to discourage such a project, but what I am trying to point out is that it is not as trivial as it might sound 18h

I can sympathize with the file clerking operations necessary to maintain an orderly file system. Currently, every evening a daemon runs on the DMS, indexes, all messages I have received or sent the previous day by the following fields: To, From, Blind Carbon Copy, Carbon Copy, Keyword, Filed-under, Message ID, References, Reply To, Sender and Date and inserts the messages into a data base. An Information Retrieval System is available which allows retrieval using the indices.* I have found it very useful. Our programming system, including the Information Retrieval System, is now operation on ISI. Would one or two of you like your own private indexing, filing and retrieval system for your messages? Any takers? The IRS won't be integrated into the reader as it is on the DMS but I think it still might prove useful. Also, you may have to manually start the index job until it is made an autostart job (a trivial operation). 18i

There are a number of people who are participating in this discussion who probably heard of the DMS message system. Therefore, I am sending by US Mail to Faber, Steffenrud, Tasker, Walker and

Baran copies of some of the documentation on the DMS message system. If anyone else wants a copy, send message me a request. 18j

Let me cast my vote for not using a conferencing system and for staying with message systems as a means for communication, mainly because the message systems performed a rendezvous so nicely and I don't know of a conferencing system that performs the rendezvous well yet. For those of you using low speed terminals, I apologize for being so long winded. 18k

Steve, as you no doubt discovered, I already have an account on ISI. 18l

A1 18m

19-JUN-75 1506-PDT ELLIS at USC-ISI: MSGGROUP# 28 COMMAND MNEMONICS
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 19-JUN-75 15:06:40-PDT 19

I think it is time for this group to try to publish a set of "preferred" command mnemonics for message processing. Hopefully, it is not too late! However, if we don't, we can only blame ourselves for further proliferation. 19a

I suggest a way to get started is for Myer and Vittal to provide a short treatise on pro and con of their approaches (i.e., Vittal's obvious problems with his single letter commands .. albeit they're very efficient). 19b

Also, comments from Gilbert, Uhlig and Tasker on any serious conflicts we're generating with deeply ingrained DoD traditions. 19c

Regards, Tom 19d

TOE/ph 19e

19-JUN-75 1526-PDT STEFFERUD at USC-ISI: MSGGROUP# 30 RE: Command Nmemonics
Distribution: ELLIS AT ISI, [isi]<farber>messagegroup.list:
Received at: 19-JUN-75 15:41:51-PDT 20

*Tom, I agree completely on the need for choosing prefered or standard nmemonics for message filing systems, but I would like to see the nmemonics structuring alternatives expanded beyond a choice between MSG and XMAIL. For example, the NLS approach to menu hierachies should be included in the exploration. I don't know that NLS has the better answer, but their approach has received a great deal of thought and we should hear from them what the advantages are and why they like it. 20a

I think this issue is at the core of the problem. XMAIL assumes that the TENEX command structure is the best basis, while MSG assumes that there is some other more humanly intuitive structure. MSG has some of the properties of the NLS structure, but has not carried it through out the language. 20b

Best Regards, Stef 20c

20-JUN-75 1441-PDT STOTZ at USC-ISIB: MSGGROUP# 33 ISI's IA project
Distribution: MESSAGEGROUP:
Received at: 20-JUN-75 14:42:18-PDT 21

*I would like to introduce to all who are not already familiar with it, the IA project at ISI. We are implementing a military message service for a test in an operational military environment. This project is independent of the MSG and XED editor developments at ISI although there is some overlap of personalities. We are currently coding the message creation and coordination phase of the service. There is some background documentation I will send via U.S. Mail to anyone who asks me (please let me know your mail address with request). 21a

*In many ways a military message service has the same requirements as one that serves computer researchers. The most distinguishing characteristic is that the message service that the military has now is extremely formal. Formal messages always pass between organization commanders (i.e. the message FROM field and the addressee fields contain the names of organization commanders even though the messages often are originated by and are eventually delivered to lower echelon people). Messages are archived for up to 7 years, and are considered to be statements of official position of the commander of the organization from which they originate. 21b

This introduces a need for "coordination" on outgoing messages and for "distribution determination" on incoming messages. Here coordination means getting consensus and approval of a message by a number of people in the organization. Distribution determination establishes who should get a copy of the message. Some fairly sophisticated algorithms have been developed for this this latter problem. It turns out that author designated keywords is one of the poorer ways of doing it. 21c

The military's requirements for security, privacy, accessibility and reliability are in general more critical than ours and military message systems deal in larger volumes of traffic. This last is aggrevated by the distribution algorithms which tend to send a copy to anyone who might be interested rather than risk missing the proper message recipient. At CINCPAC an average of 40 copies are made of each message received. 21d

*Another major concern of the IA project is how to provide

an interactive computer service of this sort to users who have no background or training in computer based systems and who want to use the service to get a job done. 21e

The background documents describe our basic approach to all this and I will not belabor your TI terminals with it here. But let me briefly address a few issues that have been raised and how we plan to handle them. 21f

1. *Terminals - The IA service is being built at this time for CRTs only. This way we can provide a full screen editor which we feel is more natural to use. 21g

2. Coordination - The IA message service will provide "coordination" which allows collection of multi-users edits, comments and sign-offs on a message prior to its release. 21h

2 21i

3. *Message storage - To minimize storage requirements, IA keeps a single central copy of a message and distributes citations to it, rather than creating a message copy for each addressee. To simplify verification of system integrity, we plan to restrict user access to formal, archived messages to read-only. Thus any personal comments, etc., to be added by recipients will have to be stored in each users personal directory along with a hook to the appropriate message. 21j

4. Distribution determination - Messages received by our system willwhave already been processed for distribution determination. The IA service will extend this by allowing the user to create his own routing tables for automatic redistribution of his traffic. 21k

20-JUN-75 1529-PDT DCROCKER at USC-ISI: MSGGROUP# 34 Getting Specific: Recommendation and Attempt
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST;
Received at: 20-JUN-75 15:41:29-PDT 22

Judging from the comments of the last week, it may be useful for us now to begin a directed effort to develop specifications for an idealized (if not ideal) message processing system. Jean Iseli's approach has the advantage of being concise, so we may want to work from it, expanding and modifying it as appropriate. We could take votes in order to determine to relative importance of various features. 22a

Mostly for the sake of variety, I offer an initial list of my own. I believe it reflects many of the wishes expressed during the current dialogue. We will not doubt find that many of the features are expensive to build and others are cheap, but we will at least be able to give very specific preference lists to Myer/Vittal/et cie. The following list describes features. I would like us also to delve into the realm of "feel." Exactly how should the features appear to users? I will be sending some other notes concerning this. For reference, some of you may be interested in reading a draft of a paper that I wrote as a result of participating in Jim Carlisle's seminar on Teleconferencing. Many of the issues are the same. The formated file is in [ISI]<DCrocker>Teleconferencing-E199-Paper.Txt and is accessible through FTP. 22b

*User Interface
"Profiles" for user-specific tailoring, between sessions
Intuitive command words
Multi-level commands, for collecting generic functions
Command macros
Single interface to all the tools
Variety of command invocation styles
Ability to "hide" capabilities, to provide simple view 22c

Message Creation
Create message fields in any order
Creation separated from transmission
Editor available for each/every buffer
*Spelling corrector
Text formater
Table of contents builder (?) 22d

Message Reading
*Ability to refer to classes of messages, by name
(Recent, Old, ...)
*Labelled filters, by date and/or string content
Table of contents generated
Multiple open message files 22e

Message Filing
*Automatic filing, according to filtering
System knowledge of file names (=> naming conventions)
Ability to delete messages
Ability to archive messages, only saving local pointer
*Automatic catalog building 22f

Misc.
Answer-back facility
(by secretaries, as well as recipient)
Forwarding facility 22g

The above is by no means complete and I welcome comments from the group. Dave. 22h

21-JUN-75 1258-PDT DCROCKER at USC-ISI: MSGGROUP# 37 Reactions to Mailsys
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 21-JUN-75 13:05:02-PDT 23

At the beginning of spring, last year, Nancy Neigus (BBN-IMP group) and I reviewed the design specifications for what has become Mailsys. At the time, we were chairing the USING group. At the end of last month, I shared some of my reactions to the existent system with the Jerry Burchfiel. You might be interested in the gist of my comments: 23a

*I especially like the header-printing and filter controls and the ability to selectively and iteratively create and modify portions of the message, before sending it -- as opposed to the non-reversible sequence in Sndmsg. 23b

Unfortunately, I am less enthusiastic about some aspects of the user interface. I am making a distinction between the functions performed (which I like a lot) and the way the functions are invoked. The "Tenex Exec-like" capabilities of command completion and optional invocation of sub-commands (via comma)* are great. 23c

However, there are at least four different commands that cause printing at the terminal (Read, Display, Printfilter, and Survey) and several other commands constitute variants of conceptually similar actions. Also,* use of "%" and "*" (rather than "first,", "last," "current," and "all") is extremely non-intuitive. The end effect of these two characteristics is that Mailsys feels extremely complex and is not trivial to start using. 23d

*I want to strongly lobby for multi-part commands, so that functions which appear similar to the user (I don't care how different their actual code is) can be invoked similarly. 23e

Consequently -- for example -- the printing commands would be much more pleasant to use if invoked with "Show Message ...", "Show Filter...", "Show Menu", etc. (I don't feel religious about using the keyword "show.") Any reasonably intuitive word is fine. However, my feeling is that "read"* is not intuitive as a COMMAND. It is an accurate description of

what I want to do, but not of what I want MAILSYS to do. I may be wrong about this particular psychological point, but I wanted to illustrate the kind of considerations which are critical to making Mailsys seem friendly. 23f

*And therein lies an interesting point. Mailsys has lots of very friendly features, but their effect is seriously limited if the user perceives the system, as a whole, as being too complex. Having "?" generate in excess of 50 lines of commands is damn scary, especially since the commands are not listed alphabetically. (Side comment: I really like the partial-command "?" capability, as well as the single-character aliases for some commands, though I suggest that the aliases not be included in a "?" list.) 23g

21-JUN-75 1335-PDT DCROCKER at USC-ISI: MSGGROUP# 38 Thoughts on Command Specification
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST;
Received at: 21-JUN-75 13:45:45-PDT 24

*While keyword -- as opposed to obscure character (e.g., "%") -- invocation of functions appeals to me, I have become very wary of being locked into having the first-character typed cause automatic command completion and invocation, as is embodied in MSG and XED. Too many contortions are needed to think of the command word. The problem becomes especially severe when the system has many commands. This, and the advantage of "chunking" conceptually similar commands together, is why I am lobbying for multi-part commands. Ron Tugender and I discussed the problem of command specification and settled on a variation of the SRI-ARC NLS scheme that would be essentially as follows: 24a

Our intent was to reduce the number of key strokes necessary for a) proficient users and/or b) frequent commands, while providing a more simple, predictable interface to the naive user. 24b

The system may be tailored for frequent-command preference, automatic completion, and automatic invocation. In the former, frequently-used commands are disambiguated by their first character. All other commands must be preceded by a blank. (For completeness, the preferred command may also be specified this way) The latter features automatically complete and/or invoke a command as soon as it is disambiguated. 24c

At any time, Question mark will provide a list of commands acceptable at that point (cf. Tenex Telnet, Mailsys). It and escape will also automatically print as much of the rest of the command word as is common to all the alternatives. (If I have typed a "D" and then question mark, the system would type an "e" for me and then show "Delete" and "Describe." I would then not have to type the "e.") In passive mode, escape and blank will perform the same actions as currently are performed by the Tenex Exec. 24d

With these three options, several tailored environments may be established, according to user proficiency and preference. A sophisticated user, on a speedy terminal, will have all three functions turned on. The Command interface will then look very similar to MSG, except that there will be some commands that

require several strokes, with <space> as the first, to specify. The advantage this offers over the current scheme in (e.g.) MSG is that ALL commands may then have intuitive labels. (As per my earlier comments about Mailsys.) 24e

A naive user will have all the features turned off. In addition, he is not told of the recognition/completion capabilities available with <space> and <escape>. He therefore must type the full command word(s) and invoke them with carriage return. Very slow but very natural. When he starts complaining (or investigating the full documentation) he discovers <blank> and <escape>. Eventually, he may also want the single-character invocation mode. 24f

Other operating modes are apparent and useful, as in the case of slow terminals (auto-completion turned off). For these sorts of options to be reasonable to use, there must also be a permanent Profile facility, to record the desired defaults. Xed has such a facility. Others are planned. It would be useful to have a generalized profile facility so that the user's directory does not become cluttered with many different profile files. Additionally, these files tend to waste a great deal of space. Xed uses one word, out of an entire page. 24g

22-JUN-75 1631-PDT STEFFERUD at USC-ISI: MSGGROUP# 42 MAILER, MAILSTAT, ETC.
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 22-JUN-75 16:38:49-PDT 25

*Dave Crocker's question about MAILER sending mail out of order prompts me to ask why MAILER and MAILSTAT and SNDMSG (and XMAIL?) are not in agreement on how to handle HOST name recognition. 25a

It seems to me that SNDMSG recognizes HOSTs with a minimum type-in and without confusion between upper and lower cases. 25b

Mailstat will accept HOST names in either case, but will not recognize anything less than the full typeout of the HOST name. 25c

Then, after renaming a HOST or a DIRECTORY name for MAILER, after MAILER refuses to mail an improperly addressed msg for instance, MAILER refuses to recognize lowercase directory or HOST names. 25d

I may have some of the details wrong but the inconsistencies are a fact, Would some one please track down the true facts, and then take action to make them consistent. The SNDMSG reconition and handling rules seem to be prefered over the others, though some rethinking of the whole thing might be appropriate in the context of Tom Ellis' suggestion about Command Standards and Dave Crocker's distertation on Command Strucures and their reconition and invocation. 25e

23-JUN-75 1001-PDT PATTI at USC-ISIB: MSGGROUP# 44 Meeting Notes
Distribution: MESSAGE SERVICES COMMITTEE:, oestreicher
Received at: 23-JUN-75 10:01:01-PDT 26

Message Committee:
The 'Message Structure' sub-committee consisting of:
1. Jack Haverty (JFH@MIT-DMS)
2. Austin Henderson (HENDERSON@BBNA)
3. Don Oestreicher (OESTREICHER@ISIB)
met at BBN on June 9th and 10th. The result of this meeting was a general decision on the next generation of message communication protocols and formats. The design makes use of the SRI-ARC PCPB8* format for structured information.
The sub-committee plans to have a draft report available for the whole committee by the end of this month.
The report will contain two main sections:
A. Protocols for cooperating message processing services.
B. Virtual message structure for information interchange
between cooperating message processing services.
Any questions or comments may be directed to the sub-committee
members individually or the sub-committee jointly.
dr0 for the 'message strusture' sub-committee 26a

Patti for D. Oestreicher 26b

23-JUN-75 1329-EDT WATSON at BBN-TENEXB: MSGGROUP# 46 2nd try on
NLS User Inte9face Paper (for real this time?)
Distribution: BURCHFIEL AT BBN, MYER AT BBN, GILBERT AT BBN,,
WALKER AT ISI, FARBER AT ISI, STEFFERUD AT ISI,, ELLIS AT ISI,
KIRSTEIN AT ISI, ISELI AT ISI,, DCROCKER AT ISI, UHLIG AT OFFICE-1,
VEZZA AT MIT-DMS, watson
Received at: 23-JUN-75 10:48:51-PDT

27

Issues in the Design of the NLS User Interface
By Richard W Watson 27a

INTRODUCTION 27b

The user interface has two sides: the input side by which the user inputs information, indicating by various conventions and controls what he wishes accomplished; and the output side by which the machine provides feedback and other assistance to the user in command specification, and provides various forms of information portrayal. Man has many motor and other capabilities that could be the basis for input and command specifications; similarly he has his full range of senses that could be targets for system output. 27c

To date, computer information systems make use of only a few motor and sensory capabilities in their man-machine dialog. An important area of research involves exploring the advantages to be gained and the techniques to be used to extend this range. There is interesting research going on in areas of speech, eye movement, brain wave control, hand written script, and video graphics that will undoubtedly be integrated into the truly multimedia systems to be built in the near future. 27d

We call the user's collection of input-output equipment and arrangement of work tables and work space, the workstation. At the present time, input centers around various types of keyboard devices: standard typewriter- type, function button, keyset (chord), and graphical pointing devices: mouse, electronic pen-tablet, light pen, joystick. The dominant output means are printers and displays of varying capabilities. 27e

The present NLS user interface has been developed around this equipment, although many of the principles used in its design can be easily extended for use with other media [3]. The prime motivation for the use of the mouse for pointing and two keyboards, (standard typewriter-like and keyset), as the input devices for the display version NLS 7 (DNLS), are described in references [2][3]. NLS can also be used from typewriter terminals (TNLS). In this chapter, we concentrate on describing

some of the motivations behind the design of the NLS command language and the forms of information portrayed to assist the user in command specifications. Forms of general NLS information portrayal are described in reference [1]. 27f

The NLS is a prototype collection of tools in a growing workshop of tools and services to aid knowledge work [1][4], and we expect the number of tools and vocabulary that controls their use to grow. We further expect that the use of such a workshop will spread throughout those occupations involved with information in various forms and that there will be infrequent and casual users of such systems, along with many people who will spend large fractions of their day using such workshops. Another goal is to match the speed of system responsiveness to the natural speed and flow of ma's thought processes. It is from these basic expectations that our user interface work has developed. The sections below enumerate several assumptions and areas of concern around which the NLS user interface has developed to date. A key point to mention is that we do not consider the NLS user interface a static, finished product. It will change, based on analysis of usage experience, and the technology and media available. 27g

HIGH LEVEL ASSUMPTIONS UNDERLYING THE DESIGN OF THE NLS USER INTERFACE 27h

First we describe a few high- level assumptions that affect the user interface design and then discuss some of the lower level issues and thespecific techniques used to deal with them. 27i

1) Coordinated Set Of User Interface Principles 27j

There will be a common command interaction discipline, over the many application areas in the workshop, that shapes user interface features, such as the language, control conventions, methods for obtaining help, and computer-aided training. 27k

This commonality has two main implications. One, it means that while each domain within the core workshop area or within a specialized application system may have a vocabulary unique to its area, this vocabulary will be used within language and control structures common throughout the workshop system. A user will learn to use additional functions by increasing vocabulary, not by having to learn separate "foreign" languages. Two, when in trouble, he will invoke help or tutorial functions in a standard way. 271

2) Grades Of User Proficiency 27m

A once-in-a-while user with a minimum of learning will want to be able to get at least a few straightforward things done. In fact, even an expert user in one domain will be a novice in others. Users will be clerical workers, information specialists, executives, engineers, and others. Attention to novice-oriented, and tutorial help features is required. 27n

Users also want and deserve the reward of increased proficiency and capability from improvements in their skills and knowledge, and in their conceptual orientation to the problem domain and to their workshop's system of tools, methods, conventions, etc. "Advanced vocabularies", short concise control notation and conventions in every special domain will be important and unavoidable. 27o

A corollary feature is that workers in the rapidly evolving augmented workshops should be involved continuously with testing and training in order that their skills and knowledge may most effectively harness available tools and methodology. 27p

3) Ease Of Communication Between Subsets And Addition Of Workshop Domains 27q

One cannot predict which domains or application systems within the workshop will want to communicate in various sequences with which others, or what operations will be needed in the future. Thus, results must be easily communicated from one set of operations to another, and it should be easy to add or interface new domains to the workshop. A corollary is that the total workshop may contain a very large number of tools and services. Some users may have access to only a subset of its capabilities while others will have access to many or all capabilities. 27r

As described below, we expect the workshop to be embedded in a computer network and thus communication between tools and between users must take place across both process and host boundaries according to well specified conventions and protocols [5][6]. 27s

4) User Programming Capability Or User Interface Extensibility 27t

There will never be enough professional programmers and system developers to build or interface all the tools that users may need for their work. Therefore, it must be possible, with various levels of ease, for users to add or interface new tools, and extend the language to meet their needs. They should be able to do this in either a variety of programming languages with which they may have training, or in the basic user-level language of the workshop itself. 27u

5) Range Of Workstations And Symbol Representations 27v

The range of work stations available to the user will

increase in scope and capability. These work stations will support text with large, open-ended character sets, pictures, voice, mathematical notation, tables, numbers, and other forms of knowledge. Even small portable hand-held consoles will be available. The multiplicity of possible terminals indeed raises the question of whether a consistent set of control and portrayal conventions is possible. 27w

As hardware decreases in cost, more and more capabilities will be placed in the work station both in the form of user interface aids and facilities, and in the form of frequently used tools. 27x

6) Distributed Nature Of The User Interface Processes 27y

The collection of facilities to support interfaces with the system of tools can be conceived of as a single service as seen by the user. These facilities may all reside in a processor in the work station or be distributed in two or more processors, depending on the level of their sophistication and state of the art with respect to cost, hardware capability, and so forth. 27z

7) Embedded In a Computer Network 27a@

The computer-based tools of a knowledge workshop will be provided in the environment of a computer network, such as the ARPANET [7]. For instance, the core functions will consist of a network of cooperating processors performing special functions, such as editing, publishing, exchanging documents and messages, data management, and so forth. Less commonly used, but important functions, might exist on

a single machine. The total computer-assisted workshop will be based on many geographically separate systems.

Once there is a "digital-packet transportation system," it becomes possible for the individual user to reach out through his processor to other people and other services scattered throughout a "community". The "labor marketplace" where he transacts his knowledge work will be literally independent of geographical location. 27aa

Specialty application systems will exist in the way that specialty shops and services now do--and for the same reasons. When it is easy to transport the material and negotiate the service transactions, one group of people will find that specialization can improve their cost/effectiveness, and that there is a large enough market within reach to support them. And, in the network-coupled computer-resource marketplace, there will be a growth of specialty shops, such as application systems specially tailored for particular types of analyses, or for checking through text for spelling errors, or for doing the text-graphic document typography in a special area of technical portrayal, and so on. There will be brokers, wholesalers, middle men, and retailers. 27ab

The key point to emphasize is that even when hardware costs decrease to the point where a user can perform 90% of his work using tools and information that operate in the processor in his work station, he will want to have access to a computer network to:

a) Communicate in various forms with others
b) Access very large or special data bases
c) Access special tools that run elsewhere 27ac

8) Problem Orientation Of The Command Language And Tolerance For Ambiguity 27ad

The user has a task that he wishes performed by the

system. Depending on the nature of the task and operations available to him on the system, he may be able to express what he wants accomplished in a single "statement" or command to the machine, or it may require a series of commands. 27ae

One of the goals of the designers of the command language and system is to understand the nature of the user's application domain so that the user can express his needs with words that are similar to his natural problem solving vocabulary and language forms. The machine should then break down the request into smaller steps as required. 27af

If there is ambiguity in the user's command, the machine should recognize it, if possible, and prompt appropriately for clarification. There is still much research and development required to fully meet this goal. 27ag

Many people hope to allow novice users or users in certain applications to use natural language in making statements to the machine. This capability will require models of the user and task domains for understanding. 27ah

Even when systems are able to interpret commands given in natural language, the precision and usage efficiency of appropriate artificial languages will make the latter's continued use preferable, especially for skilled users. 27ai

Given the above general considerations as background, we can move on to examine features of the NLS user interface in more detail. 27aj

MORE DETAILED DISCUSSION OF THE NLS USER INTERFACE 27ak

A command language must allow unambiguous specification of what the user wishes accomplished. The operation to be performed, and the entities or information items (arguments) to be acted upon, or used to determine what is to be acted upon, must be specified. These can be specified in a variety of ways: by typing them in in full or in some form of abbreviation, by pointing at them on a screen, by pronominal reference, or by use of default values where appropriate. The order of their specification, the syntax or grammar of the language, can have various forms. For example, operational keywords can be specified, followed by the arguments, or vice versa. Arguments can be in fixed positions or explicitly named and occur in any order. Some arguments or keywords can be optional and require special characters to indicate their presence. Arguments or keywords can have defaulted values under certain conditions. Pronominal references can be allowed to refer to previous occurences. Arguments may be given types by the system and language designer for more extensive error checking and feedback.

Arguments and keywords can be specified by complete or partial typein (there are a variety of forms of command recognition that are discussed later) or designated by pointing to representations on a display or by use of specially coded function keys. Or, the machine may ask questions and the user just fill in the blanks. 27al

Depending on the characteristics of the computer and communications system, it may or may not be possible to provide command word or keyword completion, prompts or other feedback, argument checking, default value fill in, and so forth, during the command specifications. 27am

For example, in line-at-a-time, half-duplex systems, the user usually must complete the entire specification of the command before transmission to the system, while in

character-at-a-time,
full-duplex systems, the system can react to each character received and provide more extensive aids to the user during command specification. 27an

The above discussion outlines just a few of the many choices available to the language designer. As the purpose of this section is not to be a complete tutorial on all possible choices available and their advantages and disadvantages, the following discussion only gives main NLS command language features and the motivation for their adoption. 27ao

THE NLS COMMAND LANGUAGE 27ap

The NLS command language generally has the following form, where angle brackets group meta symbols: 27aq

<operation specification> <operand specification> <command completion> 27ar

The fields in a command are of a fixed order, although some commands have optional fields that can be specifically requested. Other fields can have a system-supplied default value. Because NLS operates from a character-at-a-time, full-duplex system, several levels of help are available, as described later, for giving cues and prompts, explicitly listing options or syntax, and giving full documentation on what the system expects next during command specification. It was not felt that much would be gained for novice users by allowing fields to be specified in any order by using explicit field names. Novice users do not need to be aware of optional fields. 27as

As much as possible NLS makes the operational specification of the form verb-noun followed by arguments and possibly other keywords. We have also tried to maximize the fullness of the verb-noun matrix. 27at

This approach seemed to be natural, and follows normal English imperative forms to aid learning. The choice of verb-noun form seemed to fall out naturally when considering such important areas as editing. A given verb, such as DELETE, can naturally be applied to many entities, such as statement (a paragraph, title, equation), character, number, text, file etc. Learning is easier if the user can form a model of how the system works that can be consistently applied. In this case, a user can learn n verbs and m nouns and understand that generally, if it is meaningful, they can be used in pairs. Having learned n+m vocabulary terms, he can apply them in the form of n x m commands. 27au

We have tried to pick command keywords that have normal usage related to the operation described. A synonym capability would be easy to implement. 27av

Four forms of command keyword recognition are provided to enable the user to choose the one most appropriate to his terminal type, system response, previous system experience, and present NLS experience level. We have worked to pick an operational vocabulary for the present system that guarantees keywords to be unique in a maximum of three characters: 27aw

1) A single-character mode allowing high-speed single-character recognition of the most commonly used commands; less commonly used commands require an escape character followed by enough characters for unique recognition: With large and expanding command sets one cannot choose keywords with mnemonic value and guarantee uniqueness with the first character. This mode is generally preferred by experienced users because of the simplicity and speed with which frequently used operations can be expressed. We find that experienced users are very concerned that commands be formed with the minimum number of input operations, and that commands have the richness needed to specify adjective or adverb type operations as needed. There is thus some conflict in certain commands between these goals for the experienced user and the need for command simplicity for the novice. 27ax

2) A demand mode requiring a right delimiter to initiate recognition: This has proved to be popular for new users of typewriter terminals, particularly those with experience using the TENEX operating system. Modes C and D have not turned out to be heavily used. 27ay

3) An anticipatory mode requiring the user to type enough characters until the command is uniquely specified; the system then automatically fills in the remainder. 27az

4) A fixed mode that guarantees recognition on entry of three characters. 27b@

Given the implementation approach outlined later, it is quite easy to add other recognition modes, such as allowing the user to choose keywords from a menu displayed on the screen. However, experiments have shown that the time it takes to point at some item on the screen is equivalent to several keystrokes and thus would be disadvantageous to skilled users, although possibly of value to novices [2][3]. 27ba

Operand argument specification is contained in a number of fields that are variable with the type of command. All commands of a similar type have had the order of the operands made as consistent and as natural (relative to normal English usage) as possible. Infrequently used operand fields are optional and novice users need not be aware of their existence. 27bb

Related to argument specification is the problem of choosing argument delimiters. One can recognize the following delimiting functions. 27bc

1) Delimiting command words
2) Delimiting arguments
3) Delimiting optional arguments, selection type, or command word fields
4) Delimiting commands

5) Selecting arguments off a display screen, and confirming the selections 27bd

One could choose separate characters (codes) to represent each of these functions. To do so seemed to us to add an unnecessary complication for the user and so, except for using a special character to indicate an optional argument, selection type, or command word, a single code is used for the other function in NLS. We call this code "Command Accept" (CA) even though it is used for other purposes as well. The system allows the user to define which keyboard character is to serve this function if he finds the system default to be inconvenient. One of the buttons on the mouse also serves this function. 27be

Arguments can be typed in, defaulted where appropriate, or specified by pointing to appropriate entities on the display screen. 27bf

There are three flavors of command completion. 27bg

1) Completion of the command indicating execute the command and return to the base state to await input of the next command: The default indication for this form is one of the buttons on the mouse in DNLS, which is translated into a control character, or CR in TNLS. The use of CR in TNLS is quite natural and generally does not conflict with textual input as most text in NLS is typed in without explicit CRs and is appropriately formatted by the system for various output devices. If the TNLS user wishes to input an explicit CR in his text file, he must precede it with an escape character. If he has need to enter many CRs in his text string, he can redefine the completion character, Command Accept, to be some other character. 27bh

2) Completion of the command and return to an appropriate point for quick repetition of the command. Repetition mode continues until explicitly commanded to delete out of it. This mode is very useful when a delete or other operation

is
repeated several times, 27bi

3) Completion of the command and entry to insert-statement mode for addition of new paragraphs or other text statements:
This mode is like command repeat above except that it always takes you to the insert command. It is used frequently when one adds, replaces, or moves text, and then wants to follow it
with new statements. It speeds text input when inserting sequences of paragraphs. 27bj

The system is to be used from a variety of terminal types, including both typewriter-type terminals and displays. The two-dimensional displays are to be the preferred work station types whenever a design decision must be made between language forms possibly favoring one type or the other. 27bk

It was decided to make the command language syntax for the typewriter (TNLS) version and the display (DNLS) version as close as possible, except where the difference between the one-dimensional and two-dimensional media clearly prohibits this or would seriously limit one or the other version. This decision was made to allow people working in environments consisting of both typewriter and display terminals to be able
to move back and forth with ease. 27bl

The system has been organized into clearly defined subsystems with uniform rules for their entry and exit. Any subsystem can be entered from any other, either to "execute" a single command with automatic return or to perform a chain of commands. The user can return, either to a specifically named subsystem in the
path of subsystems traversed or enter a new subsystem. The issue
of how to group commands into subsystems has to do with training
and patterns of use rather than system constraints. It relates to learnability and, to some extent ease of command specification
using single characters, and to "knowing where you are" in a command or operational space. 27bm

One could construct a system where all commands were in a single subsystem. Study of the command set of a large system particularly conceived of as a set of tools shows that operations tend to group together such that to perform a given task, such as sending a message or calculating a budget, generally require several related suboperations. Certain operations, such as moving in information space or seeking help, tend to be used as suboperations of many or all tasks. This latter observation has led to "universal" commands available from within any subsystems. One can also imagine certain commands to be needed frequently in just two or more subsystems and thus implemented in each subsystem having the need. There are now no instances of this case in NLS. The ability to execute a single command in another subsystem with automatic return has been very useful. 27bn

Provision has been made for user-controllable options on prompting, feedbac, and other parameters whenever it seemed a single option, might not be appropriate to some significant class of users. 27bo

A mechanism is implemented that enables the user, or someone acting in his behalf, to create a file stating what options he wants to run. The system automatically sets his options when he enters. This facility can also be used with small extensions to subset commands. This user option capability, when coupled with the ease by which the user interface can be redefined using the Control Meta Language described below, makes possible tailoring the user interface to specific users or groups of users. 27bp

All operations that have a natural inverse command have been given one. (NLS still does not have an "undo" facility.) A general undo/redo facility has a number of technical difficulties and its value can be questioned. However, the ability to undo or

redo the last one, two, or three commands would clearly be useful. 27bq

User Programming: As indicated earlier the ability of the user to extend the system himself is important. There is a tradeoff between ease of extension specification and operational efficiency. In providing such a facility one does not have to be deeply concerned with efficiency if the task handled by the extension is performed infrequently. If the operation is performed frequently, then it should probably be inserted as a system feature and implemented efficiently by professionals. This area is ripe for much additional development. The extensions must be specified in some language to indicate what sequence of events is to take place, what arguments to collect, and so forth, when a given user action is performed. 27br

NLS now offers two forms of extensibility. The first allows users with some basic programming knowledge to write programs in the Algol like L10 language in which the system is implemented, calling on NLS system primitives as needed. They can use the Control Meta Language to specify a user interface if desired. These programs can be installed by the user as part of his default subsystems, loaded as subsystems as needed, or used as content analyzer patterns [8]. 27bs

The user can also write sequences of NLS commands and have these sequences executed at will. A specific sequence of commands can be automatically invoked when the user first enters NLS. 27bt

HELP, STATUS, AND PORTRAYAL FACILITIES 27bu

ORGANIZATION of the TERMINAL DISPLAY AREA
The NLS display screen is organized into windows as described in some detail in [9] These windows are arbitrary rectangles. Windows can be displayed essentially all the time or overlayed with others. Windows can grow dynamically. Some windows are allocated and displayed or not displayed under system control for

status and feedback information. Others can be created and manipulated by the user for display in his information space. With typewriter terminals, one does not have this two-dimensional random display capability and while the same information can be given to him, less can be given automatically or must be given in an altered form. Let us now consider each of the information spaces and the type of feedback, help, and other status information available to the user. 27bv

1) Information space
The present NLS information space is hierarchically organized. A user has a directory or directories within which there are files. A file can contain notes on many subjects stored under various headings, his mail, or single documents. Files in turn are hierarchically organized as a tree of information nodes (now text strings but soon to be generalized to include illustrations and other entities). 27bw

Files can contain cross citations to specific points within other files or the same files, thus creating networks. NLS has appropriate commands for moving within and between files and for obtaining a display of the path over which one has traveled and commands for backtracking along this path [3]. 27bx

Display screens have a limited number of lines within which to display information, and typewriters, even at 30 chars/sec or higher, cannot quickly and easily print out large documents. Also, the user often wants to see a summary or overview of a document or have it formatted in special ways to aid his understanding. To meet this need for easy control of information portrayal, NLS has a concept called "view specification". The user can change his "view" within the commands for moving in information space or by separate command. So that he can be reminded of his current view, the most commonly used view parameters are fed back to him in a

small window in the upper right hand corner of the screen. When he is at a point in a command where it is permissible to change views, this fact is fedback both by prompt (if prompts are turned on) and by enlarging the characters in the view-feedback window. For more discussion on moving, viewing, and portrayal in NLS see [3][6]. 27by

2) Subsystem or tool space
NLS is viewed as a collection of tools (subsystems) that can be used cooperatively or stand alone. Each subsystem contains a number of logically related commands and has a name, such as Base (the collection of editing and file manipulating commands), Calculator, etc. All the tools work on information in the same file structure and the user can move from one tool to another, or execute commands on a single command basis in any tool from any other tool, as mentioned earlier. The user can receive a display of subsystems available to him or an ordered list of the subsystems in which he has previously been. 27bz

The current subsystem within which he is operating is fed back in a small window in the upper left-hand corner of the screen in DNLS and as a four-character prompt in TNLS. 27c@

3) Command syntax space
There are several levels of feedback and Help available to the user in formulating a command to the system (14,). Each is described below. The Help data base clearly is also generally useful for understanding the system as a whole. 27ca

a) Command keyword recognition:
The options here were described earlier and this mode is primarily useful in minimizing keystrokes and in

triggering
additional feedback. 27cb

b) Noise words:
When the system recognizes a keyword or field it generates
what we call "noise words" set off in parentheses so the user can distinguish between what he has input and what the
system has added. The noise words aid the user in remembering what to do next. Novice users report that noise words are one of the most useful initial aids. As more experience is gained, the other aids take on more importance. This is an important point to note: users at
different levels of experience value different forms of feedback. Usefulness is not only determined by the inherent characteristics of the aids, but also, by how they
are implemented. 27cc

c) Prompts:
When the user completes the specification of a field in a command, he is prompted with some terse characters indicating the type of thing expected next and the alternatives available to him for how he can specify, select, or address the needed argument. Users can turn prompts off, which some users of TNLS do when they reach a
certain level of proficiency, although many highly skilled
users always operate with them on. DNLS users tend to always operate with them on because the high speed of the display does not slow down work while providing useful information. Users can also specify terse prompting in which case optional fields are not prompted for. Beginning users have indicated that prompting is useful, but would like them to be more mnemonic and of word length. 27cd

d) Next Options and Syntax:
If the noise words and prompts are not sufficient to jog a
user's memory about what options are available to him next,
he can strike a ? or a <Control-S>. If he strikes a ?,

the system displays, in alphabetical order, all the command keywords that are legitimate for the next field or more extensive information than is available in the prompts for other fields. If he strikes <Control-S>, the system prints out the syntax of the command from his present position to the end of the command. The ? facility is extensively used and is very useful in refreshing one's memory about infrequently used commands or new commands for a user with only a basic knowledge of command system concepts and vocabulary. The <Control-S> feature does not seem to be extensively used at present and may indicate that the ? facility is sufficient. 27ce

e) Help Data Base:
If the above facilities are not sufficient because of uncertainty about a basic concept or vocabulary word or the user wishes more information about the effects or use of a command, he can enter the the Help tool. Entry can be from the basic command level or from any point during command specification. In the latter case, the system utilizes the information input at this point to take the user to an initial point that describes the command and field where he is at. (15) 27cf

Once in the Help Data Base, a simple set of command conventions and the organization of the data base allow the user to easily move to reference related subjects or move to new subjects or back up to higher level descriptions (15). 27cg

f) Active Tutorial Help:
The next level of Help facility would be an active tutorial facility. We have not yet implemented such a facility

but
can see its value. An example of such a facility is the work going on at BBN on the NLS-Scholar system [10]. 27ch

ERROR MESSAGES AND RECOVERY 27ci

Error messages indicating an incorrectly spelled file
name
or improperly specified entity are fed back to the user
in
a window at the top of the screen. The user is left at
an
appropriate point within the command specification or
where
necessary he must start over again to respecify the command. The text of error messages is important and should be as specific to the problem as possible. This
has
implications within the system design for trapping error conditions as early as possible and determining the appropriate message for the specific error and total context of the user. While we have made progress in this area, there is much more that could be done to meet the need stated above. 27cj

There are now no automatic error correction mechanisms built into the system, such as spelling correction or "Do What I Mean" type facilities. These would probably be useful to add when resources permit. 27ck

EDITING AND BACKUP DURING COMMAND SPECIFICATION 27cl

The user can perform certain simple editing and backup operations during command specification. At any point during command specification he can command delete, which will take him back to the basic command level. This is useful if he gets confused and wants to return to a known state or changes his mind about which command to perform next. 27cm

The user can delete the last character input or last selection made on the screen with another character or button push on the mouse. He can repeat this process and

continue the incremental backup process to the basic command state. 27cn

The user can delete the last word input, or the field specified to date, or the field specified with another character or button push on the mouse. He can also repeat this process backwards to the basic command state as well. 27co

IMPLEMENTATION 27cp

The mechanisms and data bases needed to implement the user interface have been modularized and isolated. This "Frontend" can run on a separate computer, such as a mini-computer close to the user, and communicate with the basic tool information processing routines ("Backend") over a communication network. The Frontend consists of terminal handling capabilities [9], a command language interpreter (2a1), and two data bases, a Grammar representing the language syntax and noise words; and a User Profile indicating how the user wants various parameters set for him, such as his prompt and command recognition modes, keyboard key translations, etc. The Grammar is generated from a high-level description of the user interface written in a language special for this purpose we call Control Meta Language (2a1,). 27cq

Given this particular system organization it is very easy to tailor, subset, or modify the user interface for individuals or groups, or to create interfaces for new tools. 27cr

Further all the levels of help information, except the Help Data Base, are derived from the Grammar, which guarantees correctness of these levels of documentation as the system changes and is debugged. Various forms of hard copy

documentation, such as command summaries, are also derived from the Grammar representation. 27cs

The user interface must implement a man/machine dialog. In this section, we discuss issues from machine to man. The discussion centers around the use of displays, with comments on how the problem is dealt with for typewriters. Let us examine some of the types of information that the user needs in order to keep his bearings. 27ct

There are four main areas or dimensions along which the user needs information to help him a) to know where he has been, b) to know where he is, and c) to know where he can go from here. Clearly the command language and user interface must offer provisions to move in these spaces as well as obtain status. 27cu

1) Information Space
The user needs to know where he is in his information space, and what view or portrayal of the many possible is being displayed to him. Generally he arrived at his present position from previous points and he may want to be able to backtrack to previous points or views as well as to move on. 27cv

2) Subsystem or Tool Space
In workshops containing many tools and commands, the user needs to know which tool is active and possibly needs to know which ones he was in previously and their order, and which ones he can enter from here. 27cw

3) Command Syntax Space
During the specifications of a command, the user may need to know what he can or is expected to do next and how to back up to a previous point. 27cx

4) Information Input Space
During input of information, drawings, tex, etc., the user

needs to have ways to see and possibly modify, in simple ways,
information that he is entering, 27cy

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23-JUN-75 1420-PDT TASKER at USC-ISI: MSGGROUP# 49 MAILSYS; creation prompting
Distribution: [ISI]<FARBER>MESSAGEGROUP,LIST:
Received at: 23-JUN-75 14:33:18-PDT 28

[1] Ted Myer suggested that I share the text of my 19 Jun 1975 1759-PDT reply to his 18 Jun 1975 22:42:33-EDT message with the group: 28a

[2] Ted: 28b

[3] I read with great interest your note to the msggroup about MAILSYS and NMSG and found myself agreeing with you: NMSG DOES do a better job at the message management, and MAILSYS DOES do a better job at creation, 28c

[4] My only serious concern with MAILSYS message creation is apparently being addressed already by you guys: PROMPTING. The military user currently is used to a prompting message creation system (the message creation form DD173) and would probably feel more comfortable (at least initially) with some prompting. (I find that I myself spend more time creating the header in MAILSYS due, in part, to the lack of prompting). THE MILITARY USER WILL PROBABLY WANT TO TAILOR PROMPTING FOR HIS INFORMAL TRAFFIC USE AND CALL ON A COMMON DD173 ONE FOR THE RECORD MESSAGES. I would suggest that the formal message prompting might actually prompt for the required fields and then list the other fields as guidance, as opposed to requiring the operator to discard every field he doesn't want to use. This is my own guess -- if the prompting is flexible, we can let the real user find out what he wants. (I'm sure you guys have thought about this more seriously and in more depth than I have, so please excuse me if this is presumptuous). 28d

[5] In any case, I really like the manipulation flexibility you now provide, and I am very much interested in what your thinking has been in this area and what the creation prompting capabilities look like when they're ready. 28e

[6] Sitting here in the offices of a potential military user (CINCPAC J6), I am extremely gratified and excited to see the msg group interacting and that those interactions appear to be converging around real capabilities that I

think can be sold to the operational military guy. A scant three or four months ago I never would have even hoped for the current state of affairs and the direction it indicates. 28f

[7] Aloha,
Pete
--- 28g

23-JUN-75 1701-EDT WATSON at BBN-TENEXB: MSGGROUP# 50 Some [ore NLS Experience that might be useful
Distribution: BURCHFIEL AT BBN, MYER AT BBN, GILBERT AT BBN, WALKER AT ISI, FARBER AT ISI, STEFFERUD AT ISI, ELLIS AT ISI, KIRSTEIN AT ISI,, ISELI AT ISI, DCROCKER AT ISI, UHLIG AT OFFICE-1, VEZZA AT MIT-DMS, watson, Message-ID: <[BBN-TENEXB]23-JUN-75 17:01:18-EDT,WATSON>
Received at: 23-JUN-75 14:48:12-PDT 29

The paper I flooded you with this morning discussed the motivation behind the NLS multipart command structure, command recognition modes, help features etc.
From the dialog to date there is also some other experience in the NLS world that would seem relevant. First is the concept in the NLS Journal of Recorded dialog. That is dialog that gets a permanent number, is placed in read only storage, has access protection, is cataloggYd for later retrieval etc so that it is known by all that it will be around when you want to reference it. 29a

Thus when the dialog proceeds you do not have to send out copies of back or side messages, but instead can place citations (NLS links) in the text o fthe message referencing other relevant material and know the reader can get to it. With the institution of numbering messages and the archival demon we have made a start on a netwide basis toward such a capability but we need to go further.
Second the issue of problems people have with slow terminals dealing with the stuff generated on the faster terminalas can be partially handled if messages were structured and concepts like NLS viewspecifications were more generally available.
Rather than use the various mail reading programs I find it easier because of the viewspecs, split screen capabilities to handle my reading filing using normal NLS commands. The key here is that once the stuff is in NLS it is structured and I can bring the full power of a command set designed to deal with structure to bear on the material. 29b

The addition of graphics voice and other media in the future will also demand structure. And while I have not yet seen what the structure sub committtee has proposed I strongly endorse us moving to a structured world as soon as possible. This will also facilitate addition of margin notes etc. 29c

It is becoming clear to me as I read the dialog that there really is no such thing as a simple message service as people gain experience, there is only a complete office with a range of tools for creation

reading filing etc needed and therefore we need I believe to desig7 a system that will allow a market place of tools to work together which gets us into some of the experience and goals of the NSW, but thats a whole world beyond today,
Really enjoying the dialog, Dick 29d

24-JUN-75 1110-PDT AMC at USC-ISI: MSGGROUP# 53 Army Materiel Command Interests in Message Systems
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, gilbert at office-1, arntson at office-1, cianflone at office-1, mitchell at office-1, dsmith at office-1, gunn at office-1, uhlig at office-1,
Message-ID: <[USC-ISI]24-JUN-75 11:10:24-PDT,AMC>
Received at: 24-JUN-75 11:14:52-PDT

30

I have been sitting back for some time watching the messages flow through my mail box on the various message systems. The recent message from Tom Ellis on Command Mnemonics and from Rob Stotz on the ISI IA Project have acted as a catalyst to finally get me to say something (in addition to the fact that I am about to disappear for two weeks beginning this Saturday).

30a

For those of you unfamiliar with our "experiment" in Army Materiel Command, we have been using OFFICE 1 for communication among seven of the key managers in data processing in Army Materiel Command (AMC). The "experiment" portion of our use is about to end and we hope to write up the results this summer. In general, we have had the same kind of experience in improved communication that ARPA had when they began using a message system on the network.

30b

Continuing major cuts in the Army Materiel Command work force plus some fairly major reorganizations which are now being planned are leading us to give serious consideration to adopting an on-line computer based message system for key managers throughout the command. We are in the early stages of trying to define what such a system needs to look like. There is some similarity to the IA Project however that project deals more with formal message handling, in so far as I can tell, rather than the more innormal message traffic that we hope to use it for within AMC. Possibly, when we get done, the IA Project and what we want to do in AMC will merge together into a good total message handling system.

30c

Since we are aiming more at the informal communications we are not terribly concerned with the DOD traditions that Tom Ellis mentions in his message on Command Mnemonics. Our primary concern is that the message system be easily usable by noncomputer science people, some of whom are actively hostile to computers in general. The demonstrations that we have given to various noncomputer science, non technical personnel around AMC have

generally been well received, BUT ONE MUST KNOW FAR TOO MUCH "COMPUTERESE" TO USE ANY OF THE EXISTING SYSTEMS.* 30d

It is clear that we need a simple text editor which can be invoked to change the message body however, we would perfer that one not have to go through a separate action to send a message after that, Furthermore, the fixed order in which the other portions of the message appear and are prompted are desirable for our purposes, 30e

Disposing of messages needs also to be very simple, The current ability to move messages with the move command in msg appear to fill the bill for what we need, However we do need the ability to add notes to a message at the point in the text where we want to make a note 30f

*WE HAVE A STRONG NEED FOR TELECONFERENCING BECAUSE OUR KEY MANAGERS ARE GREATLY DISPERSED GEOGRAPHICALLY, The message system that we eventually adopt needs a teleconference capability, We don't want message handling and teleconferencing to be in two separate systems, Because of this we also want to make it easy in the middle of a message based teleconference to link to a data bank somewhere in AMC to pick up information which is needed at that point in time, An FTP type capability, simple to use for the novice, would meet the need very nicely, 30g

FOR TECHNICAL REASONS WE MAY HAVE TO GO TO THE ONE COPY PER GROUP FEATURE, SUCH AS ROB STOTZ CITES IN THE IA PROJECT, HOWEVER, IT WOULD BE BETTER IF THIS WERE TRANSPARENT TO THE END USER, THIS IS BASED ON PROBLEMS WE HAVE HAD IN GETTING SOME OF THE PEOPLE INVOLVED IN OUR CURRENT EXPERIMENT TO UNDERSTAND THAT THIS IS THE WAY THE JOURNAL WORKS AT OFFICE 1, 30h

Ron Uhlig 30i

24-JUN-75 1152-PDT DCROCKER at USC-ISI: MSGGROUP# 54 Helping Secretaries Answer Boss' Mail
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST;,
[isi]<ucla-doc>folk,atsgroup:
Received at: 24-JUN-75 12:00:37-PDT 31

*Since it is very common for secretaries to answers mail for their bosses, I have been trying to think of a clean way for our current mail systems to be used to that effect. AT ISI, I AM TOLD, SECRETARIES SIMPLY LOG INTO THEIR BOSSES' DIRECTORY AND "GHOST" RESPONSES; THAT SEEMS TO ME TO BE THE WRONG IDEA. 31a

The following seems to be workable and I would like to solicit comments on it: 31b

Using MSG (for the moment) Boss PUTs appropriate messages into a pre-designated file, such as ANSWER.MSG. When convenient, the secretary CONNECTS to Boss' directory and starts MSG with automatic read-in of ANSWER.MSG. MSG automatically flags Recent messages (added to the file since it was last read) so the secretary will easily be able to tell what new mail needs responding to. The secretary then tells MSG to Answer each piece of mail, allowing him/her to also send a copy (through the * facility in SNDMSG; Mailsys should offer an improvement to this, since the * thing only works on existing files) to RESPONSES.MSG (or whatever) which will also be in Boss' directory. 31c

Boss will then be able to easily tell what messages have been answered, and will have a copy of the response. 31d

The above obviously is not as smooth as one would want, but suggests what tailored functions might be useful, such as a command which does PUTs only to a file like ANSWER.MSG, so Boss does not have to remember the name. 31e

Comments? Dave. 31f

25-JUN-75 1001-EDT Nancy Goodwin: Mail from BBN-TENEX
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, WALKER AT ISI, tasker at isi, Message-ID: <[BBN-TENEX]25-JUN-75 10:01:17-EDT,NGOODWIN>
Received at: 25-JUN-75 07:25:36-PDT 32

Steve, 32a

Thanks for adding my name to the message group list, I have been interested in the exhange of ideas about the user interface, and especially like the idea of establishing a single list of command names for message handling systems, The transfers among Mailsys, MSG, and HG have been frustrating, as I try to remember which command is used for which action, 32b

*JON AND I THOUGHT THE MESSAGE GROUP WOULD BE INTERESTED IN OUR RECOMMENDATION THAT A DISPLAY-ORIENTED MESSAGE HANDLING SYSTEM SHOULD BE DEVELOPED FOR USE BY THE COMPUTER-NAIVE. (Experts might like it too.) This will be discussed in the paper we are preparing for you, but the lag between final draft, publication, and distribution, and the speed of the current exchange of ideas among the group, lead us to think it would be useful to introduce this recommendation to the group now, 32c

I would have sent it to the message group directly, but have not yet managed to get the group name accepted as an address by Mailsys, or managed to penetrate the mysteries of FTP to get a copy in my own directory, and have no patience left for typing them all out. There is something wrong with the available instructional material in this regard - I find none that is helpful, 32d

Regards, 32e

Nancy 32f

****** ****** ****** ****** ****** ****** 32g

Recommendation for a display-oriented message handling system: (from draft of MITRE paper, prepared for ARPA, 6-23-75) 32h

Rather than searching for the best syntax for a typewriter-oriented users' language, it would be worthwhile to carry the concept of a display-oriented text editor further, and design an entire message handling system which is display-oriented. 321

*A computer-naive user should not have to think in terms of commands and arguments when interacting with the message handling system. A DISPLAY-ORIENTED SYSTEM COULD PRESENT OPTIONS TO THE USER, WHICH COULD THEN BE REARRANGED IF NECESSARY BEFORE COMPUTER PROCESSING, BUT WHICH WOULD NOT REQUIRE THE USER TO BE CONCERNED WITH SYNTAX AT ALL. With a display-oriented system, the user's typing would be minimized; this would, in turn, reduce the errors he would and could make. 32j

Obviously, typing is necessary during message creation and editing, and when entering comments or changes to a message. However, typing as a means for interaction with the system could be reduced, and possibly eliminated. MESSAGE READING AND MANIPULATION ESPECIALLY LEND THEMSELVES TO A STRUCTURED SEQUENCE, IN WHICH TYPING WOULD BE MINIMAL. 32k

For example, suppose a list of 20 messages is in the current file. Instead of typing "READ 1,2,3" or its equivalent, the user could select READ from a list of displayed options (using lightpen, mouse, cursor moving keys, etc.) select the messages he wants to see, and use an ENTER key when the list is complete. The messages would then be displayed as though the command list had been typed, except that no typing or syntax errors would have been possible. To move messages to another file, the appropriate command would be selected, the list of messages would be selected, and then a list of message files would be displayed. (An area for entering new file names could be provided.) After selecting the target file, the messages would be moved, and the list of messages and options displayed again. If the user tried to enter a list of messages before selection of a READ or MOVE command, either an error message could be presented, or that sequence could be allowed. 321

Only those options that were valid at a particular point in the job sequence would be displayed at a given time. The user would not, however, have to be trapped into an undesired sequence. Escape options could always be included on the menu. 32m

*Use of a display-oriented sequence is DEPENDENT ON TWO FACTORS: HIGH SPEED TRANSMISSION, so that lists of options could change very quickly and prompts could be presented without impeding the user's progress; and, USE OF A VIDEO DISPLAY TERMINAL, so that whole pages of text and options could be presented at once, and so that options could be selected, messages selected, etc. 32n

25-JUN-75 1528-EDT myer: MSGGROUP# 58 Message Annotation and Related Security Issues
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 25-JUN-75 12:59:33-PDT 33

Message-ID: <[BBN-TENEXA]25-JUN-75 15:28:41-EDT.ROURKE> 33a

Here are some thoughts on annotation, suggested by:

, Stefferud 13 Jun Message Filing Function

, Farber 13 Jun Answer to the Above

, Vezza 19 Jun General Comments

The following approaches toward annotation could be implemented rather quickly within the framework of our existing message systems. It might make sense to put up one or more of them on an experimental basis. 33b

*1. We could make it possible to ANNOTATE existing messages by ADDING NEW HEADER FIELDS. How about NOTES for plain text and FKEYS (standing for "File Keys") to hold key words? Attaching the new fields could be done by a command (how about "ANNOTATE"?) or an option to WRITE (which is like MOVE and PUT in MSG.) 33c

We would propose an initial cut that would avoid file shuffling by combining annotation with the transfer of messages into new files. Later, if message files get more structured, it should be possible to annotate messages in place. 33d

THE FILTER OPTION WOULD BE EXTENDED TO PERMIT SELECTIVE RETRIEVAL BASED ON THE NEW FIELDS (it now handles the standard RFC-680 headers). 33e

THIS ANNOTATE FEATURE WOULD HELP PRESERVE MESSAGE INTEGRITY BY SEGREGATING THE ADDED INFORMATION. If you saw NOTES or FKEYS on a message, you could assume they were not part of the original. We could enforce this convention by making it impossible to SEND messages containing these fields. You would have to work a good deal harder, however, to authenticate the notations themselves. 33f

2, We could make it possible to copy messages out of a file into the active work area of Mailsys. Once copied in this fashion, the fields of a message could be added to, edited, replaced, deleted, etc, using the present manipulation commands. It would then be possible to re-file the modified message. 33g

*TO HELP PRESERVE INTEGRITY WITH THIS SCHEME, THE SYSTEM COULD ADD A "MODIFIED-BY" HEADER FIELD EACH TIME A MESSAGE WAS PUT THROUGH THE CHANGE OPERATION. The added field would identify the manipulator, and possibly the date the changes were made. 33h

3, An entirely different approach would disallow any modification of messages, once SENT. Instead, annotation would be accomplished by encapsulating existing messages in new ones, with the new message bearing such special header fields and notes as might be desired. 33i

A crude version of this can be accomplished right now with the FORWARD or INCLUDE commands. For example, you can set up a message containing any pattern of header fields you wish (including KEYWORDS), begin the text with your annotations, and then INCLUDE the message(s) you wish to annotate. It would not be difficult to embody something like the above operation in a special, prompted annotation sequence. 33j

The above are some rather rough first thoughts on how to do annotation. Questions: Does any of them seem like a desirable approach? If so, which makes most sense? Are there sufficient security measures in the first two? Would it make sense to put up one or more of these on a temporary, experimental basis? Your comments are invited. 33k

Incidentally, on the subject of security, we are going to have to make some system changes before the measures suggested above can have much effect. For example, right now if you're sufficiently careful about it, you can use an ordinary text editor to make any changes you want to an existing message file. As long as such free access is allowed to message files, I don't see how we can preserve message integrity. 33l

Regards, 33m

Ted Myer

33n

25-JUN-75 1733-EDT WATSON at BBN-TENEXB: MSGGROUP# 61 Need for Net Wide Ident System
Distribution: NGOODWIN AT BBN, BURCHFIEL AT BBN, MYER AT BBN,, GILBERT AT BBN, MEALY AT ISI, TASKER AT ISI,, MCLINDON AT ISI, WALKER AT ISI, FARBER AT ISI,, STEFFERUD AT ISI, ELLIS AT ISI, KIRSTEIN AT ISI,, ISELI AT ISI, DCROCKER AT ISI, PBARAN AT ISI,, VITTAL AT ISIB, STOTZ AT ISIB, UHLIG AT OFFICE-1,, VEZZA AT MIT-DMS, PIRTLE AT I4-TENEX, WATSON AT BBNB
Received at: 25-JUN-75 14:32:20-PDT 34

One aspect of a message system needing some discussion has to do with addressing, Recent notes indicate some problems for example in keeping all the address lists for this dialog the same on the several computers from which we all work. 34a

In the NLS system we have tried to come to grips with some of the issues in a central IDENT system, The system itself is something of a kludge and would not remmend it to anyone, but there are acouple of ideas worth mentioning behind it,
*1) WE RECOGNIZE THAT THE9E ARE AT LEAST TWO TYPES OF IDENTS REQUIRED, ONE FOR INDIVIDUALS AND THE OTHER FOR DIALOG GROUPS,
2)PEOPLE MOVE FROM ORGANIZATION TO ORGANIZATION AND FROM COMPUTER TO COMPUTER, THEREFORE THE IDENT CONTAINS NO INFO ABOUT THESE BUT THE SUPPORTING DATA IN THE IDENT RECORD KEEPS TRACK OF SUCH THINGS, INCLUDING MODE OF DELIVERY, ONLINE, THROUGH US MAIL ETC,
3) For groups there is a coordinator who gets to add subtract idents from group lists ala Farber in our case, 34b

4) No matter which computer one submits a mail item from one uses the idents of the addressees and a lookup is made in the ident file to obtain the where and how type info for distribution. 34c

I like the idea ala sndmsg of having people be able to keep more informal groups as strings in some file of theirs and can imagine idents being searched for in some strategy like try the central official one then try mine etc,
*WE HAVE FOUND THAT LETTING PEOPLE GO ZN AND CHANGE OR ADD NEW IDENTS ON THEIR OWN TEND TO PRODUCE A DIRTY DATA BASE WITH LOTS OF ERRORS ETC AND DO NOT KNOW EXACTLY HOW TO GET AROUND THIS PROBLEM ON A NETWIDE BASIS,
Having a central database gets into all the problems the BBN people have been working on with their TIP log in data base and know they will have similar problems, 34d

The problem of what constitutes a unique ident netwide (NLS presentmly has the bad feature of limiting idents to a few characters and you get the akward situation of rww3 type things which seem to insult people)) needs to be agreed on. 34e

There is clearly a need to have synonyms and other abrieviations tailorable to individuaml usage, although care is required here when the distribution is printed for the receivers of how they can idenitify and send replys to such if they are recorded in my private file.
Enough I just wanted to open up this area for discussion, Dick 34f

25-JUN-75 1505-PDT ELLIS at USC-ISI: MSGGROUP# 62 Secretaries answering Boss' mail
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 25-JUN-75 15:13:36-PDT 35

Dave: 35a

I share your concern about the secretary "ghosting" problem. Your suggestion for an answer.msg file does create a good "tickler" file. *However, the basic problem is that a recipient of a message sent via a secretary is somewhat confused by the name in the "FROM" field and is unable to use the MSG "answer" command correctly. The original message committee considered this problem a serious one and recommended that there be a "SENDER" field which is machine verified and that the "FROM" field be filled in - if different - to represent the authorizor of the message. 35b

Another possibility which doesn't lengthen (vertically) the header is to extend the "FROM" field with a ",for so and so," to be filled in by the secretary. 35c

Probably neither of the above are doable in the short term. 35d

Regards, Tom 35e

26-JUN-75 2232-EDT WATSON at BBN-TENEXB; MSGGROUP# 68 Minor Complaint with Survey and Operation of Mailsys
Distribution: BURCHFIEL AT BBN, MYER AT BBN, ngoodwin at bbn, burchfiel at bbn, myer at bbn,, gilbert at bbn, mealy at isi, tasker at isi,, mclindon at isi, walker at isi, farber at isi,, stefferud at isi, ellis at isi, kirstein at isi,, iseli at isi, dcrocker at isi, pbaran at isi,, vittal at isib, stotz at isib, uhlig at office-1,, vezza at mit-dms, pirtle at i4-tenex, watson at bbnb
Received at: 26-JUN-75 19:31:20-PDT 36

I am not exacctly sure how mailsys is implemented but frequently I do a survey and either have TI paper with message numbers around or remember them and decide later to go into Mailsys and print one or do something with it and can not use the message number until I do a survey of the whole days messages again, I assume that new messages get appended to end of file and so order does not change and thus old message numbers should still be valid, If so would like to use them, Thanks Dick 36a

27-JUN-75 1548-EDT myer: MSGGROUP# 70 Secretarial Mail Processing
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 27-JUN-75 12:58:58-PDT 37

Message-ID: <[BBN-TENEXA]27-JUN-75 15:48:45-EDT.ROURKE> 37a

Dave & Tom: 37b

When we did the create part of Mailsys, we put in the SENDER and FROM fields as recommended by the message committee, 37c

*The logic works as follows: SENDER is automatically filled in by Mailsys with the user's logged-in name. This is the authentication stamp, FROM is available to the user and will take any text string, 37d

Our secretaries log in under their own names and connect to our directories in order to process our mail. By convention each secretary inserts the authorizor's name into the FROM field of each outbound message. Thus, my messages will frequently show: SENDER: ROURKE at BBN-TENEXA because this is how my secretary, Mary Ann Rourke, logged-in; and FROM MYER, because this is how she filled out the FROM field. I believe this is what the committee had in mind, 37e

Problems: 1). The Mailsys REPLY command gives SENDER priority over FROM in setting up the outbound TO: field. That is, if the object message had a SENDER field the reply will go to that individual. 2). Since FROM accepts plain text, there's no guarantee that it will contain a legitimate network address, 37f

Possible fix: 1). Have REPLY given FROM priority, default back to SENDER if no FROM field or one that's not syntactically correct. 2). Make it possible (by option) for FROM to automatically pick up the Connected directory names, 37g

Comments? If this scheme looks reasonable we could probably make the change fairly quickly, 37h

Regards, 37i

Ted

371

30-JUN-75 0932-PDT ELLIS at USC-ISI: MSGGROUP# 71 Secretary mail processing
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 30-JUN-75 09:32:56-PDT 38

Ted and Dave: 38a

In my opinion, MAILSYS has done the right thing for the moment with SENDER and FROM fields. I like your "possible fix" but would like to emphasize that the connected directory be filled in "by option." 38b

This touches on another issue and that is aids for answering "forwarded"
mail as in delegating the action or asking another more familiar for the answer. This is further complicated by possibly being nested several deep. Any suggestions? 38c

-- Tom 38d

26-JUN-75 1658-PDT STOTZ: MSG and IA
Distribution: [ISI]<FARBER>MESSAGEGROUP,LIST:, MYER AT BBN, stotz
Received at: 30-JUN-75 09:40:31-PDT 39

Ted, 39a

The MSG effort is completely separate from the IA project in terms of an officially sanctioned project. Some IA people have influenced the product, but it was basically done by John Vittal on his own time. However, the history is that MSG originated as a program by Barry Wessler called (I believe) NRD. Marty Yonke and John Vittal effectively rewrote it into a program called WRD. Marty then rewrote that effort, calling the result BANANARD. BANANARD was really the starting point for the code for MSG, but the real credit goes to Barry for the original idea for the system. I will expand further on the IA project and its goals as soon as I can get some free time. 39b

Rob
--- 39c

30-JUN-75 1239-PDT DCROCKER at USC-ISI: MSGGROUP# 73 ANSWER
selection of destination(s)
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 30-JUN-75 13:11:48-PDT 40

The use of mailing list pathnames as the Groupname for
the mailing list now makes it possible for an Answer command to
automatically insert the list into the To: and/or
CC: fields. Dave. 40a

30-JUN-75 1233-PDT DCROCKER at USC-ISI: MSGGROUP# 74 Re: Secretary mail processing
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:
Received at: 30-JUN-75 13:44:28-PDT 41

In response to your message sent 30 JUN 1975 0933-PDT 41a

I guess my current feeling is that the Answer command should perform as it currently does; but if it finds that the CONNECTed directory is different from the Login directory, it should ask the user if the FROM field should be "..." (the Connected dir) and SENDER field "..." (the login dir). I agree that the user should be prompted, rather than having the actions taken too automatically. Nice thing about Mailsys is the ability to iterate through the buffers, prior to msg transmission. 41b

(BY the way, the business with the '"..."'s above was to suggest that the actual text to be used, rather than the terms "login" or "connected" directory.) 41c

Dave, 41d

30-JUN-75 1657-EDT myer: MSGGROUP# 75 MSG
Distribution: STOTZ AT ISIB, [isi]<farber>messagegroup.list;,
Message-ID: <[BBN-TENEXA]30-JUN-75 16:57:51-EDT,ROURKE>
Received at: 30-JUN-75 14:12:06-PDT 42

Rob: 42a

Many thanks for your note and your interesting comments on the geneology of MSG. Here are two thoughts for you: 42b

1. You would do the world a great service if you could explain where the BANANA came from in BANANARD. 42c

2. It may be that MSG has a yet more primitive ancestor than NRD in the form of RD -- a system of Teco Macros that was (I believe) put together by Larry Roberts. 42d

Regards, 42e

Ted Myer 42f

30-JUN-75 1705-EDT myer: MSGGROUP# 76 (Minor Complaint with Survey and Operation of Mailsys)
Distribution: WATSON AT BBN-TENEXB, [isi]<farber>messagegroup.list;, Message-ID: <[BBN-TENEXA]30-JUN-75 17:05:57-EDT,RCURKE>, In-Reply-To: Your message of JUNE 26, 1975
Received at: 30-JUN-75 14:41:29-PDT

43

Dick:

43a

Mailsys has to parse your message file before it can access the items contained. However, the parsing should happen automatically, when required, and it should be invisible to you.

43b

This is the case with SURVEY and READ, but not with WRITE. Needless to say, that's one of the things we're fixing.

43c

In the meantime if you do something like READ the item (abort with CTRL-E once output starts), you'll then be able to WRITE it.

43d

Ted Myer

43e

23-JUN-75 1721-PDT COHEN: On network-mail system,
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, ELLIS, oestreicher, stotz, vittal, cohen
Received at: 30-JUN-75 15:27:11-PDT 44

AN UNSOLICITED MINORITY REPORT 44a

ON NETWORK MESSAGE SYSTEMS 44b

by the naive Danny Cohen 44c

(1) The MAIL system should consist of MAILSND and MAILRCV processes, communicating with each other according to some NMP (Net-Mail-Protocol). 44d

This protocol could be either a level-2 protocol, i.e. interfaced to the NCP directly, nested in the Host-to-Host (level-1) protocol, or (preferably) a level-3 protocol, interfaced to the FTP, nested in the File-Transfer-Protocol (level-2). 44e

(2) The NMP should allow inclusion of an (open-ended) set of control instructions in addition to the data (text, etc.). 44f

I would suggest inclusion of some escape character (say "*" for ease of notation in this message, but of course a non-printing character should be used). Would you believe anything (nearly) except ^C, ^O, ^T, ^Z, etc. 44g

(3) This structure will allow the use of multi-addressed messages, i.e., single transnet transmission of a message for all its receivers at the same host. The MAILRCV could have its own directory, which would include MAIL-LISTs constructed of individual names (both local and remote) and other MAIL-LISTs (also both local and remote). This will allow easy and simple implementation of mail-forwarding, addressing functions rather than individuals, addressing all members of a

remote team, etc. The proper use of the escape character will allow simple and easy implementation of features like encryption of selected portions of a message or comments in any given field (e.g., "c/o" and "Attention"). 44h

(4) The original message preparation and message processing can be separated, as suggested by Ted Myer, BBN's approach to (original) message preparation looks very attractive, especially the ability to edit each field at any time and the formatting of messages. 44i

Page 2 44j

The message input stage should allow interface to any available text editor to which the user is accustomed, and should include at least trivial formatting (like MRUNOFF and PRERUN, which do the obvious things right and are idempotent). I would recommend having FORMAT do at least as much as PRERUN does. 44k

The message processing should follow the approach represented currently by ISI's NMSG, which attempts to provide the user with the features he might want to have in the most natural and obvious way. 44l

(5) The online documentation should address several classes of users: 44m

* Those who know how to use the system but have forgotten the exact instruction format. They know "what" but forgot "how". 44n

* Those who are familiar with systems like this but not with this particular one. They know "what" but don't know "how". 44o

* The totally naive user who doesn't even know "what" (to expect from the system). 44p

All the available HELP should be like that in Casner's "MACGEN" (i.e., callable at ANY stage, with ability to return to that exact stage with the same screenload). 44q

(6) The system should be well interfaced with the ARCHIVE and RETRIEVAL systems. 44r

I suggest having a means of achieving sets of messages with their headers appended to an existing file in such a way that this file can be searched and the name of the archived file can easily be found. 44s

---

I felt these comments might be of interest to the group.
Rob Stotz 44t

1-JUL-75 1113-PDT DCROCKER at USC-ISI: MSGGROUP# 78 Format Processing for Message Preparation
Distribution: [ISI]<FARBER>MESSAGEGROUP.LIST:, cosell at bbn, anderson at rand-rcc
Received at: 1-JUL-75 11:27:39-PDT 45

Rob -- Thanks for forwarding Danny's note. It reminded me of some similar suggestions I have: 45a

I like the idea of having a formatter which lets the user type his message in a natural way and then augments the appearance. (Mrunoff and PreRun know about double carriage-returns as paragraph breaks, PreRun has a number of other, more complex conventions for formatting pieces of text.) Along the lines of giving a user the tools he (maybe) uses elsewhere, I suggest having Mailsys use Mrunoff and Spell (a spelling corrector) rather than duplicate code, 45b

I also suggest that the formatter have the following rules: 45c

1. It not paginate. (Mrunoff has this as a run-time option.) 45d

2. It perform paragraph breaks upon encountering double-<crlf>. 45e

3. It indent the left margin if either the first or second lines of the new paragraph are to the right of the left margin of the last paragraph. (And out-dent the margin, if the reverse is true.) 45f

4. It "hang" the first line out to the left of the left margin of the rest of the lines of the paragraph, if the second line is indented from the first. (This kind of formatting was demonstrated in Danny's note; e.g., with the asterisks.) 45g

5. It "fill" lines with words from following lines, but NOT justify lines. At the least, this would be a minor concession to those with slow terminals. 45h

I believe the above implies an idempotent processing capability. (By the way, I would like to thank BBN for expanding my vocabu-

lary. Not being a mathematician, I had never heard the word before. It has an interesting sound to it. Oh, and while I am on the subject, can anyone give me a definitive judgement upon whether the noun, referring to a person or thing which "formats," is "formating" or "formatting?" Thanks.) 45i

What are the group's feelings about the above? Dave. 45j

4-JUL-75 1412-PDT KIRSTEIN: MSGGROUP# 81 The Attention Field
Distribution: MSGGROUP
Received at: 4-JUL-75 14:12:55-PDT 46

attn:ptk,srw 46a

I have not entered the latest set of Mail Dialog, though I have also
been following it with great interest. As many of you know, we are
in
the positon of having several users sharing one account. For this
we
developed the simmpleminded POST system, which sorted mail by the
ATTENTIPN field at the start of the message(see above). We realize 46b

this should ideally be iin the header, and it was so defiined in one
of
the versions of mailsys of BBBN. Particularly when there is the sort
of
quantity of mail as is being generated by this recent spate of
corresspondence, this ATTN field could come iin very useful. In
one version it could act as a comnmonly recognized keyword,
which could be appropriately sorted into a special file of that name
in each recipients directory. It can also be used , if defined
differently, to be sorted into a ffile other than the general message
file, in the directory of any particular account so desiring it.
If such a tecnique is not used, the general message file quickly
becomes
completely unusable in an environment like ours."Peter T Kirstein 46c

9-JUL-75 2132-PDT STEFFERUD at USC-ISI: MSGGROUP# 84 XMAIL circa July 1, 1975
Distribution: MAIL2 AT BBN, [isi]<msggroup>mailing.list:,
Message-ID: <[USC-ISI]9-JUL-75 21:32:43-PDT.STEFFERUD>
Received at: 9-JUL-75 21:39:25-PDT 47

I was delighted to find that XED had been "put into XMAIL" until I discovered that the only way to get back to XMAIL is to write the file from XED and exit from XED to the EXEC and then restart XMAIL, having lost everything in my various buffers. 47a

Furthermore, I get "ILLEG INST 256016000002 AT 167620" when I type "xed text:<cr> and it then puts me out to the EXEC having lost all my various buffers. 47b

Frankly, I find this to be encredible, Either I am just too dumb to use XMAIL or it should be recalled again because it does not perform as advertised. 47c

Having written the above, I decided I had better read the help file stuff on XED and TECO and EDIT before sending this message, I trust you all know what I found, but let me review it for you. 47d

DES EDIT has not been changed in the help file, although it is no longer available as a working command. 47e

DES XED gives a question mark. 47f

DES TECO gives a question mark. 47g

For some strange reason, DESCRIBE was not even accepting subcommands for a while, but with some persistence it began behaving normally again. 47h

Back to the problems with XED, In my opinion xed has not been "put into XMAIL!" Either it has a bug that ppevents putting the text field into the XED buffer following the XED command, or it was designed to require writing the file and then reloading it into XED, writing it from XED into another file and then reloading it with ^B into the chosen XMAIL buffer, The SAVE,FIELD Command does allow me to save

any field I wish, one at a time in separate files, but this just doesn't meet my expectations to
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And one more thing, though I doubt that this is a complete list of the new troubles I will find, FORMAT still can't handle too long lines, as I expect this message to demonstrate. This of course renders XMAIL useless for reasonable text entry. 47j

Best regards, Stef 47k

11-JUL-75 1211-PDT STEFFERUD@ISI: MSGGROUP# 85 Subdivision of Messages
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 11-JUL-75 12:22:31-PDT 48

Message-ID: <[USC-ISI]11-JUL-75 12:11:39-PDT.STEFFERUD>
Keywords: ENVELOPE,HEADING,TEXT,ANNOTATION,REFERENCES,KEYWORDS
Keywords:
SUBDIVISION,ATTN,TO,FROM,DATE,POSTMARK,CARE-OF,SUBJECT,IN-REPLY-TO,PL
EASE-REPLY-TO,POINTERS,RETRIEVAL
Keywords: MESSAGE,REVISION,COORDINATION,EDITING,NOTES
Keywords: 48a

This message is prompted by an exchange of messages with Peter Kirstein following his "The Attention Field" message (MsgGroup #82). 48b

I hope it does not depend on any of the content of the messages you don't have, since we don't want to burden you with the whole bunch. 48c

I have been putting ATTN: stuff in the subject line of messages to shared mailboxes. The POST system certainly provides a systematic way to use ATTN fields, though I appreciate that the POST system has not been made efficient. I would like to see the idea propigated to MSG and XMAIL. 48d

Actually, I am beginning to see that there are several legitimate subsections of messages, though I agree that subdividing will threaten to over complicate things again for our non-computernik friends, including our secretaries (bless them, its hard to get along without them in here). My ideas are only half formed at this time. How about the following: 48e

ENVELOPE: 48f

Contains the addresses, including ATTN:, Care-Of: and Post-Mark: subfields. ATTN and Care-Of subfields would have to be associated with specific addressees on the envelope. Addressing protocols are messy, especially since SNDMSG preempted the comma which is normally used to put Last names first in addresses. Dave Farber and i have had several discussions on this topic without

resolving it, we need Sur-names, Given-names, ATTN, Care-of, plus mailbox location fields. 48g

HEADING: 48h

Contains the Date: To: From: Subject: In-reply-to: Ref: Please-reply-to: etc. type fields such as we find on normal office correspondence now. This Header should not have all the stuff that XMAIL puts there now. Much of what MSG and XMAIL put in the Header belongs on the envelope, or elsewhere, eg. SENDER belongs on the envelope, Message-ID belongs on the envelope, "Mail From . . . . . ." belongs on the envelope, etc. The date and time of release of the message belong in the header, but the time and date of posting and delivery belong on the envelope, Keywords belong elsewhere. 48i

TEXT: 48j

Contains the main body of the message, letter, memo, note, document, or what have you, 48k

ANNOTATIONS: 48l

Contains notes and comments such as one writes on envelopes and in the margins to keep track of things like "Who received copies," "What I think of this or that," etc. This subsection should be subject to appending after receipt, and subject to selective dissemination when the message is forwarded in a new envelope. Two way pointers into text would be nice. 48m

REFERENCES: 48n

Contains formal references to other system accessible documents, messages, etc, which might be susceptible to automatic retrieval via pointing to the reference. This subsection should also be susceptible to appending after receipt. Again, pointers would be nice. They might even be used to point to other messages which make up a collection of coordination information as required by the IA Project. 48o

KEYWORDS: 48p

Contains specifically chosen words or phrases to serve as keywords for keyword searches. Possibly there might be a program that analyzes messages to prepare keyword tables automatically and store them in a keyword subsection to avoid recomputing the keyword list for future searches. Again, this subsection should be susceptible to modification after receipt, or later to allow for revision of keywords in new situations. 48q

Any Comments, Stef 48r

11-JUL-75 2040-EDT MYER at BBN-TENEXA: MSGGROUP# 86 (XMAIL circa July 1, 1975)
Distribution: STEFFERUD AT USC-ISI, [isi]<msggroup>mailing.list:,
Message-ID: <[BBN-TENEXA]11-JUL-75 20:40:07-EDT.MYER>, In-Reply-To: <[USC-ISI]9-JUL-75 21:32:43-PDT.STEFFERUD>
Received at: 11-JUL-75 17:41:53-PDT 49

Stef: 49a

1, I don't know who told you that XED had been "put into XMAIL" as of July 1, No link between the two was attempted at ISI til July 9, 49b

2, When we did make the attempt, XED was not in [ISI]<SUBSYS>, where we had expected it, so we put a private copy in [ISI]<SUSSMAN>, In so doing, we failed to realize that <SUSSMAN> had unusually stringent file protection, We were able to access it -- logged in as SUSSMAN -- but apparently you were not, Ron Tugender's attached message explains this further, In any case the situation should now be restored to normal, 49c

3, I'm not familiar with XED, but I believe it is supposed to hand it's text buffer back to XMAIL through the EXIT command, We have tried this with the current implementation on ISI and it appears to work, 49d

4, I apologize for the documentation problem you ran into, That was my decision, and apparently a mistake in judgement, I felt that the notice we included in the NEWS command would be sufficient to get people started, Evidently I was wrong, 49e

5, Thanks for pointing out the long lines problem in Xmail's formatter, We'll fix it as soon as we can, In the meantime if you'll remember to toss in an occasional <cr>, I think you'll find the formatter can straighten out quite considerably ragged text, Even with the bug you discovered, we have found XMAIL to be far from "useless for reasonable text entry", 49f

6, This leads to a general comment, Please bear in mind that XMAIL represents the "limited experimental release of a developing system to a select group of friendly co-workers," As

long as that's the case, you are going to keep seeing various forms of ragged behavior, especially when we put up new versions. 49g

The alternative is to regard XMAIL as a production system. If that's to be the case, then we'd prefer to withdraw it altogether until we ourselves are far more satisfied, not only with it's operation, but also the underlying design. 49h

Regards, 49i

Ted Myer

Mail from USC-ISIB rcvd at 10-JUL-75 1219-EDT
Date: 10 JUL 1975 0927-PDT
Sender: TUGENDER at USC-ISIB
Subject: XMAIL-XED problems on ISIA
From: TUGENDER at USC-ISIB
To: Myer at BBNA
Cc: Stefferud at ISIA,
Cc: ISI-IA:
Message-ID: <[USC-ISIB]10-JUL-75 09:27:14-PDT.TUGENDER> 49j

Ted, 49k

I checked out Stef's problems on ISIA and the reason he can't get XED from XMAIL is that the private copy of XED you are using is on a directory which is protected against any files being opened by other users. Its protection would have to be relaxed for users to access files there. 49l

Since you may not know as yet, the runnable version of XED at ISIA is <OESTREICHER>XED.SAV (analogous to <IADOCUMENTS>XED.SAV on ISIB). Having XMAIL call the version of XED on <OESTREICHER> assures you of accessing the latest version of XED on ISIA. 49m

Ron 49n

--- 49o

14-JUL-75 1445-PDT STEFFERUD at USC-ISI: MSGGROUP# 87 ((XMAIL circa July 1, 1975))
Distribution: MYER AT BBN-TENEXA, [isi]<msggroup>mailing.list:,
Message-ID: <[USC-ISI]14-JUL-75 14:45:24-PDT.STEFFERUD>, In-Reply-To: <[BBN-TENEXA]11-JUL-75 20:40:07-EDT.MYER>
Received at: 14-JUL-75 14:58:26-PDT 50

Hi Ted, 50a

It appears that we have orthogonal views of the world, which have led to significant differences in our expectations, 50b

First to answer the points in your message of 11-July-75, 50c

1, XMAIL NEWS, "Changes as of July 1" told me that XED had been "Put into XMAIL, I took the announcement at face value and assumed the obvious when I read it on July 9, 50d

2, Ron Tugender's message does explain what happened (XMAIL pointed to a version of XED that was in an unaccessible Directory), Your message explains that you did not check out the operation of XED from the situation to be faced by MsgGroup users, I would like to assume that you will modify your release procedures for future changes to achieve better quality assurance for MsgGroup, 50e

3, XED does work now as you supposed it should, and I agree that it is well done, both in design and implementation, It works exactly as I expected when I tried to use it on July 9, 50f

4, I accept your apology regarding the documentation goof and I apologize for reacting so strongly when I found that it was not properly done, My reaction was based on the assumption that it had been the way I found it since July 1, 1975 since that is what NEWS said, If one can't trust the documentation, who can one trust? 50g

5, I agree about the "occasional <CR>" to cope with the "long lines problem in FORMAT" but I will now use XED to enter text because it gives me auto <CR> insertion and gives me the power of the edit features of XED right there in my text entry facility,

The assembly line approach to text entry is not reasonable, in my opinion. 50h

It does not make sense to me to enter text in one system, edit it in another , and square it up in yet another. If XED only had a "Fill" capability to square text without "Justification" I would find that it meets all my needs for message text entry. At least until something better came along in a single "package." 50i

Actually, I find that FORMAT messes up my intersentence spacing and makes the text look like I don't know the typing rules. (ie. two spaces following a period at the end of a sentence.) I would prefer simple filling of lines in place of low quality justification procedures. Non-network recipients of FORMATted messages must wonder about our secretaries' training. 50j

The other problem with the "occasional <CR>" solution is that I typically discover that I need the <CR> after it is too late. When I am composing my thoughts at the keyboard, it is very distracting to think about things like "occasional <CR>s." 50k

6. I understand and appreciate the "limited release" concept and I apologize for violating the spirit of it by blasting in the MsgGroup channel instead of commenting privately to MAIL2@BBN. 50l

Indeed one alternative is for you to withdraw from MsgGroup exposure until the whole "package" is completed and then deliver it as a fait accompli. As things are going now, we are not far from that because we only get to feed back our concerns after you have done the implementation, which puts us in the position of attackers if we don't like what we see. By the time we get to register our thoughts, you are too far down the pike to accomodate our ideas (I think). 50m

Another alternative is for us to withdraw from commenting. 50n

I would like to suggest another alternative. 50o

A. I suggest that you let us know more in advance what you are going to do to XMAIL. For example, what are your next changes in

the works? I would much prefer to give you constructive suggestions than carping criticism after it is too late. 50p

B. I also suggest that you adopt well thought out release procedures for system releases to MSgGroup which are like those for real products, at least to the extent that you don't leave such big holes for MsgGroup members to fall into. I would have had no reaction at all if the "Changes as of July 1" had been dated July 9, or had indicated that the "XED in XMAIL" feature was coming in the near future. 50q

Ted, We all want to help make XMAIL succeed. To help, we need more than the privilege of previewing it before public release. Hopefully we can have a better information interchange through the MsgGroup. I would like to hear from others in the group on this subject. 50r

My very best regards, Stef 50s

PS: 50t

I just discovered that XMAIL steals ^Es so the ^E command in XED is lost. It seeems that XMAIL remembers about ^E typed into XED and saves it for after return to XMAIL, where upon it reacts to the ^E and wipes out the modified text in the buffer. Its kind of an interesting bug. Good luck Stef 50u

16-JUL-75 1135-EDT MOOERS at BBN-TENEXA: MSGGROUP# 89 [MOOERS at BBN-TENEXA: XMAIL/MAILSYS: Xed, Format, ^E bug]
Distribution: [ISI]<MSGGROUP>MAILING.LIST;
Received at: 16-JUL-75 08:50:25-PDT 51

Message-ID: <[BBN-TENEXA]16-JUL-75 11:35:22-EDT,MOOERS> 51a

Begin forwarded message

Mail from BBN-TENEXA rcvd at 15-JUL-75 1449-EDT
Date: 15 JUL 1975 1443-EDT
Sender: MOOERS at BBN-TENEXA
Subject: XMAIL/MAILSYS: Xed, Format, ^E bug
From: MOOERS at BBN-TENEXA
To: Stefferud at USC-ISI
Cc: MYER, ROURKE, AIRPLANES
Message-ID: <[BBN-TENEXA]15-JUL-75 14:43:28-EDT,MOOERS> 51b

Thanks for your message. Glad you are happy with XED now. 51c

I agree with you completely about the "justification" feature of FORMAT. Please note that

>DEFAULT FORMAT NOJUSTIFY (CR)
>RECORD,PROFILE (CR)

will make FORMAT fill but not justify for you henceforth. 51d

We believe that XMAIL/MAILSYS needs editing capabilities within the system, and not in a subsystem like XED or TECO. This is on our priority list of new features. 51e

FORMAT is not really a separate system -- just a command in MAILSYS. Perhaps a FILL cpability could be included in an editing system that was automatically invoked whenever the user gave a message-creating command and began to enter text. 51f

We will look into the ^E bug. 51g

---Charlotte Mooers

End forwarded message

51h

16-JUL-75 1725-PDT FARBER at USC-ISI: MSGGROUP# 90 Proposed One Day Meeting of the Message Group
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 16-JUL-75 17:32:18-PDT 52

Message-ID: <[USC-ISI]16-JUL-75 17:25:00-PDT.FARBER> 52a

The COMPCON this year will attract many of the message group to Washington. I would like to suggest that we gather on Friday September 12 th (right after COMPCON) to both get up to date on the plans of the various implementers and to interchange ideas and physically meet each other. If there is sufficient interest Stef and I will form the agenda for the day. Please RSVP both your interest in such a get-together and particular session topics you would like to schedule or see held. 52b

Dave 52c

16-JUL-75 1725-PDT FARBER at USC-ISI: Proposed One Day Meeting of the Message Group
Distribution: [ISI]<MSGGROUP>MAILING.LIST:,
[ISI]<MSGGROUP>MAILING.LIST:
Received at: 16-JUL-75 19:02:04-PDT 53

Message-ID: <[USC-ISI]16-JUL-75 17:25:00-PDT,FARBER> 53a

The COMPCON this year will attract many of the message group to Washington, I would like to suggest that we gather on Friday September 12 th (right after COMPCON) to both get up to date on the plans of the various implementers and to interchange ideas and physically meet each other, If there is sufficient interest Stef and I will form the agenda for the day, Please RSVP both your interest in such a get-together and particular session topics you would like to schedule or see held, 53b

Dave
------- 53c

17-JUL-75 1222-EDT myer: MSGGROUP# 92 Stotz 10 Jul 1975 -- Need for Message Structure
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 17-JUL-75 09:22:49-PDT 54

Message-ID: <[BBN-TENEXA]17-JUL-75 12:22:01-EDT.ROURKE> 54a

Rob: 54b

The message service subcommittee report "Proposed Specification of Inter-site Message Protocol" describes a structured message representation and a transmission protocol that I believe is intended to meet just the need you describe in your message. As you know, that report is now in draft form and under review by the full message service committee. I'd suggest going over it for any defects that might prevent it from performing the IA coordination functions you describe. My understanding is that it's not too late to make changes to the design. 54c

For general information, we plan to replace the existing Tenex Mailer/FTPSRV distribution system with one that implements the new message protocol. The new system will feature a cache/citation form of delivery that will eliminate much of the wasted redundancy built into the present approach. More on this later. 54d

Our hope is that the new delivery system will be useful to the IA project in supporting the various coordination functions you have described in recent messages. For example, it should enable coordination among groups scattered over two or more host computers. It will also permit useful redundant storage of messages at multiple sites for backup purposes. 54e

Ted Myer 54f

17-JUL-75 0932-PDT RYLAND at USC-ISI: MSGGROUP# 93 (Stotz 10 Jul 1975 -- Need for Message Structure)
Distribution: ROURKE AT BBN-TENEXA, [isi]<msggroup>mailing.list:,
Message-ID: <[USC-ISI]17-JUL-75 09:32:23-PDT,RYLAND>, In-Reply-To: <[BBN-TENEXA]17-JUL-75 12:22:01-EDT,ROURKE>
Received at: 17-JUL-75 09:35:09-PDT 55

Ted:
How can the members of the message group get copies of the "proposed specification", in order to comment on it? 55a

Thanks,
Chris Ryland 55b

18-JUL-75 1006-PDT Tom Ellis: MSGGROUP# 94 "Proposed Message Protocol"
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 18-JUL-75 10:07:37-PDT 56

Message-ID: <[USC-ISI]18-JUL-75 10:06:25-PDT.ELLIS> 56a

Chris Ryland and all: 56b

The "Message Committee" (much smaller than the Message Group) has a draft "proposed structured message protocol for intersite communication" recently prepared by a subcommittee. The Message Committee will "debug" this draft over the next several weeks before it is released to the larger audience. I would appreciate the "Group" being patient while the debug process is going on because I don't think it can be effectively "coordinated" over the whole group at this stage. 56c

Thanks, Tom 56d

18-JUL-75 1135-PDT STOIZ at USC-ISIB: MSGGROUP# 95 New message transmission protocol
Distribution: MYER AT BBN, [isi]<msggroup>mailing.list:
Received at: 18-JUL-75 12:04:39-PDT 57

Ted, 57a

You are correct that the Message Service subcommittee's proposed protocol is designed to allow transmission of structured messages across the net. Don Oestreicher from the IA project is a member of that subcommittee, so that IA's requirements are already represented.
However we will be reviewing the spec. 57b

The point of my message was to support the need for the new protocol and for message services that can take advantage of it, i.e, one's that provide more information than just the message itself. 57c

For those who are interested, contact Jack Haverty at MIT (JFH@MIT-DMS)
for a copy of the proposed message transmission protocol. 57d

I am pleased to hear that BBN is implementing a new message handler to replace MAILER/FTPSRV. We are most interested in your design plans for this as we do plan to use it in our military message service. When can we expect to hear more about it? 57e

Regards,
Rob 57f

20-JUL-75 1724-PDT WALKER at USC-ISI: MSGGROUP# 97 MsgGroup vs Message Committee
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 20-JUL-75 17:24:31-PDT 58

A comment on MsgGroup versus the "Message Committee". 58a

There has been some extra confusion of late about the two groups referred to above. Let me give you my view of what has been happening in hopes that it will make more sense. Last fall a group called the Message Service Committee was formed to plot a course for future development of message services on the ARPAnet. This group was chaired by Tom Ellis of ISI and included Jerry Burchfiel of BBN, Al Vezza of MIT, Tom Marill of CCA, Dick Watson of SRI Rob Stotz of ISI, and Peter Kirstein of U of London (did I forget anyone? sorry). This group has met several times and has made some recommendations. Their latest draft report is on a proposed protocol for transmitting structured message on the Net. This is a detailed adaptation of the latest PCP protocol for message transmission. It has very little (if anything) to do with the deliberations of the MsgGroup. Furthermore, it is at present a draft subject to much revision. I have directed that it not be distributed outside the Message Committee, please don't be offended. 58b

The MsgGroup, on the other hand, was formed largely spontaneously by a group of interested people commenting on how message services should appear to users (as opposed to how they should function internally). I'm pleased with the progress of this "conference", I am trying to arrange for Stefferud to serve as a "paid" organizer so that the groups ramblings can come out in a coherent form. I would encourage your continued participation here and in groups such as Dave Farber's Compcon get together. 58c

Steve 58d

22-JUL-75 0904-EDT MOOERS at BBN-TENEXA: MSGGROUP# 99 The Attention Subfield in The MAILSYS Address Fields,
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, henderson, rbrachman, ulmer, Message-ID: <[BBN-TENEXA]22-JUL-75 09:04:54-EDT,MOOERS>,
References: Kirstein "The Attention Field", Msggroup #82,
Received at: 22-JUL-75 06:17:55-PDT 59

Discussion of Kirstein's message of July 7, 59a

The problem is that one MAILBOX sometimes serves a group of users or projects, How can the messages, as they arrive, be brought to the attention of different users? And how can they be sorted out at a later date? 59b

There are three ways that the current MAILSYS system can handle this: 59c

(1) Use the KEYWORDS field to store the appropriate keywords, names, names of projects, or whatever, 59d

The KEYWORDS field takes a text string as its argument, The idea is that it will usually consist of words, separated by commas, but this is not at all required, 59e

Ex: KEYWORDS: WHATZIT, WHOSIS 59f

The KEYWORDS field can be displayed in a long-form SURVEY with the command

```
>SURVEY,(CR)
>>KEYWORDS (CR)
>>(CR)
```

If you wish to search the KEYWORDS field with a READ or SURVEY command, you can first set up a FILTER:

```
>FILTER <filter name> (CR)
>>REQUIRE KEYWORDS <text string> (CR)
>>(CR)
```

Then you can perform the sort and store the selected messages in a file with 59g

```
>READ,(CR)
>>FILTER <filter name> (CR)
>>OUTPUT <file name>(CR)
>>(CR)
```
59h

The commands can be typed in the abbreviated mode, of course. 59i

(2) Use the "Attention Subfield" of the MAILSYS address fields (TO, CC, and BCC). 59j

As currently implemented, the MAILSYS address field has the form 59k

<address list> = <name spec>, <name spec>, ... <name spec> 59l

where 59m

<name spec> = <name> @ <host> (<text string>) 59n

which is displayed as 59o

Name at Host (Attn: Text String) 59p

Ex: Mooers at BBNA (Attn: WHATZIT) 59q

Until now, the documentation of <name spec> showed the form 59r

<name spec> = <name1> @ <host> (<name2>, <name3>, ...) 59s

and the idea was (and is) that in future versions of MAILSYS, <name1> could be the primary user assigned to a multi-user MAILBOX, and the names in the parentheses could be secondary users authorized to use the MAILBOX. Whether the secondary users should be assigned identities in the system so that MAILSYS can parse and check them in -- at least in the local directory -- is an interesting point for debate. 59t

At present, the attention subfield is available for any kind of flag. It has the advantage of being in the TO, CC, and BCC fields, where you would normally look for an addressee, and the disadvantage that MAILSYS can't sort on it. 59u

In the address fields, MAILSYS will FILTER only for address lists and will not touch the stuff inside the parentheses, whether it consists of duly authorized names or not. 59v

Future versions of MAILSYS will certainly have to filter and sort on the Attention Subfields of messages. 59w

(3) It is also possible to put the attention flag at the beginning of the SUBJECT field, e.g., 59x

Ex: SUBJECT: WHATZIT: More thoughts on the Attention Problem. 59y

Then you can search for WHATZIT with a FILTER. 59z

This has the advantage that the attention flag shows up on a normal short-form SURVEY, and the disavantage that the subject field is, perhaps, not a very logical place for an attention flag. 59a@

I hope this clarifies matters. I have changed the on-line documentation to reflect the system as it is now. 59aa

---Charlotte 59ab

22-JUL-75 2108-PDT FARBER at USC-ISI: REF:msg 90-91 16 July 1975 60
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 22-JUL-75 21:12:47-PDT

Message-ID: <[USC-ISI]22-JUL-75 21:08:19-PDT.FARBER> 60a

please RSVP ASAP as to your interest in such a one day meeting
and any specific topics you would like to hear or present. 60b

Dave 60c

24-JUL-75 1622-EDT MOOERS at BBN-TENEXA: MSGGROUP# 101 Proposed new MAILSYS features inspired by MSG,
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, airplanes, henderson, rbrachman, Message-ID: <[BBN-TENEXA]24-JUL-75 16:22:49-EDT.MOOERS>
Received at: 24-JUL-75 13:40:04-PDT 61

Stef: 61a

In your message of 14 July 1975 to Myer, you suggested that there be more discussion of future plans for MAILSYS and other message systems. The remainder of this message is intended as a step in that direction. 61b

The next release of MAILSYS will introduce new features designed to improve the performance of the system, especially in the message-processing commands. This memo discusses a few areas of improvement that were inspired by features in MSG. 61c

ENTERING THE MAILSYS SYSTEM 61d

When you give the command MAILSYS (CR) to the EXEC, you will have the option of specifying which file you want to use as the INBOX. 61e

@MAILSYS <filename> (CR) 61f

If you simply type 61g

@MAILSYS (CR) 61h

MAILSYS will input the default INBOX MESSAGE.TXT;1. 61i

MAILSYS will then automatically print out on your terminal, a set of one-line SURVEYs of all RECENT messages -- that is, all messages that have arrived since the last time you looked at that INBOX. This printout can be easily aborted if you don't want to see it at the moment. 61j

At your option, MAILSYS will interrupt a working session with an

automatic SURVEY of new incoming messages. You will be able to set this option as part of your DEFAULT PROFILE. 61k

THE CONCEPT OF THE CURRENT ITEM 61l

The current item in MAILSYS is the item which is ready to be scanned and printed out, or otherwise output when the next message-processing command is given. The current item will be able to be

(1) printed out "Current Item is N of M",
(2) incremented or decremented by one,
(3) set to any arbitrary number,
(4) entered in an item list symbolically, as "," 61m

COMMAND STRUCTURE 61n

Wherever possible, the commands requiring several lines and the use of previously constructed FILTERS will be replaced by multipart, one-line commands. It will be possible to use 61o

"throwaway" one-time FILTERS, entered on the same line as the primary command. This will substantially reduce the burden of typing commands. 61p

LINEPRINTER OUTPUT 61q

Messages printed out on the lineprinter will automatically be preceded by a list of one-line SURVEYs, forming a table of contents. 61r

It will be possible to use MAILSYS to print out the MAILSYS on-line documentation on the lineprinter. 61s

SURVEYING 61t

The ability of MSG to SURVEY messages is considerably more flexible than the current MAILSYS implementatin, which offers only a SURVEY of all messages. The new MAILSYS release will

provide a better engineered survey command that will make it possible to generate selective SURVEYs showing just part of the INBOX contents, 61u

MESSAGE STATUS 61v

MSG provides a simple and uniform way of describing various states of a message, which we will embody in the new release of MAILSYS,

RECENT -- all messages that have arrived since the last time the user entered the INBOX
OLD -- messages that arrived before the user last entered the INBOX
SEEN -- messages marked SEEN
UNSEEN -- messages that have not been marked SEEN
DELETED -- messages marked for deletion
UNDELETED -- messages that have never been marked for deletion, or that have been DELETED and then UNDELETED

---Charlotte 61w

24-JUL-75 1504-PDT FARBER at USC-ISI: MSGGROUP# 102
Distribution: WALKER, STEFFERUD, MSGGROUP
Received at: 24-JUL-75 15:10:17-PDT 62

Message-ID: <[USC-ISI]24-JUL-75 15:04:37-PDT,FARBER> 62a

The following message was sent to MUoers in response to his msg of 24 July 62b

I approve very much of the ideas you put forth , I will wait egarly to having a chance to see how they work in practice within the MAILSYS enviornment 62c

Dave 62d

24-JUL-75 1706-PDT TASKER: MSGGROUP# 103 MSG Answer command
Distribution: MSGGROUP
Received at: 24-JUL-75 17:06:57-PDT 63

[This is a copy of a message already sent to Vittal.] 63a

John: 63b

I just sent a message to your ISIA directory by mistake (re some changes Mooers is adding to MAILSYS). 63c

I used Answer to generate the message to Mooers and found that the A command is now a little confusing to use. The typeout of: 63d

<- Answer Respond to sender, specify additional cc:
in message: 63e

(caps are my input) made me think that I was first supposed to enter the additional CC's. Naturally MSG came back and told me I was dumb by saying "No number given" to which I verbally replied "You ##$%&&%, you didn't give me the chance!! How the hell am I supposed to terminate my CC's and give you a number!!" 63f

To make matters (a little) worse, the help offered after entering the A for Answer (<- Answer ?) gives adequate information as to the options, but then types, "Send response to:" making me further believe that I was being asked for the actual CC items. How about "Response option:" instead? (I admit that this reaction on my part was not entirely rational at this point, but it WAS my reaction -- triggered by the earlier message leading me to believe that I was next expected to specify the actual CC items. As you're probably aware, user "mental context" has a lot to do with how a user interprets anything the least bit ambiguous.) 63g

The quick and dirty solution is to take away the colon that follows the "cc" and move the "in message:" up to the same line. If you can do it, it wounld probably be a little better to

the terminal user if you could rearrange the response to be something like: 63h

<- aNSWER MESSAGE #: <message-sYmbol><cr> 63i

or 63j

<- aNSWER MESSAGE #: <message-symbol>, r 63k

[<message number> <date> <from> <etc...] 63l

RESPOND TO SENDER, SPECIFY ADDITIONAL CC: <addresses><cr> 63m

I know you are trying to keep the syntax consistent, so this is merely an illustration. However, something needs to be done. 63n

I also find it convenient to have the message system print out what's in the text buffer so far (as MAILSYS does). (This would clearly be inappropriate for Forward, but would be nice for Answer.) 63o

26-JUL-75 0138-PDT ISELI: MsgGroup Efforts
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, STEFFERUD, iseli, robertazzi at office-1
Received at: 26-JUL-75 13:17:41-PDT 64

Hi, Stef - 64a

I have been reading your MsgGroup messages with great interest and watching the development of your message system. 64b

I wonder if it would be possible to join your group and attend the one-day meeting in September. 64c

While Jean Iseli is out of town for a bit I have the use of his directories (which is why this message is coming from ISELI) and am taking care of his mail for him...sending him a printout through the common, ordinary, plebian come-down of U. S. Mails at the moment. 64d

I am Mil Jernigan, associated with Roland Bryan (UCSB Computer Systems Lab) in his consulting firm of ACC out of Santa Barbara, but located in the Washington DC area as a consultant to the DOD community in the area of ARPANET "technology" (a euphemism if I ever heard one!). Since the entire concepts of ARPANET and computer networks and the man/machine interface as computer networks are applied to communication is "my bag", all of the ideas on message handling are very much in my field of interest. 64e

I was with Doug Engelbart's SRI-ARC group through the whole development of the ARPANET until last September when I came East to work in this end of it. 64f

I ordinarily use the ROBERTAZZI@OFFICE-1 directory or this one at ISI. 64g

There are a number of approaches to message handling that some of the people I have been talking to have been exploring on a theoretical or not yet implemented...if we are going to implement it,... sort of basis. Have heard a lot of ideas kicked around, but nothing as far along as your group has gone. 64h

Thanks for your consideration, 64i

Please SNDMSG me at either (probably best to use the first one) at ROBERTAZZI@OFFICE-1 or here as ISELI@ISI (which does not have to be added since Jean is already getting the messages). However, I would appreciate having my name and address of ROBERTAZZI at OFFICE-1 added. Please inform me of the meeting. I am looking forward to it. 64j

Mil Jernigan c/o ROBERTAZZI@OFFICE-1 64k

U. S. Mails to
Ms. Mil E. Jernigan
P. O. Box 174
Annapolis Junction, Maryland 20701
Phone: (301)953-7561 64l

P. S.: Jean sends his regards and sorry he could not get together with you before he left for Oregon. He will probably be back for a bit some time next month. 64m

--- 64n

27-JUL-75 1545-PDT STEFFERUD at USC-ISI: MSGGROUP# 107 Mailbox Finder Program at ISI
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, alan at isib,
Message-ID: <[USC-ISI]27-JUL-75 15:45:08-PDT.STEFFERUD>
Received at: 27-JUL-75 15:54:30-PDT 65

ISI is now running a program called MAILBOX, which has the ability to redirect mail, which is sent to several addresses of a user, to one address, 65a

For more information, read <DOCUMENTATION>MAILBOX.USER-DOC or request that copy of the file (2 pages, 3694 Chars) be sent via SNDMSG, 65b

Regards, Stefferud@ISI 65c

30-JUL-75 1357-EDT MOOERS at BBN-TENEXA: MSGGROUP# 111 (NELC at USC-ISIB: Comments on Mail System)
Distribution: NELC AT ISIB, myer, henderson, calvin, malman, postel at bbnb,, postel at sri-arc, [isi]<msggroup>mailing.list:,
Message-ID: <[BBN-TENEXA]30-JUL-75 13:57:02-EDT,MOOERS>, In-Reply-To: Your message to Malman at BBN, 17 July 1975
Received at: 30-JUL-75 12:01:08-PDT 66

The following message from NELC at ISIB was forwarded to me at BBN. I am including it and my reply in one message to members of the Message Group. (I've stripped off a few of the "envelopes" that came with it, in the interest of saving space.) 66a

---Charlotte Mooers 66b

Begin forwarded message
---------- 66c

17-JUL-75 13:34:34-EDT,4942;000000000000
Mail from USC-ISIB rcvd at 17-JUL-75 1334-EDT
Date: 17 JUL 1975 1034-PDT
From: NELC at USC-ISIB
Subject: COMMENTS ON MAIL SYSTEM
To: MALMAN at BBN, POSTEL at BBNB, POSTEL at SRI-ARC 66d

THE FOLLOWING COMMENTS WERE PREPARED PRIOR TO MY READING OF RFC#680 BY MEYER AND ANDERSON OF BBN-TENEX. NO NETWORK ADDRESSES WERE GIVEN FOR THEM SO COULD YOU PLEASE FORWARD THIS MESSAGE TO THEM. SOME OF THE ISSUES I RAISE WERE CONSIDERED IN THE RFC, BUT OTHERS WERE NOT, MOST NOTABLY THE ISSUE OF MULTIPLE ADDRESSEES ("IN-BASKETS") WITHIN A SINGLE MAILBOX. 66e

I see that the mail mechanism is being upgraded. I would like to enter my opinion about services that should be included in any such system. The services divide naturally into two areas that are normally reflected in different sub-systems that the user invokes: creation/sending functions and recieving/filing systems, plus a couple of functions on the nether ground between. 66f

First, the creation/sending functions. There should be a way of creating, editing, and verifying a letter before sending it. In other words, a text editor should be a part of the facility,

either by the send function calling on a host editor, or having a host editor that can call the send function. XED here at ISI is a good example of the latter approach. 66g

It should be possible to send mail to different "in-baskets." If no in-basket is specified in the send request, a standard in-basket should be assumed(like MESSAGE.TXT). (More about in-baskets below.) 66h

The header information should be more standardized so that certain information is always included in all messages. The minimum should be the date/time sent, the originator, the addressees(both action and informational,if any), and a subject. NLS mail(at OFFICE-1) does not include the addressees -- this means that if an "interesting" message is ever recieved, you fire off copies to anyone who might be interrested if you're not sure they got a copy. It's possible to recieve half-a-dozen copies of the message before things settle down. 66i

The ability to "can" a distribution list and re-use it is very useful. It should be possible to send to multiple distribution lists. It should be possible to exclude elements of a distribution list. Elements of distribution list should be permitted to be further references to other distribution lists. A distribution list shouldn't be identical to a file, i.e., it shouldn't be necessary
to clutter up a directory with a lot of names. 66j

As a middle ground between send and recieve functions, it should be possible to request a "return reciept," i.e., a message that is sent back to the originator when the mail is first read by an addressee. The return reciept would be a standard message that identifies the message(by its subject line?) and the addressee who opened it. This would reduce the hassle of people asking that reciept of messages be acknowledged. 66k

It should be possible to send a copy of a message to another addressee. 66l

Another function present should be to send a reply to a recieved message, that is, merely indicate that you wish to reply to the message and your message will be sent to the originator of the recieved message. Options should permit the inclusion of the

original addressees and the addition of new addressees to be sent carbon copies. MSG and BANANARD at ISI have some good facilities along this line. It is a blessing for someone as stumble-fingered as I am. 66m

The recieve function should insert the time of reciept in the message header before placing it in the appropriate in-basket. 66n

It should be possible to read from the various in-baskets and then file the messages in various files. Messages should be placable in more than one file without undue space penalty. NLS has some nice facilities along this line. 66o

There should be an associated journal file. This file would contain the header information of each message recieved and functions would be available to search it on various attributes -- a range of dates, the originator, an addressee, the in-basket, a partial match(computed by some hit function) on the subject, or some combination

**

of the above. 66p

It should also be possible to search through in-baskets and files as well. In these cases, the search functions could be extended to scan through the text of the messages, but I'm not too crazy about the idea. 66q

There should be functions, selectable between implicit and explicit, that permit older messages and journal entries to be archived. Messages should age independantly, so that, for example, all messages that haven't been viewed for at least a month and all journal entries over a year old could be archived. Retrieval functions will be necessary as well. 66r

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End forwarded message

NELC -- 66s

We appreciated your thoughtful comments on mail systems, and we'd like to know your full name. Report RFC # 680 "Message Transmission Protocol" by Myer and Henderson covers only a small

part of the questions that have to be considered in the design of mail systems. 66t

I have attempted to comment on the topics you discussed in the order in which you presented them. 66u

1. Creation/Sending Function. MAILSYS now includes a choice of text editor, TECO or XED, that can be run within MAILSYS on a "lower fork". FUTURE PLANS: Text editing facility within MAILSYS that is automatically invoked when text is entered in a message field. 66v

2. MAILSYS automatically includes in the header information, the DATE/TIME sent, the SENDER, the addressees (TO, CC, and BCC for those on the BCC list), and the SUBJECT, if any. The other optional headers are included if they are used. 66w

3. Distribution lists can be entered from files. A list of addressees can be given a "groupname". The groupname alone appears on the copies of the message. (See, for example, the group name of the Message Group in the CC Field of this message.) The SENDER, but not the recipient, can look at the complete list. FUTURE PLANS: We're thinking of a "Cache-Citation" delivery system that would make it possible for the recipients to see the complete lists hidden in group names. The problem of MAILSYS-accessible directories for message files and for saved parts of messages, such as addressee lists, is under study. 66x

4. Return receipts. At present, you are notified by TENEX MAILER only if your mail is undeliverable (if, for example, there is no such MAILBOX at a remote site). FUTURE PLANS: The "Cache-Citation" system would include a capability for automatic receipts which notify the SENDER whether or not the recipient has processed each individual message. 66y

5. Sending a copy to another addressee. This can be done now with the MAILSYS commands FORWARD and INCLUDE. 66z

6. MAILSYS has a REPLY that helps you answer messages in the way you want. It fills in the TO, SUBJECT, and IN-REPLY-TO fields and automatically calls the TEXT field for you to fill in. You have the option of setting the system defaults so that copies go to

all the addressees in the CC field of the original message. You can also add (or add to) any message fields, as you wish. 66a@

7. The next release of MAILSYS will change the date-time in the one-line SURVEY from "date sent" to "date received". MAILSYS now records and displays the date received in the full text of the message. 66aa

8. All messages are placed in the standard INBOX, MESSAGE.TXT;1, in each directory. The recipient can easily transfer messages from MESSAGE.TXT;1 to any other file. Any MAILSYS-readable file can be turned into a temporary INBOX for the purpose of processing, but not receiving, messages, through the use of the command INPUT <filename>(CR). 66ab

There is a real difficulty with having the ability to send messages to more than one INBOX in a directory: How can the sender be sure that the recipient will check all his/her INBOXES? How can the sender know for sure which files are considered to be message-receiving INBOXES by the recipient? At present, the decision is to have only one INBOX for incoming messages. The Attention Subfield of the addressee fields may be able to solve the problem of several people using the same INBOX. 66ac

9. The function of the associated "journal file" is partially filled by the MAILSYS command SURVEY. It is now possible to SURVEY messages and selected upon almost all parts of the header fields. FUTURE PLANS: Complete facility for searching for all addressees and text strings in all header fields. Possibly also, an index file associated with each message file so that it is not necessary to parse the message file each time a SURVEY is made. 66ad

10. The problem of archiving older message is under study at present. In some installations, messages can be archived through the use of the TENEX EXEC in the local TENEX archive-backup facility for general file storage. 66ae

The present MAILSYS system has a subcommand (and default option) of the command SEND which is called ARCHIVE, and which causes a copy of the message to be sent to the DATACOMPUTER for permanent storage. 66af

It is our understanding that the DATACOMPUTER is an experimental, public-access information facility whose entire contents is accessible to all users of the ARPANET. 66ag

Messages ARCHIVED in the DATACOMPUTER can be retrieved, one by one, with the command RETRIEVE through the use of the MESSAGE-ID fields of the ARCHIVED messages. 66ah

---Charlotte Mooers 66ai

31-JUL-75 1322-EDT MOOERS at BBN-TENEXA: MSGGROUP# 112 Standard mail protocol on FROM and SENDER -- a discussion
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 31-JUL-75 11:30:42-PDT 67

Message-ID: <[BBN-TENEXA]31-JUL-75 13:22:26-EDT.MOOERS> 67a

These comments on the "standard mail protocol" for the FROM and SENDER fields are the result of correspondence between Dan Kohanski of Rutgers and Ted Myer and Austin Henderson of BBN, We thought the rest of the Message Group might like to see them, 67b

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The new standard mail protocol, defined in the Network Working Group paper, RFC #680 (NIC #32116), "Message Transmission Protocol", by Myer and Henderson, April 30, 1975, has changed the specifications for the FROM and SENDER fields from that of the earlier paper RFC #561 (NIC # 18516), "Standardizing Network Mail Headers", by Bhushan, Progran, Tomlinson and White, 5 September 1973, 67d

The new definitions are as follows: 67e

"FROM, This field contains the identity of the person who wished this message to be sent, This is expected to be the originator field which is specified by the user in the case that the message is being entered by one person for another, The message-creation process should default this field to be the user entering the message, [The usage for FROM and SENDER differs from that of RFC 561,]" In other words, FROM defaults to SENDER, 67f

"SENDER, This field contains the identity of the person who sends the message, This field is expected to be set by the message-creation process automatically, It is possible that some sites will not include this field in external communications," 67g

RFC #680 goes on to say " It is expected that the current system will be able to authenticate only the SENDER field; however, later systems might have mechanisms to verify that the FROM actually authorized the SENDER to act on his/her behalf, It is

expected that when the FROM is authenticated, the SENDER will no longer be necessary for external distribution." 67h

What this means is that the "standard mail protocol", as defined in RFC #680, is not actually in use at the moment. The "SENDER" field is the primary field now, in the sense that it is the field automatically filled in by MAILSYS. However, if you are simply scanning mail, the FROM field is more useful because it is more likely to tell you who really originated the message. 67i

For this reason, the MAILSYS command "SURVEY" in its standard form prints out a one-line summary containing the item no., date, FROM field, and SUBJECT. However, it is possible to do a more elaborate survey that includes the SENDER field, or any other header field you want. 67j

Maybe you want to be able to look at SENDER if somebody types "Bob" or "Guess Who?" in the FROM field, assuming that you correspond with more than one Bob, or you can't guess. 67k

That kind of problem doesn't come up very often, and it will eventually cease to exist. 67l

---Charlotte Mooers 67m

31 Jul 1975 1535-EDT KOHANSKI at RUTGERS-10: MSGGROUP# 113
RUTGERS-HARVARD AUTHENTICATION OF "FROM" FIELD
Distribution: BURCHFIEL AT BBN-TENEX, GILBERT AT BBN-TENEX,,
NGOODWIN AT BBN-TENEX, MYER AT BBN-TENEX, MOOERS AT BBN-TENEXA,,
WATSON AT BBN-TENEXB, PIRTLE AT I4-TENEX, MSGGROUP AT USC-ISI,,
PBARAN AT USC-ISI, DCROCKER AT USC-ISI, ELLIS AT USC-ISI,, FARBER AT
USC-ISI, ISELI AT USC-ISI, KIRSTEIN AT USC-ISI,, MCLINDON AT USC-ISI,
MEALY AT USC-ISI, MEALY AT USC-ISI,, RYLAND AT USC-ISI, SPIVEY AT
USC-ISI, STEFFERUD AT USC-ISI,, TASKER AT USC-ISI, WALKER AT USC-ISI,
STOTZ AT USC-ISIB,, VITTAL AT USC-ISIB, VEZZA AT MIT-DMS, ROBERTAZZI
AT OFFICE-1,, UHLIG AT OFFICE-1, KOHANSKI, GEOFF AT SRI-AI,, TOM AT
CCA-TENEX
Received at: 31-JUL-75 12:35:20-PDT 68

CHARLOTTE MOOERS HAS SUGGESTED I FILL THE GROUP IN ON PART OF A
PRELIMINARY
DISCUSSION WHICH LED TO THE DEFINITIONS OF THE "FROM" AND "SENDER"
FIELDS
THAT HAS JUST BEEN DISTRIBUTED, IN THIS CONTEXT, I HAD DESCRIBED TO
TED
MYERS THE NATURE OF THE MAIL AUTHENTICATION IN USE AT RUTGERS AND
HARVARD. 68a

WHEN A USER LOGS IN, HIS NAME IS TAKEN FROM THE SYSTEM ACCOUNTING
FILES AND
INCLUDED IN THE MONITOR TABLES; THE USER HAS NO WAY OF INTERFERING
WITH THIS
PROCESS, AND SO THE MONITOR IS GUARANTEED TO KNOW THE USER ACCORDING
TO THE
NAME THE SYSTEM MANAGER HAS ASSIGNED HIM. MAIL USES THIS SAME TABLE
TO
SUPPLY THE VALUE OF THE "FROM" FIELD, AND SO AUTHENTICITY IS
PRESERVED.
SHOULD A USER GIVE HIS PASSWORD TO SOMEONE ELSE, THAT PERSON CAN THEN
SEND
MESSAGES UNDER HIS NAME, BUT THIS IS UNAVOIDABLE AND AT THE USER'S
CONSCIOUS
RISK. 68b

WE PERMIT PEOPLE WHO ARE NOT LOGGED IN TO SEND MAIL LOCALLY, BUT NOT
ACROSS
THE ARPANET. IN THIS CASE, THE "/ID:" SWITCH IS REQUIRED, IN WHICH
THE
MAILMAILER SUPPLIES SOME IDENTIFICATION, THIS CANNOT BE GUARANTEED,
AND SO
THE MAIL PROGRAM ADDS A TAG TO THE "FROM" FIELD WHICH READS: "(NOT

LOGGED
IN)" AS A WARNING, 68c

[DANIEL KOHANSKI] 68d

31-JUL-75 1700-PDT FALSIFIER: MSGGROUP# 115 Automatic Authentication
Distribution: KOHANSKI AT RUTGERS-10, MOOERS AT BBN-TENEXA, STEFFERUD, msggroup
Received at: 31-JUL-75 17:55:51-PDT 69

I am concerned about some problems with the AUTHENTICATION issue. 69a

Some time ago one of our MsgGroup Members demonstrated that one could easily send a message to anyone that looked like it came from anywhere, with all the earmarks of authentications but in fact being false. That somehow violates our sense of how things aught to be, and I see that there is quite a bit of effort being applied to in fact prevent that kind of thing. 69b

I wonder why this is really necessary? The US Mail doesn't do this for us now, and it never will because no Postal Service is in the AUTHENTICATION business. 69c

If you think about it, even NOTORIZATION does not "guarantee" authenticity, though it does subject the NOTORY to legal action in the event of a violation. 69d

I suspect that AUTHENTICATION is only going to be a relative thing, which in case of a serious need to be absolutely sure of the source, will require extra efforts to determine the required degree of AUTHENTICITY, such as calling for verification by phone,, forwarding the message back to the sender for verification, etc. There are other ways to establish extreme degrees of authenticity when required,
so I don't see a need to automate it in the Message System. If it is customary to AUTHENTICATE messages by some other extra network means, the likelihood of violations should decrease as the possibility
of successful violation becomes limited. 69e

To restate my point. A degree of authenticity is clearly required so our normal communications will be smooth and not subject to doubt at every turn. My question is directed at the perceived need for extreme degrees of automatic authentification. I don't think we, or anyone else, will ever succeed in relieving us of our individual responsibilities for authenticating our received messages by analyzing the messages, checking back on the source,

or what ever, In some ways, the more we depend on automatic AUTHENTICATION, or on other than ourselves for authentication, the more subject we become to being duped by the clever ones among us, 69f

Best regards, Stef 69g

PS: I am attaching the original message that provided the demonstration for your perusal, 69h

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10-JUN-75 17:35:54-PDT,813;000000000001
TO: INTERESTED PERSONS
FROM: Whoever I want to claim to be
RE: THE MYTH OF SECURITY 69j

One reason that some people keep security on their directory, rather than simply on sensitive, individual files, is to force the delivery of mail to be by mailer, rather than by SNDMSG. I believe that it is their perception that mail so delivered is somehow 'authenticated'. This note constitutes proof that such authentication does not, in fact, take place. I could as easily have stated that the message was from LICKLIDER, 69k

This is not meant as a criticism of the current mechanism, since I do not believe it has ever been touted as 'secure', rather, I just wanted to clarify the point, in some people's minds, 69l

DAVE CROCKER. (Note that this is local mail to some people. The 'hole' is not net-specific.) 69m

31-JUL-75 2007-PDT STEFFERUD at USC-ISI: MSGGROUP# 116 FROM/SENDER, MAILSYS/MSG
Distribution: MOOERS AT BBNA, VITTAL AT ISIB, [isi]<msggroup>mailing.list:
Received at: 31-JUL-75 20:07:18-PDT 70

It seems clear to me that the new (RFC #680) spec for FROM and SENDER make good sense, FROM should default to SENDER, And Answer should similarly default to SENDER when FROM is not a legal address. 70a

Is it reasonable to omit the SENDER when it is the same as FROM? 70b

And, is it an accident that MSG chooses the SENDER field and the first subject field for inclusion in its SURVEY while XMAIL chooses the opposite, FROM and last SUBJECT? 70c

Curiously, Stef 70d

1-AUG-75 1614-PDT STEFFERUD at USC-ISI: MSGGROUP# 117 New NMSG Answer Command
Distribution: VITTAL AT ISIB, [isi]<msggroup>mailing.list:
Received at: 1-AUG-75 16:28:19-PDT 71

Hi John, I like the new version of NMSG Answer much better. 71a

It took a minute figure out what was happening, without reading any instructions. It is much more intuitive now. 71b

Thanks, Stef 71c

1-AUG-75 1821-PDT FARBER at USC-ISI: MSGGROUP# 118 Answer commands
Distribution: VITTAL AT ISIB, [isi]<msggroup>mailing.list:
Received at: 1-AUG-75 18:31:15-PDT 72

John,
Being always poking, I have been trying NMSG. I find that the
answer command there is much better than the one that
is MSG. I vote for it.
Dave 72a

4-AUG-75 1135-PDT TASKER: MSGGROUP# 120 NMSG Answer Command
Distribution: VITTAL AT ISIB, msggroup
Received at: 4-AUG-75 11:36:00-PDT 73

John: 73a

Bravo! I used the new Answer command in NMSG today and I LIKE it! Keep up the good work. 73b

Aloha Nui,
Pete 73c

13-AUG-75 2026-PDT FARBER at USC-ISI: SNDMSG
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 13-AUG-75 20:36:20-PDT 74

Message-ID: <[USC-ISI]13-AUG-75 20:26:53-PDT,FARBER> 74a

Several months ago, an experimental marriage of the CALENDAR system of the tenex and the sndmsg facility was designed and implemented by John Pickens and myself. The idea was to generate from the calendar data base each morning the appointments of the day and to sndmsg this information to the person. As an additional by product an reminder mechanism was implemented which "rang" an alarm at specified times of the day and printed the reason for the alarm on the console. 74b

The system proved rather usable although inadequacies of the tenex required explicit actions on the part of users at LOGIN time for the reminder mechanizm . 74c

I believe that the experiment showed the usefulness of expanding the message system into a personal communication system as well as an interpersonal one. 74d

Dave 74e

14-AUG-75 0459-PDT GEOFF at SRI-AI: MSGGROUP# 124 Mailbox hack at ISI.
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, alan at isib
Received at: 14-AUG-75 05:01:30-PDT 75

A couple weeks ago, Stef (I think) sent out a message about the new MAILBOX hack that ISI ofered to its users. I had known about this for sometime, when I discovered it at BBN, but when I sent a note to Clements about it, I got no response, and just sort of passed it off at the time as something that I'd like, but was in no rush to get. 75a

When I discovered that it had been brought up on the ISI 10's, I sent ALAN@ISIB, a message asking 'HOW' one went about bringing it up. He at least responded to my query, and sent me some blurb that he managed to srounge out of BBN, that really didn't help that much at all; I mostly had to punt and look at what BBN and ISI had done with it. 75b

Anyway, my major gripes about it, after uncovering its inner most secrets of operation are:

1. It requires that a person, namely a systems group member, who is a wheel, do all the manipulation of the Database rather than the user himself, which is somewhat of a hassle for both parties involved.
2. the only way that you can get the hack to 'do its thing', is to have a systems group member fiddle with the users MESSAGE.TXT, (again requiring wheel), turn the bit off that allows the message.txt file to be deleted. This is REALLY not the way to do it. See 3.

Major gripe:

3. The fowarding scheme works fine for people who have a directory on machine in questionm with their message.txt's deleted, as SNDMSG will try to write it at, and fail and then attempt to sent it though the network, in which FTP Serve will foward it to the correct address, providing an entry has been made in the MAILBOX database.

However,
nicnames will not work at ALL, unless routed though the network,
I.E. I have GOODFELLOW@SRI-AI defined as a nickname for
GEOFF@SRI-AI.
This works fine if some user sends mail to GOODFELLOW@SRI-AI,
though
the ftp server. However, if a user on SRI-AI, tries to send a
note
to user GOODFELLOW, he gets the message 'No such local user'!!!
But!,
if the local user sends to GOODFELLOW@SRI-AI (having the mail go
though the Ftp Server), all is peachy. That is pretty bad I
think, since
local users are the ones that you deal with the most, and are
probly the
ones to make the mistake the most of anyone. The right way to do
it would be for SNDMSG to pull in the hash table that MAILBOX
makes
(and FTP Server uses), into it at start up time and then when a
users TO person fails, try it against what is in the Database,
and
act accordinly. This could also be made one step better, by
having 75c

the mail put directly into the users fowarded MESSAGE.TXT (if its
the the same system), and not have to route the mail though
FTPSRV, which would take longer for starters, and uses more over
head than shoving it directly in the file. 75d

I think that pretty much covers what I think needs to be added to
the
MAILBOX system to make it better. I'm sure that others have ideas on
how
to improve it, and would enjoy sharing them. 75e

Tiredly yours,
[Geoff] 75f

14-AUG-75 1451-PDT ALAN at USC-ISIB: Re: Mailbox hack message
Distribution: [ISI]<MSGGROUP>MAILING.LIST:, GEOFF AT SRI-AI, alan
Received at: 14-AUG-75 19:48:45-PDT 76

Yes, i would enjoy sharing my views on MAILBOX, 76a

I agree wholeheartedly with your major gripe, Removing that prolem would create a major convienience for mail senders, Remember, tho, that as users get attached to that feature, it must be incorporated into XMAIL, and other hacks, like MSG, which can send mail, or the users will be very confused, I beleive that the inertia to be overcome is great, but, if it can be done, it will be well worth it, 76b

One additional suggestion that i have for MAILBOX, (besides the need for better documentation) is that it should accept host nicknames in its text file, 76c

I disagree strongly with your first 2 gripes, The logic and code required to implement them in a secure way is complex enough, so that it would not be completed unless as a recognised project, First of all, there are several jokers on the net who delight in showing system programmers expamples of weaknesses in their software, and would jump on an insecure implementation of your ideas like a heroin addict going thru the D.T.s , Secondly, altho there may not be a security problem right now, there may be one in the furure, All we need is one, at the wrong time to cause some real damage,

Assuming that solos, to your 2 gripes are installed, here are 5 exs, of malicious use, in approximate order of 'ease of solo,',

1)A user deletes other users forwarding addresses,

2)A user inserts messages-from-the-phantom 100s of pages long, in the text file,

3)If no check on a PERMANENT mailbox is done, a user gives himself

the
nickname LICKLIDER, waits for mail, then deletes the nickname.
4)A user gives himself the nickname LICKLIEDER, plus several others like
it, and recieves mispelled mail.
5)A user with an account on 2 more machines creates an infinite loop by
having mail sent to a garbage address on machine 1 go to a garbage address on machine 2, and visa-versa , and then sends a series of messages
to one of the addresses. 76d

Unless all of these problems (plus those which hackers much more
clever than i can think of) are solved, we cannot let the users touch the
mailbox,text file. 76e

Lastly, i would like to apologise for my curt replies to your mail
concerning MAILBOX . I was in a period of having to do a lot of things
under time pressure, and couldn't really concern myself at all with worries
about enhancments to convenience items. Also, i didn't (and still do not)
know much more about MAILBOX than the info contained in that .MEM file i
got from BBN. For those reasons, my replies to you were minimal.

Hope we can have better contact in the future. 76f

Alan 76g

P.S. thought for the dsy: 76h

Yesterday, we had some DEC guys down here, and one mentioned that
ARPA seems to consist of a bunch of people who beleive they communicate
with each other, because they send messages to each other on different
computers. 76i

So much for DEC and its understanding of the network....[Geoff] 76j

14-AUG-75 1701-PDT WATSON at BBN-TENEXB: MSGGROUP# 128 The Chapter on the NLS Journal System by Jim White
Distribution: BURCHFIEL AT BBN, GILBERT AT BBN, NGOODWIN AT BBN, MYER AT BBN,, MOOERS AT BBNA,, WATSON,, TOM AT CCA,, PIRTLE AT I4-TENEX,, MSGGROUP AT ISI, PBARAN AT ISI, DCROCKER AT ISI, ELLIS AT ISI, FARBER AT ISI, ISELI AT ISI,, KIRSTEIN AT ISI, MCLINDON AT ISI, MEALY AT ISI, SPIVEY AT ISI, STEFFERUD AT ISI,, TASKER AT ISI, WALKER AT ISI,, PICKENS AT ISIB, STOTZ AT ISIB, VITTAL AT ISIB,, VEZZA AT MIT-DMS,, ENGELBART AT OFFICE-1, PANKO AT OFFICE-1, ROBERTAZZI AT OFFICE-1, UHLIG AT OFFICE-1,, KOHANSKI AT RUTGERS-10, RYLAND AT RUTGERS-10,, GEOFF AT SRI-AI,, ------- AT SRI-AI
Received at: 15-AUG-75 05:06:31-PDT 77

Message-ID: <[BBN-TENEXB]14-AUG-75 17:01:19-PDT,WATSON> 77a

Recorded Dialog: the NLS Journal, Identification, and Number Systems
By James E White 77b

OUR CONCEPTION OF RECORDED DIALOG 77c

RECORDED DIALOG 77d

One of the prime objectives of the augmentation system developed at ARC is to aid collaborating knowledge workers by providing flexible computer tools and methodology for communicating with one another. We collectively refer to such tools and a methodology as a Dialog Support System (DSS). Its primary task is to provide mechanisms for transmitting online messages and documents between users. However, for large projects or those about which some larger community of users must remain informed, the dialog soon becomes unmanageable without additional computer aids. arc's DSS therefore 1) permanently records (copies to read-only storage), 2) numbers (assigns a unique accession, or catalog number), 3) and catalogs (records author, title, number, and location) each piece of dialog--for later consultation, for reference by later documents, and for examination by interested bystanders. 77e

THE JOURNAL 77f

arc's DSS is implemented as a set of computer processes called the Journal, consisting of a foreground subsystem that interacts with the user and provides primitives for entering a message or document in the Journal (with title, author and other information), reserving catalog numbers, and so forth; and a background process that further processes submission requests and delivers mail to the addressees indicated by the author. The Journal is supported by several additional systems: an Identification System responsible for

maintaining
information about users--their location, group memberships, phone numbers, and so forth--and a Number System responsible for keeping track of which catalog numbers have been
assigned,
and to whom, and which are available for future assignment. 77g

Since its implementation in April of 1971, the Journal has been heavily used (now containing over 10,000 messages and documents), initially by the ARC staff, then by a larger
user
community with network access to arc's computer facility,
and
most recently by commercial and government users of a second computer facility operated for ARC. The Journal has evolved as a result of our experience and in response to the
increased
demands placed upon it by its growing user base. This
section
describes that experience and evolution. 77h

OUR INITIAL IMPLEMENTATION 77i

THE arc/NLS ENVIRONMENT 77j

arc's DSS resides on a heavily loaded Digital Equipment Corporation (DEC) PDP-10 running Bolt, Beranak, and Newman's (BBN) TENEX operating system. TENEX provides a time-sharing environment in which 10 to 20 users independently interact with any of a variety of applications packages called "subsystems". arc's PDP-10 is devoted almost exclusively to providing access to a single subsystem, arc's NLS [1], a comprehensive system of tools for manipulating structured text. 77k

NLS provides a very general set of primitives for
manipulating
and viewing tree-structured text files. Commands are
provided
for manipulating the tree's structure, e.g., for adding
nodes
called "statements" to the tree, for deleting single statements or whole branches of the tree, for moving or copying a subset of the tree from one location to another,

and
so forth, 771

In order to maintain flexibility in the first implementation and to facilitate maintenance of the system, NLS text files were consistently used in implementing the Journal, Identification, and Number Systems' principal data bases, as well as for catalogs, indices, and a variety of internal, inter-process communication files. 77m

STRUCTURE 77n

The Journal 77o

The Journal System is a set of procedures that runs in
both
foreground and background modes to maintain a data base
of
recorded documents, and to distribute them to specified addressees, 77p

Larger Journal documents are stored as separate files in
a
set of system directories. Short documents, called "messages", given special treatment in the interests of economical storage, are stored in a set of (currently
about
20) files, several hundred to a file. Whenever a
document
remains unreferenced for a month, it is archived to magnetic tape by TENEX, and its online storage released
for
other use. Although over 10,000 items have been journalized on the PDP-10 since April of 1971, most have long ago been archived and therefore do not occupy online storage, except when brought back for reexamination, 77q

The Journal maintains a system catalog of all recorded documents, implemented as a set of (currently five)
online
files. The catalog contains information used by NLS to locate a Journal item given its catalog number, as well
as

information used by stand-alone programs to produce nonsystem catalogs and indices (by author, titleword, and number). 77r

Journal mail addressed to a particular user is delivered in one or both of two delivery modes, online and hard copy. The delivery parameters are selected by the addressee and maintained by the Identification System. A document's author need know nothing about the delivery modes of its addressees. 77s

ON-LINE DELIVERY 77t

Regular users of NLS normally receive online delivery of all their Journal mail. Each item is placed by the Journal in a special NLS file called the user's "initial" file (so named because the file's name is the user's ident, which is usually his initials). For convenience, this file is automatically loaded for the user when he enters NLS. The text of short messages is delivered to the user in its entirety. For longer items, only a citation giving the document's author, title, and date, and a convenient, machine-readable pointer (called a "link") to the text of the document are delivered. 77u

HARD COPY DELIVERY 77v

Hard copy line printer output is sent by U.S. mail to users who never or only infrequently use NLS or who, for one reason or another, want it in place of, or in addition to, online delvery. A substantial amount of clerical support is required to support hard copy delivery. 77w

The Journal maintains information about ongoing

distribution operations in a single NLS file, used also as a vehicle for communication between the submission and distribution components of the background system. 77x

The Identification System 77y

The Identification System is a set of procedures that maintains a large data base, implemented as a single, very large NLS file, containing information about individuals, groups of individuals, and organizations (each of which is assigned a unique name called an "ident"). Various information fields are maintained for each ident, and procedures are provided for manipulating each field. 77z

The Identification System includes an NLS subsystem that permits users to interrogate and modify the data base themselves, subject to the appropriate access controls. 77a@

Because of the data base size, and because updating the data base involves creation of a new version of the file (requiring about 30 seconds or more of real time on a loaded system), all of the changes for a particular ident are collected from the user before the file is updated. 77aa

The Number System 77ab

The Number System is a set of procedures that manage a data base, implemented essentially as a single NLS file, containing information about the assignment of catalog numbers to Journal documents. The data base contains: 77ac

1) a number of blocks of numbers available for assignment 77ad

2) a list of assigned numbers (either recently used, assigned but as yet unused, or in the process of being used) and for each the date and time of assignment and the idents of the users to whom they were assigned. 77ae

It is often useful to know in advance what number will be assigned by the system to a particular item. This is necessary, for example, to create a set of documents that internally reference one another. A catalog number may therefore be reserved for later submission, or "preassigned". 77af

The RFC number system, a separate special-purpose number system patterned after the master system (and thus able to use most of the same primitives), was implemented at the request of an informal group of network protocol developers. An item may have an RFC number in addition to the master catalog number. 77ag

EXPERIENCE AND PROBLEMS 77ah

A number of problems with the initial Journal implementation have been encountered and attacked. Some of the major problems are described below. 77ai

Excessive real-time required for submission: 77aj

In the initial implementation, the entire submission process, with the exception of delivery, was performed in the foreground and therefore kept the user from other work for what often, given the system load, proved to be an inordinate amount of time. In an attempt to alleviate this problem, the submission mechanism was restructured, and all manipulation of catalog, distribution, and storage files deferred to the background process. 77ak

A special system directory was established for queuing

submission requests for the background process that now goes through two distinct phases. First, all queued submissions are processed: numbers are assigned where necessary, the document is stored in the appropriate message or separate file in the appropriate system directory, the document is cataloged, and a distribution request is queued. And second, whatever distribution requests have accumulated are processed, one individual addressee at a time. 77al

To further reduce the amount of processing that must take place in the foreground, a form of submission is permitted in which the task of assigning a catalog number is deferred to the background process. Deferred submission is the default, and most submissions are therefore of this type. Since deferred submission does not require write access to any system files, a user can submit an item in this mode at any time, regardless of the state of the Journal or Number System files. 77am

Background delivery degraded system performance: 77an

The Journal background process has proven to be very expensive to run, and often has had a detrimental effect upon the responsiveness of the system as viewed by its interactive users. We have experimentally varied the frequency with which the background process runs (and thus with which mail is delivered) from once per day initially, to its current frequency of once every hour. 77ao

The background process now periodically checks the load average (the TENEX monitor's measure of system demand) and suspends processing if it is above some predetermined cut-off value. Processing is resumed only when the load average drops sufficiently. The check

is

performed at a point in the process when the system files are consistent and least vulnerable to a crash. Between these check points, the process runs at high priority. 77ap

The benefits of this strategy are threefold: the background process does not add appreciably to the system load when it's already high; it can exploit

slack

times throughout the day; and since the probability of

a

crash increases with system load, the Journal and

Number

System files are usually in a relatively invulnerable state when a crash occurs. 77aq

Data bases vulnerable to system failures: 77ar

A very serious problem of the initial Journal implementation was the vulnerability of the various system files to hardware (especially disk) problems, monitor crashes, and exhausted disk storage. The processing of hard copy output, besides being time consuming, was similarly vulnerable to both software

and

hardware failures. 77as

The danger of losing system files because of lack of disk storage has been greatly reduced by also checking for available disk space at the same time the load average is checked. Processing is terminated until

the

next hour if space is too low. This strategy prevents losing a system file due to exhausted disk space

during

a file update. 77at

A number of problems associated with the processing of hard copy output have been largely eliminated. A variety of monitor bugs have been fixed or avoided.

The

bulk of the processing is done during the evening or early morning hours. Because of the volume of hard

copy output produced by the Journal, the print requests were first placed on magnetic tape and printed on an IBM 360 system elsewhere at SRI, and finally contracted outside of SRI. Network delivery, described in the next section, has, on the other hand, drastically reduced the volume of hard copy produced, and thus recently permitted us to resume printing on our own system at OFFICE-1. 77au

EXTENSIONS FOR A NETWORK ENVIRONMENT 77av

THE ARPANET ENVIRONMENT 77aw

In July of 1970, arc's PDP-10 became part of the ARPANET, now an international network of large-scale computer facilities called "hosts" linked by 50 kb communication lines. Once the lowest level, inter-machine communication protocol was developed, the central task was to design and implement the software protocols required for general, inter-process communication, and other, more specialized exchanges. This task was undertaken by an informal group of geographically separated systems programmers called the Network Working Group (NWG). 77ax

In early 1969, ARC had offered to serve as the Network Information Center. As soon as hardware connections were made and protocol development reached a stage sufficient to permit simple, teletype-like use of a remote time-sharing system, ARC began to provide dialog support for the NWG via the Journal. 77ay

JOURNAL CHANGES TO SUPPORT THE NETWORK 77az

At first, the Network user used the Journal in nearly the same manner as a local user. Like local users, he had to login to the ARC system and use NLS to compose and journalize a document. But unlike most local users, he received hard copy, rather than online delivery of his Journal mail. When ARPANET protocols developed to the point of permitting the transmission of text files and mail to users at remote hosts via the Network itself, the Journal was modified to utilize this new capability. 77b@

Network Delivery 77ba

The File Transfer Protocol (FTP) [2] devised by the NWG permits the transmission of text to a named "mailbox" at a remote host. For purposes of receiving mail, therefore, each Network user has a network address consisting of a host name and a mailbox name. To exploit this new Network capability, we added a third, network delivery mode to the existing online and hard copy modes, storing a network address in the ident file for each Network user. A Network user can thus take delivery of all Journal mail addressed to him, in his own system, simply by storing the appropriate delivery parameters in the Identification System. 77bb

Rather than deliver extremely long documents in their entirety, via the Network, we made the same size distinction for network delivery as for online delivery, sending only citations for long documents. We modified the FTP software supplied by BBN to recognize a distinctive pathname (that the Journal provides with the delivered citation) that, when used to retrieve Journal documents, invokes a conversion of the tree-structured document to sequential form before transmission through the Network. A Network user can thus retrieve the full text of any

Journal
document sent to him, 77bc

Network Submission 77bd

The fact that the Network user had to explicitly connect to and login at arc's PDP-10 to enter a document into the Journal, and that he had to compose the document using NLS, complicated life for some users, forcing them to learn the details of NLS, in which some had only one, specialized interest. 77be

To alleviate this problem, we implemented a facility that permits users to journalize documents composed via their local editor without explicitly connecting to the ARC system or logging in, and without any knowledge of the NLS command language. We did this by further modifying BBN's FTP software to recognize a special mailbox name of the form "authors/addressees" and to interpret it, in the context of a mail delivery, as a Journal submission. The ident lists of "authors" and "addressees" are verified by NLS, running beneath the FTP program in an inferior fork. If the ident lists are found correct, the "mail" is immediately journalized. Thus the remote user can journalize a document using the normal, Network mail facility provided by his system. 77bf

EXPERIENCE AND PROBLEMS 77bg

The Journal's Network submission and delivery facilities have been in operation since mid-1973. The latter has suffered from a few, relatively minor problems. Network addresses, for example, are not well understood by some users who, in attempting to modify them themselves, have frequently modified them incorrectly. In such cases, delivery of the user's mail is prevented until the error is discovered and corrected by

ARC personnel. Because of this, almost all identification changes are now done by ARC staff. Many users are unwilling to explicitly retrieve the text of long documents for which they are sent only a citation, even though the retrieval process is straightforward, even automatable. 77bh

The submission facility suffers from more severe problems, one of which is that the ident verification and journalization processes are very time-consuming and must be completed before the user's request is acknowledged and he is "set free". A more satisfactory strategy would be to queue the request and acknowledge it immediately, releasing the user for other work, and then to perform the expensive processes in background mode, with a Network message sent to the author in case of failure. 77bi

A second problem is that the conversion that the Journal must make between the sequential text file presented by the user and the tree-structured NLS file required by the Journal is often unsatisfactory to the user. We believe this to be a very difficult problem to solve, one perhaps best handled by permitting the inclusion of sequential files in the Journal data base, thereby eliminating the need for conversion. 77bj

A final problem is the inadequacy of the mail subset of the FTP, which makes it difficult or impossible for the user to transmit any of the optional parameters supported by the Journal, and which forces the user interface to remain somewhat artificial. ARC has proposed a separate mail protocol [3], but no protocol development is being carried out in that area at present. 77bk

EXTENSION TO A DUAL-SITE SYSTEM 77bl

THE sri-arc/UTILITY ENVIRONMENT 77bm

In January of 1974, ARC began operation of a second, "utility"

PDP-10 system we call OFFICE-1 to provide NLS support in a stable environment to what has proved to be an ever-growing clientele. The facility is operated for ARC by Tymshare, Inc. from Cupertino, California. Like arc's own PDP-10, OFFICE-1 is connected to the ARPANET, through which most of its users gain access to it. The Utility's software configuration is essentially identical to arc's, providing the full range of NLS service to its users. One such service is, of course, the DSS. 77bn

In providing Journal service from the Utility, we decided to include that second system within the domain of what is conceptually a single Journal spanning both the ARC and Utility machines. That is, rather than simply replicate the software, thereby creating a second, independent system, we decided to couple the two DSS systems, making all items journalized from either system available at both and addressable to users resident on either machine. Thus, for example, we employ a single Ident File, but maintain it in duplicate. 77bo

STRUCTURAL CHANGES 77bp

In implementing a dual-host Journal, we were somewhat pressed for time and therefore decided to design and implement an interim system and later replace it with a more efficient and carefully thought-out implementation. 77bq

The interim dual-host Journal we decided upon involves duplicate Journal, Identification, and Number Systems, cognizant of each other at only a few points in the code. The two systems communicate with one another through the ARPANET via FTP. We implemented a special, assembly-language module to perform the FTP operations on NLS's behalf, since the corresponding FTP software provided by BBN is neither designed to be called by another program (since it's implemented as an interactive subsystem) nor structured in such a way that the relevant subroutines can be easily extracted. The portion

of
BBN's FTP software that was retained has been modified to
deal
more satisfactorily with NLS files, which have blank spots
in
their address space, 77br

Two Journal Systems 77bs

Each submission request, regardless of its source, is
fully
processed by the Journal System on each machine. Each system's Journal catalog and document files, though in a sense maintained independently, are always identical (neglecting the obvious time lag). To avoid duplicate delivery of each Journal item, as would naturally occur
as
a consequence of duplicating the submission request, we partitioned the idents, assigning responsibility for delivering mail to any particular user to (in most cases) just one of the two systems--the one on which the user
does
most of his work, 77bt

Submission requests are duplicated in the following
manner:
The background process on each system, before processing recent submissions, moves any files in the other host's special communication directory (OUTJOURNAL) to a local submission queue directory (TEJOURNAL), thus adding them
to
the list of local submissions to be processed. Then, in processing that list, a copy of each submission request, except those obtained from the second host, is queued for the other system in the local communication directory (OUTJOURNAL again). 77bu

Two Identification Systems 77bv

To simplify the task of uniting the two Identification Systems, we bypassed the problem entirely by permitting additions and modifications from only one machine. The other machine is periodically sent an updated copy of the entire data base. 77bw

Two Number Systems 77bx

The two Number Systems function independently, each assigning catalog numbers from a separate block. Numbers preassigned on one machine must be used on that machine, and the RFC Number system is available on only one machine. 77by

EXPERIENCE AND PROBLEMS 77bz

Aside from the obvious inefficiency of duplicating each submission on the remote machine even though the item may be of only local interest, there have been no serious problems with our interim implementation. 77c@

An occasional asynchrony problem arises as a result of the time delay between an addition or modification to the ident file and receipt of the modified version of the data base at the second machine. For instance, an ident could be added to the Identification System, a Journal item sent to him from that machine (which already knows of his existence), and the item could reach the remote system via FTP before that system becomes aware of his addition to the system, causing an error in the remote system's Journal delivery function. 77ca

The most common problem with the dual-host system is Network transmission errors during file transfers. Such failures cause the item being transmitted to be delayed until an operator finds the file in an unusual state on the source machine. He must then check the destination system to verify that the file has not in fact arrived, which is the usual case, and then requeue it for transmission. Since occasional Network failures are inevitable, we are attempting to enhance the performance of the dual-host system by automating the detection and requeuing process. 77cb

The redundancy of information within the dual-host system is

occasionally useful for reconstructing data lost due to a malfunction of the file system. A backup of the file system recently experienced by the Utility cost no more than reconstruction time; no Journal files were lost. 77cc

PRIVATE DIALOG 77cd

COMING TO GRIPS WITH THE PROBLEM 77ce

From the outset, one of the design goals for the Journal has been to provide an atmosphere in which memos, formal design documents, proposals, and other items, once published, would thereafter be readily accessible to anyone who cared to consult them. Author and subject indices are periodically produced and anyone, whether an active participant in the dialog or not, can therefore browse through the list of items authored by a particlar individual or written on a particular subject, skimming or reading in full any items that look useful or appealing to him. 77cf

This model of dialog was appropriate for the system's initial user community, ARC itself, where subgroups working on highly interrelated tasks must keep abreast of one another's activity. As the Journal's user community grew to encompass researchers throughout the ARPANET, the model remained for the most part appropriate. Again the participants were engaged in separate but interrelated subtasks of a single, large project (i.e., ARPANET protocol design and implementation), and each working group had legitimate (and often vital) interest in the work of the others. But with the extension of the Journal to a dual-host system, a new class of users became involved. Many Utility users, though anxious to use the Journal as a dialog support aid, were not at all anxious to have all of their dialog (including, perhaps, personal correspondence, new product information, and so forth) accessible to the general

public, Thus ARC was compelled to address itself to the problems of nonpublic, or private dialog, and to provide support for it through the Journal. 77cg

CHANGES TO THE JOURNAL 77ch

What follows is a brief discussion of the more fundamental implementation problems that we encountered in tackling this problem; the reader is referred to [4] for a more detailed statement of the Journal changes made. 77ci

Three tests must be applied in establishing a user's right to view a recorded document: 77cj

1) Who is requesting access to the document? 77ck

2) Has he explicitly been granted access to the document? 77cl

3) Is he a member of any group (perhaps by way of one of more levels of indirection) that has been granted access to the document? 77cm

Who is the Requestor? 77cn

The Journal has always tolerated imposters, simply accepting the user's word for the ident he declares at login to be his. It has done so because it could afford to, and because it was difficult to do otherwise. 77co

Access to a user's personal files is controlled by the monitor, and all system files (i.e, Journal documents) were accessible to everyone. The only thing that hinged on the ident claimed by the user was the authorship of items he journalized during the session. 77cp

Since the Journal designates users by ident, rather

than

by directory name, and since elements of the two name spaces cannot, in general, be placed in one-to-one correspondence (several users, each with an ident,

often

sharing a single directory), the monitor's login identity check was of little use as it stood. 77cq

Rather than significantly perturb the TENEX login procedure, we adopted the following strategy: 77cr

1) For those users who have personal directories, we constructed a system data base giving ident as a function of directory. TENEX was modified to infer

the

user's ident from his stated directory name (which, of course, had to be accompanied by the appropriate password) at login, using the data base, and to store

it

in a read-only, job-global cell for subsequent interrogation by NLS. 77cs

2) For those users who share a directory, we placed opposite the directory name in the data base the

idents

of the users who use the directory. When TENEX encounters such a user at login, it interrogates him

for

his ident, accepting only one that appears in the

list. 77ct

Thus, those users who are assigned a personal directory, and who login only under that directory, are completely protected by the System (i.e., they cannot be impersonated), while those who work in a community directory, are less fully protected, since they can be impersonated by any other member of the directory community. We are encouraging user organizations to set

up

separate directories for each user. 77cu

Has the Requestor been Granted Access to the Document? 77cv

We have defined two classes of Journal items: private and public. Whenever a document is entered into the Journal, its author can select the class most appropriate, with public being the default. Private documents are defined to be readable only by the clerk, an author, or a distributee. That list of idents, including in general those both of individuals and groups, is stored as text in the first statement of the file that ultimately holds the document in read-only storage. Whenever a user attempts to load the file, the list is consulted, and if the requestor's ident appears in it, his request for the document is honored. 77cw

Has He been Granted Access by Implication? 77cx

Since authors and distributees may be groups of people (or other groups), as well as individuals, the access list for a private document in general contains group, as well as individual idents. A user who requests access to a private document may therefore have legitimate access to it by virtue of his membership in a group, without his individual ident appearing explicitly in the access list. Because group idents are used heavily is this way, we were compelled to provide efficient means for verifying an ident's implicit appearance in an access list. 77cy

To this end, the Identification System was modified to maintain back links, as well as forward links between each group ident and the idents of its members. That is, not only is a membership list maintained for each group ident, but in addition, now a group list is maintained for each individual or group ident, specifying the list of groups in which the ident is a member. 77cz

The logged-in user's group list is loaded by NLS once per session, and by a simple search of that list, most

instances of legitimate access attempts to private documents can be identified. For those cases in which the user's claim to a document is more complicated (e.g., requestor A is a member of group B that is a member of group C, that appears in the access list), the Identification System is consulted and its data base examined more thoroughly. 77d@

EXPERIENCE AND PROBLEMS 77da

The private dialog feature of the Journal has been in advertised use for only a few months, and hence any in-depth attempt to evaluate its performance or use would be premature. The areas in which effects are most likely to be expected are those involving intimate collaboration between users. It's long been common practice, for example, for cooperating users to impersonate one another to get at a file that, though necessarily residing in one particular directory, is in reality a joint file. In implementing private dialog, we've necessarily restricted such practices, and the result will probably be the design and implementation of more formal methods for accomplishing such shared tasks. 77db

OUR THINKING ABOUT A GENERAL, MULTISITE SYSTEM 77dc

MOTIVATION 77dd

Recognizing the immediate need to provide dialog support for Utility users, and recognizing also that the implementation of an efficient dual-host dialog support system would require significantly more than simple modification of the existing, single-host system, we elected to make the short-term modifications described earlier and then to begin design work on a general, multihost system to be distributed on an arbitrary number of ARPANET host systems. 77de

The implementation of such a system would involve a complete

rewriting of the present Journal, Number, and Identification Systems. Furthermore, we expect that the new DSS will in many ways be a different system, one in which many of the basic concepts of the previous system find a place, but also one in which new concepts appear. 77df

DESIGN GOALS 77dg

In designing a MultiHost Journal System (MHJS), we had a number of goals in mind, the first necessarily being modularity: 77dh

Modularity: 77di

We envision a system composed of modules, each providing some specialized service to the others, or to the end user, and which together comprise a coherent system. 77dj

Each module implements a set of primitives whose syntax and basic function are to be standardized, but whose internal workings would be left unspecified by the design (within certain broad constraints), being dependent upon the implementation machine, and the particular role that the module is to play within the System as a whole. 77dk

Reconfigurability: 77dl

The MHJS must be reconfigurable. Although the design suggests in broad terms the manner in which the System is to be constructed from its component modules, the design does no more than specify a family of MHJSs from which a particular configuration can be selected (in the same way that a computer system manufacturer provides a

set of hardware modules (disk drives, CPUs, etc.) from which the customer configures his particular system]. 77dm

The design specifies a small set of module types, each of which is replicated in appropriate numbers for a particular system configuration. 77dn

The MHJS must be reconfigured, for example, to accommodate the addition of new hosts to the system,
or
it might be reconfigured to place an instance of a frequently used module closer to a population center,
or
for any of a variety of other reasons. 77do

Optimum Data Base Distribution: 77dp

It is, of course, more expensive to manipulate remote data bases than local ones; sometimes it is impossible (e.g., when the remote host is down). The MHJS, therefore, must attempt to reduce the frequency with which remote data bases must be dealt with by replicating portions of them in centers of user population and message traffic. 77dq

Uniform and Consistently-Applied Access Controls: 77dr

The MHJS must recognize the existence of private information of every type (documents, catalogs,
idents,
etc.) and provide the access controls necessary to protect it, providing for private dialog of a much
more
flexible nature than that described in the preceeding section. 77ds

With these goals in mind, then, we began designing a
MultiHost
Journal System. Some of the more important concepts we came up with are described below; the reader is referred to [5]
for
a more complete discussion. 77dt

SOME IMPORTANT CONCEPTS 77du

Isolating the Recording, Cataloging, and Distribution Functions 77dv

The original Journal implemented a single user primitive we called "Submit" which records, catalogs, and distributes a document. We considered that primitive fundamental to dialog support, and the vision of it colored our thinking about the Journal's internal structure. We've since learned that the subprimitives from which Submit is constructed are also of interest to the user. 77dw

For example, we've found it useful to be able to distribute a previously submitted document to additional users, an operation that we've implemented and call "secondary distribution" (even the name reflects our bias toward "Submit"). We now recognize, further, the need to be able to distribute a document without recording it at all, a facility that the present Journal still does not offer. And we recognize the cataloging subfunction of "Submit" to be a more generally useful tool, applicable, for example, to personal as well as system data bases. 77dx

Access Controls 77dy

We decided from the outset of the design to implement flexible access controls throughout the MHJS, applying them not only to documents, but to data elements of all types--catalogs, idents, and so forth. Controlling access to a data element consists of specifying, when the data element is created, the list of individual or group idents granted access to it, and then limiting access to members of that list. 77dz

This is the same kind of access control now implemented in the present Journal, as we've already described, and is by far the most satisfactory type we know. In the MHJS, we've taken the additional (and natural) step of assigning passwords to idents, and requiring their use, as a means of verifying the user's identity. 77e@

Catalog Number Assignment 77ea

The present Journal assigns every recorded document a unique identifier, called a catalog number, by which the document can be referenced or retrieved. Since the MHJS is conceptually a single Journal, we must somehow maintain uniqueness in catalog number assignment, while yet hopefully making the assignment process reasonably efficient and reasonably insensitive to host failures. These requirements preclude the simplest implementation, i.e., assignment of numbers by a single module at a single host. 77eb

The approach we think most satisfactory is to station several instances of a module we've called the Number Vendor at strategic points about the system. Each additional Number Vendor, assuming it resides on a different host, increases the probability of a user's being able to obtain a catalog number when he wants it, as well as reducing the overhead (by placing the source closer to him). 77ec

At any time, each Number Vendor owns a subset of the universe of catalog numbers from which it can satisfy user requests. A Number Vendor may assign only catalog numbers that it itself has been assigned by another Number Vendor, except for one special root Number Vendor assigned

initial
possession of the entire name space. 77ed

Number Vendors might be stationed throughout the MHJS,
each
with responsibility for servicing a segment of the user population, and each replenishing its number supply, when it nears bottom, from the Root Vendor. This strategy permits a form of number assignment that is both
efficient
and insensitive to the host failures that periodically
make
the Root Number Vendor inaccessible. 77ee

Publishing a Document 77ef

In our design of a MHJS, we've made central a concept
that
is given only lip service in the present Journal, that of subcollections. A subcollection is a subset of all recorded documents, each of whose members shares some common attribute, e.g., author, subject, and so forth. A single document may be assigned to zero or more subcollections, either explicitly by the author, or by
the
system. Although hard copy subcollection catalogs can be generated, the Journal maintains no online subcollection catalogs, thus severely limiting the utility of the
concept
in its present implementation. 77eg

A major concern of the MHJS is to provide specialized marketplaces in which documents can be exchanged. Such a marketplace is called a "forum", and one speaks of "publishing" a document in a forum. In the MHJS we've
thus
placed great stress on the concept of allying a recorded document with other documents related to it (i.e.,
placing
it in a subcollection), relegating the concept of simply recording a document to a less central role. 77eh

Users with interest in a particular forum can formally declare that interest, and, subject to appropriate access

controls and accounting disciplines, become "subscribers" of it, thereafter automatically receiving an announcement of each new document published. The prime responsibility of the Publisher, the module that implements a forum, is therefore to catalog each document as it is contributed, and send a copy of the catalog entry (giving the document's author, title, date of publication, etc.) to each of its subscribers. We've thus given the old concept of subcollections an active, rather than passive character, with the system notifying interested users as new documents are made available. 77ei

Maintaining Networks of Documents 77ej

For reasons of efficiency and reliability, it is necessary to permit an arbitrary number of physical copies of a document to exist simultaneously within the MHJS. Each additional copy, assuming it is created on a different host, increases the probability of a user's being able to retrieve the document when he wants it. A retrieval request can be satisfied most quickly, of course, if a copy of the requested document already exists on the user's own host. The system might therefore create a copy of the document at each major population center, anticipating a rash of retrieval requests; and then delete the copies a month later, once the period of peak demand has passed. 77ek

Access to a document and all its copies is uniformly controlled on the basis of access lists assigned by the author. A user, for example, cannot read a document unless the author granted him read access to it. The copying of documents, however, is a system function designed to promote efficiency and is therefore unhindered by access controls. 77el

Each recorded document within the MHJS is therefore implemented as a network of copies whose topology is a dynamic characteristic of the system and changes with such

things as the frequency with which it is referenced. The system keeps track of the various copies of a document, and can thus direct the curious user to the nearest one. 77em

Distributing Information About Users and Modules 77en

A need that pervades the MHJS, even more so than in the present Journal, is that of swift access to information about users of the system. In the present system the data base is called the Ident File and describes the users and user groups known to the system. To implement the access controls that the MHJS seeks to maintain throughout, both human users and system modules are assigned idents. Group idents are very heavily used, being extremely convenient for implementing access lists for the various data bases within the system. 77eo

For reasons of efficiency and reliability, it is highly desirable to maintain copies of subsets of the Ident File at various locations within the system, each under the control of a module called a Registrar. An ident can be known to an arbitrary number of Registrars, and that particular set of Registrars is called the ident's "domain". Information about the ident can be obtained from any Registrar in its domain. Modifications to an ident are relayed by the Registrar that receives the modification request to all Registrars affected. 77ep

The Registrar turns out to be the workhorse of the MHJS, and its importance cannot be underestimated. In designing the MHJS we discovered that: 77eq

1) Virtually every system module must deal with incidental data bases that are lists of user/program names (e.g., access lists), and each must provide mechanisms for retrieving and modifying them. 77er

2) System modules can be relieved of a significant burden by providing a specialized module (the Registrar) whose function is to provide the primitives required to manipulate these data bases. 77es

3) Furthermore, the lists then become accessible from any one of an arbitrarily large set of Registrars (the group ident's domain), since the Registrar already implements the required broadcast facility. 77et

4) Since the existence of a document's read access list (for example) implies the existence of the document itself, whether or not a document exists can be determined by consulting the nearest Registrar. 77eu

5) Race conditions associated with the creation of a document (e.g., two users attempting to create a document with the same catalog number simultaneously at two different points in the system), for example, can be arbitrated by the use of locking mechanisms implemented by the Registrars. 77ev

CONCLUSION 77ew

Having made heavy and continuous use of the Journal for over three years now, ARC has found it to be a powerful dialog support tool for knowledge workers. 77ex

During the course of its use, the Journal has been substantially modified to increase its efficiency, extend its geographical reach, and provide the new features we've discovered to be important. Initially an experimental system supporting a fairly small number of geographically concentrated researchers, it now supports a large, geographically distributed user community

linked by the ARPANET, Initially a software system implemented on a single computer, it now operates on a pair of PDP-10 systems
linked by the Network, and design work has been done for a general, multihost system, Initially exclusively a forum for public dialog, it now supports private communication as well, 77ey

The Journal will further evolve and new features will be implemented and experimented with as we continue to gain experience in the dialog support field, 77ez

ACKNOWLEDGEMENTS 77f@

Many past and present members of the Augmentation Research Center
have contributed to the design, implementation, and evolution of
arc's Dialog Support System, The contributions of the following
individuals warrant special acknowledgement: William S, Duvall, Douglas Engelbart, David Evans, J, David Hopper, Charles Irby, and Jeanne North, 77fa

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14-AUG-75 1659-PDT WATSON at BBN-TENEXB: MSGGROUP# 129 Beware the following long message
Distribution: BURCHFIEL AT BBN, GILBERT AT BBN, NGOODWIN AT BBN, MYER AT BBN,, MOOERS AT BBNA,, WATSON,, TOM AT CCA,, PIRTLE AT I4-TENEX,, MSGGROUP AT ISI, PBARAN AT ISI, DCROCKER AT ISI, ELLIS AT ISI, FARBER AT ISI, ISELI AT ISI,, KIRSTEIN AT ISI, MCLINDON AT ISI, MEALY AT ISI, SPIVEY AT ISI, STEFFERUD AT ISI,, TASKER AT ISI, WALKER AT ISI,, PICKENS AT ISIB, STOTZ AT ISIB, VITTAL AT ISIB,, VEZZA AT MIT-DMS,, ENGELBART AT OFFICE-1, PANKO AT OFFICE-1, ROBERTAZZI AT OFFICE-1, UHLIG AT OFFICE-1,, KOHANSKI AT RUTGERS-10, RYLAND AT RUTGERS-10,, GEOFF AT SRI-AI,, ------- AT SRI-AI
Received at: 15-AUG-75 05:06:47-PDT 78

[1] Message-ID: <[BBN-TENEXB]14-AUG-75 16:59:37-PDT,WATSON> 78a

[2] The message to follow this one is a chapter from a report which while about a year old contains grist that should be of use to the message group , The chapter summarizes experience with the NLS Journal and has been passed out to some of you before but there are enough new peop;e in the dialog that it seems worthwhile to pass it on to them, Dick 78b

15-AUG-75 1144-EDT HENDERSON at BBN-TENEXA: MSGGROUP# 130
Distribution of previous message re: New Protocol,
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 15-AUG-75 09:40:15-PDT 79

Message-ID: <[BBN-TENEXA]15-AUG-75 11:44:47-EDT,HENDERSON> 79a

The enclosed was sent to Tom Ellis for distribution to the members of the Message Service Committee, Don Oestreicher has informed me that Tom is currently on holidays. Therefore I am distributing it directly to you. 79b

Austin Henderson 79c

Date: 11 AUG 1975 1312-EDT
Sender: HENDERSON at BBN-TENEXA
Subject: Message Transfer Protocol,
From: HENDERSON at BBN-TENEXA
To: Ellis at ISIB, Gilbert at BBN, Walker at BBN
Cc: Oestreicher at ISIB, JFH at MIT-DMS, COTCO-PROJECT:
Message-ID: <[BBN-TENEXA]11-AUG-75 13:12:03-EDT,HENDERSON> 79d

This note expresses BBN's current position on the proposed new Message Transmission Protocol (MTP) (Haverty, July 8, 1975). In addition, it presents the outline (although not the details) of an alternative proposal. 79e

0. Briefly, our objections to the proposed MTP protocol are as follows: 79f

1. It does not respond to the mandate of the Message Service Committee (MSC) in that it does not support the transmission of arbitrary structured objects. 79g

2. It addresses a collection of problems not fundamental to the future development of message-based communication in the network. In doing so, MTP overlooks a simple solution to the problem of encoding structured objects, adopting the

overly-complex view that messages are changing objects which may appear differently to different receivers of them. 79h

3. It leaves untouched the critical issue of extending the currently-primitive notion of message transmission services to include process-to-process service in addition to the user-to-user service. 79i

Our alternative response to the MSC's mandate is indicated. 79j

1. The mandate of the MTP SubCommittee of the MSC, as BBN understands it, was to propose a new protocol for sending structured messages in the network. We interpret this mandate to imply a request for two things: (1) a definition of, and an encoding for, "structured messages", and (2) a definition of, and protocol for, sending messages (of all kinds) in the network. Also implied in the mandate is a request for a specification for representing RFC680 messages as "structured messages". 79k

2. The document produced by the MTP SubCommittee is a response to this mandate. It defines a structured message as a two-dimensional matrix: on one dimension is a list of field names (e.g., ACTION, ADDRESSES, IN THE NAME OF, REVIEWERS), and on the other a list of persons (users) concerned with this message (presumably including the sender(s) and addressee(s)). The information contained in the matrix (its entries) may be changed by the users associated with those entries; thus, a message is a time-varying object. 79l

The encoding proposed for a message is based on the DPS 8-bit format known as PCPB8. The encoding interprets certain PCPB8 lists as typed objects. By explicitly including type, (as opposed to type being implied by position in the encoding) it is possible to provide for alternative encodings and optional information. 79m

Page 2 79n

Sending a message, as defined by the report, is potentially an elaborated exchange of signals (MSIGNALS) among servers on a number of hosts in the network. It is possible, for example,

for one server to inform another that a message exists. The notified server can, then or later, request that different entries in the message be transmitted to it. Further, when entries are changed, the fact of these changes can be transmitted to other users associated with the message. 79o

The protocol implementing this extended exchange is based on MSIGNALS. These signals are PCPB8 encodings of requests for action and responses to these requests. The servers are assumed to communicate MSIGNALS over network connections established in response to ICP's (or something like them) on special reserved sockets. 79p

3. Some specific criticisms of MTP deserve mention: 79q

a. MTP does not support the transmission of arbitrary structured objects. Rather, the fields permitted in messages are a fixed set. MTP ought to have defined a general message, and then shown how to map the messages of RFC680 (or an extension) onto that. 79r

b. There seems to be no way for a server to decide when it can get rid of its messages. 79s

c. A server has to retain all its requests until a response comes back. This may require considerable overhead. 79t

d. The typing scheme used in the encoding of MSIGNALS is used inconsistently. Ideally, types should be included explicitly where position does not make clear what to expect; they should not be used otherwise. This rule is not followed. For example, the prototypical FLDVAL (page 17) only appears in forms where it is expected, so typing is unnecessary to say that it is a FLDVAL; however, <ACCESS> should be an optional part of a FLDVAL, yet no typing is put on it, thus forcing it to be present always. 79u

e. MTP permits a receiving server to ask for message fields only when it needs them. A user requesting to see a field has such a need. However, a receiving server cannot afford in reality to take the risk that the network or sending host may not be available when the user makes his request.

Consequently, a receiving host will always want the whole message. Thus, MTP is too general, permitting transmission of partial messages. 79v

f. MTP views messages as changing objects. This requires that, in order to propagate changes in messages, the servers must understand the structure of those messages. This means that it is impossible to divorce what is transmitted from the 79w

 79x

mechanisms which transmit it. This leads to complexity. 79y

g. Another source of complexity in MTP is the inordinate number of options available throughout. Also, the use of alternative encodings for many objects adds to this problem. 79z

h. The complexity of MTP implies servers of not insignificant size. A small host on the network may well have trouble furnishing adequate resources to support such a server. 79a@

4. We feel that MTP is unnecessarily complicated for use as a primitive message transmission service. In particular, MTP appears to be an attempt to implement high-level abstractions using an underlying facility for sending MSIGNALS between servers. It is this more primitive capability which we think should be embodied in a network-wide message transmission system (MTS). Then, using such a service to send MSIGNALS, servers could be built to implement MTP. 79aa

5. An alternative and simpler response to the MSC's mandate is as follows: 79ab

a. Regard messages as unchanging objects. Then the servers which transmit messages will not need to understand their structure. This permits separating the structure of messages from the transmission of messages. 79ac

b. To support the creation of server processes which communicate quickly by sending messages to one another (as

exemplified by the MTP protocol), build a high-speed message transmission system (MTS) whose function it is to transmit messages which it views simply as collections of bits. 79ad

c. Adopt PCPB8 as an encoding for structured objects when structured objects are to be transmitted. This defines structured objects as those objects which can be encoded in PCPB8. 79ae

6. A message transmission service (MTS) is responsible for delivering a message (any bit string) to a collection of receivers. To give this meaning, we must say who receivers are. "User at host" is an inconvenient way to name processes. Also it ties a user or a process to a particular host. We, therefore, feel that this is a good time to broaden our view of message transmission by changing the notion of "address". A new message transmission service (MTS) should be provided in the network by having co-operating servers at each host. These servers, in addition to managing network connections over which messages are transmitted, maintain a network-wide collection of addresses. A process could request an address which it could supply to other processes to have them send messages to it. By making addresses be 72 (or 144) bits long, there should be no need to re-use addresses for any reasonable duration of the MTP 79af

 79ag

system (say 100 years). 79ah

A number of extensions of this MTP service are imaginable. Associated with certain addresses could be character strings (names of people, subsystems, services). The MTP service could be queried to obtain addresses whose associated strings meet certain criteria. Also associated with an address could be a program to be run when a message arrives for that address. There need be no requirement that addresses be host-dependent; that is, the service could be extended to be able to move an address to another host. Conceivably, addresses which had moved might receive their messages a bit slower, due to forwarding. The service can be designed to answer a reasonable set of queries concerning addresses (location, strings, programs), speed of service (host temporarily down), cost of service, and the like. 79ai

Since the MTS serves both high- and low-speed communication, there is a need for some method of guaranteeing that high-speed messages not be held up by slow-speed ones. That is, the MTS should understand message priority. 79aj

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What is needed then, is a protocol which MTS servers are to use in implementing MTS. We are drafting such a proposal now. 79ak

7. In conclusion, BBN feels that: 79al

a. messages should be conceived of as unchanging objects: 79am

b. a Message Transmission Service (MTS) should be constructed based on an extended notion of address, with the intent that it serve both user-to-user, and process-to-process message transmission. 79an

c. an encoding for structured objects is available in the DPS format called PCPB8. 79ao

d. the conceptual and implementation complexity of MTP is too great to be acceptable as the primitive network message transmission protocol. Rather, it should be regarded as a higher level service which could be implemented using an MTS. 79ap

e. MTP has some serious limitations for practical message transmission, and, therefore, needs further work before being accepted as a higher-level network standard. 79aq

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79ar

15-AUG-75 1800-PDT DCROCKER at USC-ISI: MSGGROUP# 131 Participation in Design Review
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 15-AUG-75 18:12:13-PDT 80

Hello again. I have been on an extended vacation and am finally beginning to catch up on the Group's activity during my absence. 80a

For starters, I would like to strongly support the suggestion that the group be informed of design plans (and thank Charlotte Mooers for initating a response to the request). I believe that much of the agony and frustration experienced by users, and directed at designers, can be avoided by gathering meaningful feedback from a group such as this. 80b

I would specifically like to suggest that we be informed of progress/thinking along the ENTIRE development path: Selection of general features, selection of specific form of the features, selection of commend words which will invoke the functions, etc., so that we can in turn provide some indication, and perhaps increase in, the ultimate user acceptance of new systems and features. 80c

15-AUG-75 2308-PDT NELC at USC-ISIB: MSGGROUP# 132 More comments on mail service
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 15-AUG-75 23:25:05-PDT 81

Charlotte -- 81a

My appologies for taking so long to respond, but we have been undergoing a reorganization and office-moving that has kept us pretty busy. I will remember to sign this one -- sorry I forgot to sign the previous one. 81b

First I want to say someting about the philosophy employed in the prior message. I was trying to identify features that I thought were good and practical, not features I thought were missing. In fact, I drew heavily upon some of my background in the use of mail systems -- not only computer mail services, such as the ARPAnet mail protocol, but also the some of the military message communication services. Thus, I listed several features that I knew existed and which I thought worth retaining. 81c

The paragraphs below are an attempt to give my reactions to what you had to say in your very thoughtful comments to the previous diatribe. 81d

1. (Your point 1) Good. I'm glad to see that we agree on the desirability of a text editor in conjunction with a mail service. 81e

2. (2) As I discussed above, I realize that the current message service automatically puts in certain header information. My point was that some minimum set of this information should be required. Some mail servers, notably NLS, don't supply some of the more critical fields. (NLS doesn't supply "TO", "FROM", or "CC", nor does it put "SUBJECT:" or "DATE:" in front of the information that it does supply.) 81f

3. Some of the header info is self-explanatory. "TO" means to whom it is sent, "CC" tells who received carbon copies. But what in the world is "BCC"?? 81g

4. (3) I think you misunderstood this one. One problem of

mine currently is that I have a whole bunch of very short(one or two line)files that contain the Net mailbox for somebody. It is frequently very convient to do this for people you send a lot of mail to. The problem is then twofold: first, each mailing list requires an entire file all to itself at a corresponding cost in wasted storage and cluttered directory listings; and second, often you want to send mail to all of a mailing list EXCEPT a few. I feel that the concept of mailing lists should be explicitly present in the mail service, and that all management of the mailing lists should be its responsibility. A mechanism similar to the "funny name" file managed by the TENEX ARCHIVER could be used, for example. 81h

5. (more 3) Another feature that would be useful for a mailing list facility would be to permit the items of a mailing list to make references to other mailing lists, including the ability to exclude items of the other mailing list. The possibility of infinite recursion is present, of course, but this could be identified
and some suitable action taken. 81i

6. It would be nice if duplicate names were spotted and merged so that only one copy was actually delivered. XED does this; it is very handy when sending mail to multiple mailing lists. 81j

7. (3 & 4) What is a "Cache-Citation"? How does it cause the return-reciept function to be performed? 81k

8. (5) I know. MSG does it with Forward. 81l

9. (6) I know. MSG does it with Answer. These were "good features that should be retained." 81m

10. (7) This issue was one of validation. Most mail recievers already do it and should continue to do so. 81n

11. (8 & 9) This is a very tangled skein that I will attempt to unravel. I tried to state what I wanted in a very abstract way without specifying any implementation methodologies. This time I will describe more of the specific model I had in mind. The backbone of the process is the journal file. Every incoming message is logged in this file with enough information for display,

search, and retrieval. The full actual text of the message goes into another file. The current ATTN parameter is a partial answer to how the in-basket could be specified. In this interpretation, the journal file acts as an index to the messages, identifying the location where the message actually is. This pointer could be as simple as a file name/offset or as complex as the "archive handle" of the message in the Datacomputer. 81o

12. (con't) Another interpretation is that the system supports a set of "file folders" that copies of incoming messages can be placed in. (These file folders could be implemented as a set of keywords that are retained with the message.) In this view the in-baskets are just distinguished file folders into which incoming messages may be directed. A message not directed to any specific in-basket, or to an illegal in-basket, would be placed in some default in-basket. Mail that has been routed to the default in-basket could be re-routed to the appropriate in-basket(see later about specifying additional folders). 81p

13. (con't) A message coming from the outside may only be routed to an in-basket, while internal messages(messages to myself) could be routed to a folder, thus giving a "Memo to file" capability. A copy of outgoing messages would be routed to a special file folder, so that a file of messages authored would automatically be kept. 81q

14. (con't) As the user examines his mail, he can specify additional folders(keywords) in which copies must be put. Mail put in an in-basket would be equivalent to routing it on to another member of the group. Note
that actually putting full copies into each folder would be a great waste of file space; it is probable that a mechanism like that of NLS, where only one copy is retained and an index is used to locate the contents. 81r

15. (con't) This seems to imply that the implementation would consist of a journal/index file and a set(see comments about your point 10) of associated files containing the the full text of the message. The journal/index file would contain only enough so that the display, search, and retrieval functions could operate; this would basically be the information in the header, the folder names(keywords), the pointer to the full text, and an "examined" flag(see below). 81s

16. (con't) An additional problem that would have to be addressed would be how to correctly tell each individual user of the directory when mail was waiting for them. To solve this, the "not examined" concept of MSG should be supported(a good idea all by itself) and as long as "not examined" mail exists in an in-basket, the logon/logoff handler would comment about it. 81t

17. (con't) Although much of this mechanism was envisioned to ease the problems encountered when multiple users are sharing the same mailbox, the file-folder management that is a natural fallout would be very useful even if you are the only user of the mailbox. In fact, looking back at the model, it is hard to tell which one is the fallout of the other. The mechanism is intuitively appealing since it follows very closely the way mail delivery actually works in many places. I recieve my mail in a common mailbox with the three other people with whom I share an office; whenever any one of us goes by the mailbox, we grab all the mail and put it on the desk of the correct person. 81u

18. (10) The archival problem is basically one of splitting the messages into units that can be archived individually. In the two-level scheme above, this can be done by placing the data into a sequence of files. Messages would be appended to one file until it exceeded some reasonable size(about 20 pages would be reasonable for us) and let the standard archival mechanism remove the files in the usual way. The journal file could use the same system for putting in physical breaks, but it would mark those files containing the information for the last (say) 100 journal entries as not archivable. Searches would be limited to only that last 100 entries unless extended by the user. It would be probably be reasonable to permit the size limit of the text files, the size limit of the journal files, and the number of active journal entries to be setable by the user. In the event that the user wants to see a message that has been archived, the mail system would notify the user. If he still wanted to see it, the mail system would construct the necessary retrieval request and post it. The user should be able to "lock" a particular message, that is, specify that the message is not to be archived. Also an "unlock" function.
This was a long set of comments in this paragraph; also somewhat confused. I hope that all of my thoughts can be deciphered. 81v

19. (con't) Keeping the messages in the Datacomputer is good idea. I presume that you've worried about it, but what provisions have been made to ensure that people don't go around reading the mail? Some of my spook friends in Security would be a little

hesitant about the information I already keep on the ARPAnet -- not classified, of course, but the equivalent of commercial proprietary -- plans and cost estimates. (Actually, I pity anybody who tries to use it -- it goes to my sponsor after me and doesn't come out the same afterwards.) 81w

20. What is the relationship of MSG to MAILSYS? Many of the commands are so similar that I suspect that it is either a precursor or an offshoot. 81x

21. Another feature that we seem to need around here is the ability to reformat the messages and the index (header) data and print it on the line printer (COM, etc.) and put it in our own archives. This seems to me to be the security blanket approach, but it may be required for political (sales?) reasons. 81y

22. A feature that would be neat, but I don't know how it could be done, would be to permit files to be "attached" to the message.
We operate in the mode where we prepare documents and send them to other people on the net. The thing to be avoided in this case is having a long file that will only be edited and sent back and forth many, many times. It wastes message file space to hold ten or twenty copies of the same document, only slightly different in each version. What would be better would be the ability to send a "file handle" that would be good for only one time and permit the guy at the other end to pull the file and examine it. If he wanted to send it back, you would have the option of putting it in the same file again, thus conserving storage, or putting it in a new file. In addition, the document in the file would be clean -- it wouldn't have any message headers or other stuff that would be irrelevent to its basic function as a document. 81z

23. One last thing. A bell that would be useful to me, since I would forget my head if it weren't firmly attached, is a "tickler file." I'm not even sure that the mail system is the place to put it. All it needs to be is a spot where I can request that a message be sent back to me at a certain time. 81aa

I hope these comments are useful to you. Although I can't afford to do very much(it's on my own time), I would like to be kept informed as to what you're doing. 81aa

I think Charlotte is such a pretty name. 81ab

Greg Noel -- NELC@ISIB(Attn: Greg) 81ac

17-AUG-75 1340-PDT FARBER at USC-ISI: MSGGROUP# 133 A 5 page
desciption of the Calendar Sndmsg Experiment
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 17-AUG-75 13:45:27-PDT 82

Message-ID: <[USC-ISI]17-AUG-75 13:40:08-PDT.FARBER> 82a

A short 5 page memo on the experiment is in a message in message.txt
of msggroup with the keywords calendar , sndmsg , experiment.
Requests for direct copies should be sent to Farber@isi. 82b

Dave and John 82c

17-AUG-75 1616-PDT FARBER at USC-ISI: MSGGROUP# 134 A 5 page description of the UCI Calendar-SNDMSG Experiment
Distribution: MSGGROUP
Received at: 17-AUG-75 16:17:36-PDT 83

Message-ID: <[USC-ISI]17-AUG-75 16:16:32-PDT.FARBER>
Keywords: calendar , sndmsg , experiment 83a

Experimental CALENDAR/CLOCK/MESSAGE system 83b

An experimental system exists which merges the services of CALENDAR, CLOCK, FILWATCH, and SNDMSG in order to give the user a more dynamic calendar/alarm-clock mechanism. (Of the above, CLOCK and FILWATCH may not be known. Briefly, CLOCK is a subsystem which accepts a file of times and notices. When a noted time arrives the indicated message is printed on the user's terminal, no matter what he is doing. FILWATCH is a subsystem which continuously (sort of) monitors the status of designated files. It is used primarily to detect any change of status within the MESSAGE.TXT file) 83c

A brief overview of how the whole thing works is as follows: The user, or his secretary, uses the CALENDAR subsystem to create appointments and/or daily entries for tasks to be done. A special format is required, which does not restrict normal calendar entries, for those entries which will cause notices to appear at specific times of the day. (See below) If desired, a special file may also be maintained with more permanent notices. (This file must be maintained in the format required by the CLOCK program) Examples of such notices are ... lunch time at 12:00, rent due on the 1st of every month, and quitting time at 5:00. At the first logon of the day, or whenever new calendar entries are added, the user runs a program which initializes his notices file and sends him a message with the day's calendar. After this program is complete, and at each successive login he runs another program which starts both CLOCK and FILWATCH. From this point on he may proceed as normal - editing, running subsystems, reading mail, or whatever. 83d

How to Use this System 83e

The special formatting rules for CALENDAR entries and appointments are very simple to explain. All calendar entries

for the current day are split into two groups- those with specific time identifiers and those without specific time identifiers. A time identifier is simply one or more 4 digit fields, separated by commas, and must be the first data in the entry/appointment. (1100 means 11:00 A.M. 2300 means 11:00 P.M.) The time identifiers indicate at which time(s) the notice is to be printed. Entries without time identifiers will be printed every time the monitor program is started up. Multiple line entries are acceptable and will get converted correctly for the CLOCK subsystem. (See the APPENDIX for the format required directly by the CLOCK subsystem) 83f

To initialize the current day's message and clock files, the user simply types the sequence "DO <SPACE> STARTUP <CR>".After a significant amount of output (remember, this is experimental) and 83g

2 83h

the creation of a temporary file (MONITOR.SCRATCH) everything will have been initialized. Now to begin monitoring (done at each successive login) the user simply types "DO <SP> MONITOR <CR>". 83i

3 83j

APPENDIX 83k

CLOCK -- A Reminder System 83l

CLOCK is a system which will give you a reminder by typing out a notice on your terminal at various points through the day. Such a notice may appear more than once throughout the logon period. The specification of the times and associated notices is done in the following way. 83m

CLOCK starts by asking you for a file where the time/notice sequences are to be found. After acquiring this information, you are left at a lower EXEC. If you want to leave clock or reset the notices, QUIT from that EXEC. 83n

The file must consist of a set of either 2 line or 3 line specifications. The two line specification has as the first line a list of the times of day the notice is to appear (if the notice is to appear at more than one time, the times may be seperated by either a space or comma). The second line is the notice. 83o

The three line specification has a 'date specifier' as the first line, with the time and notice lines as the second and third. A date specification may precede any group of notices in a file of notices. The specification states on what dates the notices are to be output to the terminal as specified by the respective time specifier for each notice until the next date specification is found. 83p

The date specification is a line of text beginning with an asterisk (*), containing date specifiers separated by semi-colons (;) and ending with the usual carriage-return linefeed. The date specification applies to all notices following it until the next specification. 83q

A date specifier is any of the following: 83r

- the word "DAILY";
- any of the words "MONDAY", "TUESDAY", "WEDNESDAY", "THURSDAY", "FRIDAY", "SATURDAY", "SUNDAY";
- a date specified according to day, month, and year;
- a day of the month, that is, an integer in the range of 1 to 31 inclusive;
- a pair of dates separated by a colon (:);
- a pair of days of the month separated by a colon 83s

4 83t

(:). 83u

The word "DAILY" signifies that the following notices are to be sent every day. Similarly, a particular weekday, say "FRIDAY", specifies that every Friday the following notices are to be sent. In just the same way, a date or a 83v

2 83w

day of the month also specify particular days for delivery of the following notices. 83x

A pair of dates or days of the month specify a range of days over which to deliver the following notices; the range is from the earlier of the two in the year or month, to the later of the two. 83y

The word "DAILY" may be abbreviated to "D"; similarly the weekdays may be abbreviated to one or two characters each, as long as the abbreviation is unambiguous. However, if the abbreviation is ambiguous, the match will be made if today's day is appropriate. Thus, if "S" is used, the following notices will be sent every Saturday and Sunday. 83z

Note that a time of 0 implies only at startup or midnight. However, a time of 2400 means only midnight. The date specification is valid only from a disk file. If the file is TTY:, you will be prompted for the time/notice sequences. A time sequence is terminated by two carriage return line-feed pairs. To terminate the acquisition mechanism, a null time sequence should be specified. 83a@

The following is a sample file time/notice specifications: 83aa

```
0
 This notice will appear daily at 0000 and also on program
 startup.
1200,1300
 This notice will appear daily only at noon and 1:00pm.
2400
 This notice will appear daily at 0000 but not at program
 startup.
13 115
 This notice will appear daily at 00:13 and 01:15am.
*daily
0
 These notices will also appear daily.
*D
0
```

83ab

5 83ac

```
 The date specification can be abbreviated; case shift is
 ignored.
*monday;tuesday
0
 Every Monday and Tuesday this will appear on startup.
*m;w
0
 Monday  Wednesday - Only ";" may be used to separate date
 specifiers
*w;f
0
 Wednesday and Friday for this one.
*t
0
 Both Tuesday AND Thursday; similarly, "s" matches Saturday
 Sunday
```

83ad

3 83ae

```
*1TU;2F;SUN
0
 The first Tuesday and second Friday of the month, and every
 Sunday.
*1/2/75
0
 This would have come out on Jan 2, 1975
*January 2, 1975
0
 Same
*1/3/75:19/1/75
0
 Every day from Jan 3 thru Jan 19, 1975, this would appear on
 startup
*3/1/75:19/1/75
0
 Every day from Jan 19 thru March 1, 1975, this would appear.
*3/1/75:3/12/75;5w
0
 Between March 1 and 12, 1975, and also on the fifth Wednesday of
 each month
*24:31;1
0
 Between the 24th and 31st, and also on the 1st, of each month.
0
```

Rent due on the first,
*1
1000,1300,1400,1500,1600,1700
PAY THE RENT!!! (note the bell in the message, very useful
sometimes) 83af

6 83ag

18-AUG-75 0047-PDT STEFFERUD at USC-ISI: MSGGROUP# 137 Issue Matrix Suggestion
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 18-AUG-75 00:56:24-PDT 84

After some review of the various aspects and dimensionalities of the MsgGroup problem space, I have drawn up a tentative issue matrix for consideration in our discussions. It has two primary dimensions: 84a

Activities and Tools 84b

* Activities: * Tools: *	A. Message Exchange	B. Meetings & Conferences	C. Fact Gathering
1. Text Processing			
2. Access & Delivery			
3. Filing & Retrieval			
4. Data Banking & Retrieval			

84c

In addition to these dimensions, it seems clear that there is a third dimension, from Formal to Informal, for the entire table. 84d

In terms of this matrix, the major interest of MsgGroup now appears to focus on Message Exchange and Conferences using Text Processing, Access & Delivery, and Filing & Retrieval Tools. 84e

It is clear that the Activity and Tool categories in this taxonomy are very general, but they can each be factored into subcategories and they do afford some clarity and efficiency in our discussion. 84f

For example, the prior paragraph appears to reasonably define the domain of interest of MsgGroup, which is at least one small step forward at this point. 84g

With the matrix, it seems possible to develop subject encoding schemes to help label messages to show their subject content. Perhaps we might try to use the matrix row and column headings to encode our messages. (eg. /A,/2, means "Message Access & Delivery systems.) 84h

To indicate subcategories, we could use a decimal system, and we could include as many row and column headings as we wish in our message SUBJECT fields by preceeding each category code with a slash "/" so we can range over any part of our defined problem space that we may wish in any given message. 84i

I will be interested in seeing your comments on these ideas. Unfortunately, I must be away from the network for a couple weeks, so I will have to wait till I return to see what you all think of these ideas. 84j

Enjoy, Stef 84k

18-AUG-75 1711-PDT DCROCKER at USC-ISI: MSGGROUP# 141 NMSG Answer Command / Keyword Invocation of Functions
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 18-AUG-75 17:25:46-PDT 85

To start my current spate of notes about specific aspects of mail systems, I'd like to add my support to the recent modification to (n)MSG's Answer command. However, I have one piece of criticism which derives from my continuing interest in making the mail system command language(s) more humane: How about multiple-word specification for response-class? 85a

Instead of having to remember some fairly arcane keywords (e.g., E(body who received the note, plus cc:'s to be specified) how about allowing a number of keywords per specification? E.g.: S(ender) R(ecipients) A(dd cc's), or E(verbody)? The latter would NOT allow any CC: specification -- unless the user also typed the Add keyword. 85b

Since the goal is to provide the user with a set of fairly intuitive keywords, a great deal of care should be put into discovering which particular words are best, and I do not believe the ones in the above example constitute that ideal. They do, however, demonstrate the structure of specification that I am thinking of. Sndmsg, with its Queuing options, is another example. 85c

About selection of command words I have more to say, and will in my next message. (My intent, here, is to avoid the "large message" problem by creating smaller, self-contained messages. In a teleconferencing sense, the intent is to keep each "entry" fairly atomic and therefore separately manipulable.) 85d

Dave. 85e

18-AUG-75 1838-PDT DCROCKER at USC-ISI: MSGGROUP# 142
Considerations in User Command Vocabulary Selection
Distribution: [ISI]<MSGGROUP>MAILING.LIST:
Received at: 18-AUG-75 18:54:39-PDT 86

I would like to open a discussion about The Selection of Appropriate Command Invocation Vocabulary. That is, what word will most likely be remembered by the user as invoking a specific function? 86a

My understanding of the IA Project's approach to the problem is that they will have a monitor which notices frequent errors and helps the user develop her own vocabulary. Short of having a system which is that flexible (if, in fact, we wish to exclude such a feature from any near-term developments) I believe that this group can be instrumental in helping decide upon the best command words to be used in the mail systems we are/will be using. 86b

For the scope of this note, I would like to assert the importance of more complex command syntax (as per my last note and some earlier communications) and of the PERSPECTIVE of the command vocabulary. A more complex (i.e., "natural") syntax seems to be understood as useful, so I will only discuss the question of perspective. 86c

The tendency is for a system to have user commands which indicate what computer-related action the system should take. For example, a text editor typically has a "read" command, because the system is reading data from a file into its internal work space. I suspect that, though accurate and precise as a formal description of the system's action, "read" is NOT appropriate to the perspective that SHOULD be available to the user. 86d

For something like a text editor, the perspective of an office environment will probably provide a more natural set of command words. For example, what directions does a boss give to a secretary, in order to make the contents of a "file" available for perusal? Unfortunately, two different commands occur to me: 1. If the boss wishes the file to appear on her desk, she tells her secretary to "Get" the file for her; 2. if she merely wishes to prepare her secretary for taking action upon the file, in the boss' behalf, the boss might say "Open" the file. (In fact, "Get" might be used in the latter case, also.) Consequently I will,

for the moment, merely assert that either of these words is a better choice than "Read". In the case of other functions, more alternatives may present themselves and we will be faced with making arbitrary selections, which is why I imagine that the IA Project's approach will win. 86e

For the present, I suggest selecting a particular perspective (a model that the user can hold of what the computer is equivalent to) and then applying it to the selection of command words. 86f

To elaborate upon the problem, without providing any more assistance in finding its solution, I will close with another example of sub-optimal choice of perspective. The example was related to me by Stefferud: In Mailsys, the user can specify "Filters," a capability I find extremely appealing. Stef suggests, however, that people are not used to consciously thinking in terms of "filters" (i.e., of looking through everything in order to extract a subset) but rather focus only upon the characteristics of the subgroup. It might be useful for him to elaborate upon this particular complaint, since it seems to get at the problem of perspective to a more subtle (and insidious) level. 86g

(J33407) 4-SEP-75 09:19;;;; Title: Author(s): Raymond R. Panko/RA3Y;
Distribution: /GCE([INFO-ONLY]) DCE([INFO-ONLY]) RWW([
INFO-ONLY]) JBP([INFO-ONLY]) RLL([INFO-ONLY]) JHB([INFO-ONLY
]) HGL([INFO-ONLY]) RPU([INFO-ONLY]) ; Sub-Collections:
SRI-ARC; Clerk: RA3Y; Origin: < PANKO, MSGGROUP.NLS;2, >,
3-SEP-75 12:59 RA3Y ;;;; ####;

33407 Distribution
Gwen C. Edwards, Douglas C. Engelbart, Richard W. Watson, Jonathan B. Postel, Robert N. Lieberman, James H. Bair, Harvey G. Lehtman, Ronald P. Uhlig,

DCE 4-SEP-75 19:43 33408

Encouraging new-community bids for early AKW dialog trial, cf. SGR (26378,)

Susan: Thanks for your note (26378,), referring to the Callaway-HRRO possibility I had described in (33384,). Good thinking. I'll quietly introduce the possibility to Callaway that he might ask for some early free time to experiment with. 1

This brings up at least two other smilar possibilities: 2

I would think that the CBI Community that O'Sullivan and I began talking about years ago, and that EeTS assumdly was to stimulate and nucleate, might well be aimed in a similar fashion. The CBI group is HRRO sponsored, and has the makings of a great community. JCN should broach this one to his ETS people. 2a

Also, HRRO is apparently (or once was) getting up a community of researchers, implementers and users of Decision Analysis tools. HRRO was going to encourage these people to get on the ANet to share resources. Would have the makings of another AKW-supported collaborative community. 2b

The general idea of scouting for feasible users of some temporarily unused capacity seems very good. Discreetly -- let's keep thinking. 3

DCE 4-SEP-75 19:43 33408

Encouraging new-community bids for early AKW dialog trial, cf. SGR (26378,)

(J33408) 4-SEP-75 19:43;;;; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /SGR([INFO-ONLY]) RH([INFO-ONLY]) RLL([INFO-ONLY]) JCN([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DCE;

33408 Distribution
Susan Gail Roetter, Rita Hysmith, Robert N. Lieberman, James C. Norton,

cost outlook for NLS

Introduction 1

This note projects future cost reductions for computer-based message services -- computer mail, teleconferencing and so forth. The horizon for the projections is 1985. 1a

This work was done for Roger Hough, in SRI's Telecommunications Sciences Center. Roger is studying tradeoffs between communication and travel. I am working on this project about 15 hours per week. 1b

These are my conclusions. Today, a typical system capable of providing computer mail service costs about $20 per connect hour; by 1985, cost per hour will be only $5, perhaps less. The cost of composing, sending and reading a memorandum or business letter is now $1.00; by 1985, this cost will be about a quarter. 1c

Costs Today 2

We based the cost analysis on NLS. For a mature user organization, NLS costs $15 per connect hour, plus communication costs. If a commercial time-sharing network (such as Telenet) were used for communications, $5 would be added per connect hour. Total cost for NLS would then be $20 per connect hour. 2a

Backup: NLS costs $40,000 per year, including training but excluding communications. A mature user will have about 50 connect hours each week, or 2600 per year. Thus cost is $15 per connect hour. 2a1

Backup: Communication figures were based upon a (rough) application of Telenet's rate structure to guestamated NLS use parameters. The estimate is probably high. Display work stations are assumed. 2a2

NLS costs about as much as other commercially-available teleconferencing and computer mail systems. PLANET, a teleconferencing system, seems to cost about $16 per connect hour. General Conferencing System, a teleconferencing and computer mail system, costs $25 per connect hour. 2b

General Conferencing System is used only for communication, so its data provide an insight into the cost of sending a single message. In the one organization where GCS has been used, the cost to compose, send and read a message has been about $1.43. This assumes that each message was sent to only one person. Of course many messages were sent to several people, so the $1.43 figure is probably high. 2c

Backup: GCS's first user is the Nonmedical Drugs Directorate, an agency of the Canadian Federal Government. In six months of GCS service, the NDD has sent 21,000 messages, that is, 3,500 per month. Connect time has been running about 200 hours each month, which implies a cost of $5,000 per month. The cost per message is therefore $1.43. 2c1

The cost of transmitting a message is trivial compared to composing and reading costs. At Telenet's rates, it would cost a penny and a half to transmit a full page of text (250 words). Most messages are much shorter than a page. 2d

Backup: Telenet charges $1.25 for each 1,000 packets transmitted. A packet can contain up to 128 characters. One page of text is 250 words, which is under 2,000 characters. At Telenet's rate, sending 2,000 characters will cost about 1.5 cents if packing is done well. 2d1

Cost Trends 3

We base our analysis of cost trends on a 1974 study by Arthur D. Little for the Air Force. For details, see Datamation (January, 1975, p. 54ff.). Basically, A.D. Little projected cost trends between 1977 and 1985. Because 1977 is a year and a half away, and costs are dropping rapidly, using the Little projections cavalierly as we do here should understate future cost reductions. 3a

The Little report projects a 75 percent drop in minicomputer, mainframe and auxilliary storage costs between 1977 and 1985. This implies that processing costs for a system like NLS will fall to under $4 per connect hour. (Incidentally, Archival storage costs are expected to drop to two percent of current levels, and retrieval speeds should increase by a factor of ten.) 3b

The Little Report also projects a 50 percent cost reduction in transmission tariffs. This alone would cut communication costs to about $2.50 per connect hour. In addition, because most work will be done in minicomputers near the user, future NLS-like systems (including NLS) will have much less need for communication with a remote back-end computer. As a guess, communication costs will be under $1 per connect hour. 3c

The cost of using a system like NLS, then, should fall from its current $20 per connect hour to about $5. For a better estimation, I should go back and estimate how much Little assumed costs would drop between 1974 and 1977; this would almost certainly lower cost per hour. Also, I should reexamine cost savings already possible in NLS just from going to the Front-End/Back-End split. 3d

cost outlook for NLS

Because transmission is extremely inexpensive, the cost to send a message of about 100 words (near the GCS average) should be 36 cents. In fact, because GCS is now more expensive than comparable systems, cost per message should be more like 30 cents in 1985. 3e

cost outlook for NLS

(J33410) 4-SEP-75 08:35;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /RA3Y([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RA3Y; Origin: < PANKO, COST-OUTLOOK.NLS;3, >, 22-JUL-75 19:59 RA3Y ;;;;####;

33410 Distribution
Raymond R. Panko,

DVN 5-SEP-75 09:41 33411

Collecting DPCS Feedback from Feedback

One thing I am doing for DPCS is collecting suggestions for development of devices to aide document input, control, editing in the sense of editing involved in document production, and publication. Do you think it reasonable that copies of suggestions to Feedback on these subjects go to me or be avaialbe in a group some how? How much work would the sorting be? 1

DVN 5-SEP-75 09:41 33411

Collecting DPCS Feedback from Feedback

(J33411) 5-SEP-75 09:41;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JHB([ACTION]) FEEDBACK([INFO-ONLY]) ; Sub-Collections: DPCS DOCPLAN SRI-ARC FEEDBACK; Clerk: DVN;

33411 Distribution
James H. Bair, Special Jnb Feedback,

PWO 5-SEP-75 09:46 33412

DDPCS Thinkpiece Draft - again revised

Here is a new draft version, with inputs from DVN, JCN, and Jack Bialik. More?

DDPCS Thinkpiece Draft - again revised

INTRODUCTION 1

The field of machine-aided document production is experiencing a period of chaotic growth. New hardware and systems ranging from typewriters with limited magnetic card memory to highly sophisticated systems such as SRI's Augmented Knowledge Workshop are flooding the marketplace with minimal semblance of order, standardization of equipment, anticipation of system evolution, or problem orientation. Users report startling successes and failures, but more frequently report uncertain outcomes in a field where the real costs of the old procedures are difficult to quantify and where organizational lines frequently inhibit change. Decision makers must anticipate cost and user adaptation to and acceptance of an unfamiliar medium thrust on an untested environment with little assurance of realizable benefits. 1a

At the same time the conventional methods of publication are being threatened sharply on several fronts. Paper costs are becoming prohibitive, labor costs are rising, production schedules are becoming tighter, and the conventional storage of an increasing volume of material is becoming physically and ecomonically unmanageable. 1b

We believe that the increasing cost of conventional processing and the promise of economy and efficiency of computerized document production has brought many organizations to alternative approaches to current equipment and procedures despite the seemingly equivocal results. The competitive edge becomes a looming threat to the continued existence of many traditional publishing operations as spiralling costs march on unabated. We believe growing technological pressures are accelerating the gradual transition to computer-aided document production systems. These pressures include: 1c

* the rapid expansion of automated information storage and retrieval systems and abstracting services, 1c1

* the growing number of client requests for material to be submitted in machine readable form, 1c2

* the use of microfilm for document storage, 1c3

* the rapid transmission of documents and other textual material over large distances, and 1c4

* the phenomenal appearance of a plethora of computer aids and services in both the highly specialized areas as well as the general purpose text processing field. 1c5

Since there are a large number of computer service bureaus, software editing packages and specialized automated tools designed for or adapted to the document publication industry and offering text processing facilities, the selection of equipment or services to fit the needs of the organization becomes a herculean task requiring extensive research on the part of the technical publisher, and education to facilitate interpreting the jargon. Coupling this with the predictable lack of objectivity on the part of potential vendors makes choosing wisely very difficult. 1d

Other potential barriers, often technical, likewise contribute to these problems. The equipment specifications are expressed in jargon readily comprehensible only to computer systems experts. The economies of scale cannot readily be predicted at such an early stage. Potential incompatibilities between the equipment capabilities and the company needs can be elusive. Even just researching equipment with better or more suitable gear to accomplish the requirements can be laborious and confusing. 1e

Perhaps at the heart of much of this discussion is the implicit often dramatic change in procedures that attends incorporating new tools in the document preparation operation. Unless these are foreseen and prepared for, use of the tools will likely be abortive and result in extended deadlines rather than improved efficiency. 1f

BACKGROUND 2

SRI has actively participated in the evolution of document production automation and has also kept abreast of the developments both big and small in the industry growth. We have analyzed and rationalized client procedures to assist adjusting to the incorporation of new tools. 2a

To focus more directly on these tasks, SRI has assembled a talented core of research staff with a long history of involvment in and dedication to the growth and adaptation of computer-aided text-processing systems to client needs. This team consists of systems analysts with expertise in a number of computer specialties, high technology computer system engineers with extensive system development experience in the text-processing field, and technical editors and staff from the SRI technical publications services who lend production-oriented publications experience and insight to the effort as required. 2b

This combination of skills from complementary text-processing oriented disciplines with a long history of involvement in computer-aided text-processing and having as a primary goal the design and development of production-oriented automated

text-processing systems offers a uniquely qualified team for effectively coping with document production problems. 2c

OBJECTIVES 3

We are initially offering selected services to potential clients with the following primary objectives: 3a

* To assist the client in defining and pragmatically achieving a viable, economical, and customized approach to his document production tasks, often requiring one or more of the approaches described herein. 3a1

* To identify alternative means of achieving a cost-effective rationalized system. 3a2

* To report on the alternative path options, following which the client participates in the selection of an acceptable approach. 3a3

* To develop a plan for incorporating automated aids in the technical publication system. This plan will be designed to have continuity in time and bridge the primary immediate requirements with the diverse long range needs of the client organization. 3a4

* To specify, design, and implement a production-oriented automated text-processing system tailored to the specific requirements of the client organization and, where appropriate, apply current technology tools in a total system approach to the application at hand. 3a5

METHOD OF APPROACH 4

Our past and continuing dedication to the application of automated tools to the technical publication industry gives the SRI team a rare melding of both the maturity and wisdom derived from experience and a tempered perspective on the problems and their solutions. We are offering this expertise in a phased set of services typically consisting of the following steps: 4a

Preliminary Phase - Problem Definition and Scope 4a1

* Determine the nature of the client's documentation production activities and assess the feasibility of applying automated techniques. 4a1a

* Estimate the cost and scope of the first in-depth analysis phase. 4a1b

First Phase - Analysis 4a2

* Investigate and record the internal procedures in the document processing flow of the organization. 4a2a

* Identify the anticipated direction and growth of the client organization in publishing and word processing areas. 4a2b

* Invoke techniques that we have developed to establish a basis for quantifying the costs associated with their publishing operations. 4a2c

* Analyze the detailed document characteristics for format, class of material, rigidity of layout, type of character sets, complexity of capture, publication schedules, etc. 4a2d

* Identify functions characterized by inefficiences, operations that would benefit by procedural improvements or steps obviously amenable to automated techniques. 4a2e

* Given the publishing problems, determine in the abstract one or more desireable courses for achieving these requirements and goals. 4a2f

* Identify available or achievable systems support for these approaches from the complement of current equipment, services, and software. 4a2g

* Recommend and, if so desired, design or guide the implementation of a system suited to the client needs. 4a2h

* Introduce the concept of the Document Development Community to the client and offer the option to subscribe to the service. 4a2i

Subsequent Phase - Detailed Design, Implementation, Further consulting, ... 4a3

* As requested or indicated. 4a3a

Some clients interested in maintaining touch with state-of-the-art development in this area may then choose to join the Documentation Development Community. 4b

WORK STATEMENT 5

Preliminary Phase 5a

Survey the client's text-processing operations and review their

requirements to gain perspective on their needs and goals and to assess the approach and scope. This requires access to and assistance from the client organization's staff. (Usually one to two manweeks) 5a1

Prepare and submit a proposal for first phase tasks. 5a2

First Phase 5b

Identify the support needed or sought and the environment and scope of the desired system or upgraded requirements. 5b1

Analyze the technical publication operation to chart the system flow and the interaction of complementary facilities and understand the philosophy behind the current structure of the operation. 5b2

Quantify the relevant statistics, such as the number of rewrite cycles, the delay times, document revisions, extent of editorial corrections, percentage of boilerplate material, format continuity within documents and degree of reuse of documents. 5b3

Establish a phased development plan, and document it in the form of a final report. 5b4

Subsequent Phases - As Required 5c

QUALIFICATIONS OF SRI 6

Overview 6a

SRI has been active in systems analysis, design and development of computer-aided systems for word processing and publication since 1962. This work encompasses federal government, local government, military and commercial clients, in addition to in-house applications. 6a1

* We have performed system analysis of machine-aided publication, considering in detail and choosing the most economical or efficient combination of procedures, hardware, and software, for a number of customers substantially committed to computer-based document production . 6a1a

* We have developed in-house a computer-based prototype tool which could be adapted to form the core of a full scale document production system. This system, the Machine Aided Editing (MAE) system, is a mini-computer-based interactive

documentation production system that has been operational in a limited production environment for over 3 years. 6a1b

* Over a period of 12 years, we have developed NLS, a sophisticated on-line timesharing system widely accessed through computer networks. It is a highly interactive system which aides a wide variety of knowledge tasks, such as managment informaton flow and software system development. A community of users for whom document production via this system is now a principal activity has been steadily growing. 6a1c

* As one aspect of our growing concern with this area, we have formed a community of NLS subscription members whose primary activity is document production. 6a1d

Project Experience 6b

Work on text processing and documentation systems has ranged from simple, dedicated stand-alone systems to complex multi-terminal editorial production systems operating over a distributed computer network. These efforts have encompassed analyzing and rationalizing the steps involved with many facets of the process, including text capture; text processing, editing, and formatting; and document output. 6b1

One notable project that has particular relevance here is the design of a complete editorial production system for the new edition of the Encyclopaedia Britannica. SRI documented the entire editorial process for the Encyclopaedia Britannica, prepared a preliminary system design for a machine-aided editorial system and compared the economics of the proposed system to those of the manual system. SRI delivered a final system design that included software, detailed hardware and software specifications, personnel requirements, schedules, and milestones. SRI also assisted with the initial system implementation phase. 6b2

Other activities have included providing consulting services to clients desiring suitable computer system or service bureau support and to makemore effective use of text-handling systems through: 6b3

* hardware acquisition 6b3a

* procedural analysis 6b3b

* software tool development 6b3c

* more effective use of the system software 6b3d

* the comparative merits and selection of available service bureau support 6b3e

Machine Aided Editing (MAE) System 6c

MAE is a minicomputer-based (PDP 11/20) text editing system developed in the Information Science Group (ISG). Its primary function is to provide an environment for the development of production-oriented text handling techniques and to demonstrate the application of these techniques to potential clients. A growing portion of MAE activity has been devoted to report preparation by SRI staff. For example, most reports generated by the Information Systems Group are processed through MAE, and groups such as Chemical Information Services are working with ISG personnel to use MAE for some of their production text handling requirements. 6c1

The offline text capture activity is designed to enable secretarial personnel to enter text efficiently with minimal training and without transitional difficulties. The tutorial approach used in the online portion of MAE allows the novice user to accomplish his editorial goals with relative ease. Editing takes place on a screen displaying a full page of text formatted as it will appear when printed. MAE can direct text to a variety of hard copy output devices. 6c2

NLS 6d

The Online System (NLS) is a wide ranging computer system developed at SRI to aid a variety of tasks dealing with textual and graphic information. Among other functions, NLS provides the basis for flexibly creating, modifying, disseminating, and controlling documentation. NLS has particular advantages in easy modification of master copies, large-scale modification and reorganization of documents either as initial drafts or later for revision after publication, facile detailed editing, flexibility of printed output, including line drawings, and facile creation of special purpose subsystems. NLS is used as a medium to make printed or microfilm versions of files that are primarily intended for reading online and to publish material that would not otherwise be online. 6d1

Documentation Development Community 6e

SRI is also creating a community of organizations interested in sharing long-range development of computer-based document production. The community pools information, developments in

procedures and software, and has access to the Augmented Knowledge Workshop which is a community of NLS users. The NLS system serves as a common medium for document production, for development of prototype software and procedures, and for information exchange among participants. The products of all development work within the community are shared freely by all, as well as technology breakthroughs as they occur in the field at large, but members may also arrange separate, specialized research and development activities with SRI staff outside the community. 6e1

DDPCS Thinkpiece Draft - again revised

(J33412) 5-SEP-75 09:46;;;; Title: Author(s): Pat Whiting O'Keefe/PWO; Distribution: /DOCPLAN([INFO-ONLY]) ; Sub-Collections: NIC DOCPLAN; Clerk: PWO; Origin: < O'KEEFE, DRAFTB,NLS;6, >, 5-SEP-75 09:08 PWO ;;;;####;

33412 Distribution

Raymond R. Panko, James H. Bair, David R. Brown, Glenn A. Sherwood, N. Dean Meyer, Kathey L. Mabrey, Norman R. Nielsen, Thomas L. Humphrey, Robert Louis Belleville, Elizabeth K. Michael, Richard W. Watson, James C. Norton, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys,

DLS 5-SEP-75 13:53 33413

MY Understanding of terminal Procurements

This is a list of the terminals that I have started procurement paperwork on here at RADC. I talked with Jim Norton last week, and he said that shipments could begin anytime on lineprocessors. I'd like to talk with you Monday at your convenience, to determine how we go about this. Its probably best if you cal me at 315-330-3857. Thanks,

Stoney

MY Understanding of terminal Procurements

TERMINAL MATRIX 1

USER	DNLS LP	GNLS LP	DATA MEDIA	TEKT 4014	TEKT 4063	TI-735	GE-300	2400B MODEM
RADC	5	1	6	1	1			
NAVY(NCSSA)	1		1				1	1
IBM	1		1			1		1
DMA	1		1			1		2
NAVY(NSWC)						4		
NSA	2							
DSC	1							
TOTALS	11	1	9	1	1	6	1	4

DLS 5-SEP-75 13:53 33413

MY Understanding of terminal Procurements

(J33413) 5-SEP-75 13:53;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /BJP([ACTION]) JLM([INFO-ONLY]) ELF([INFO-ONLY]
) ; Sub-Collections: RADC; Clerk: DLS;

33413 Distribution
Buddie J. Pine, John L. McNamara, Edward F. LaForge,

Screen Bugs and Ruined Demo

Today I tried giving a DNLS demo to Anders Scoe of the Trans-Canada Telephone Service. I was trying to impress him with the fact that NLS has gone beyond the laboratory stage. As you know, however, about 75% of all screen refreshes leave garbage on the screen. At the end of the demo, Anders just shook his head and pointed to the garbagy screen. He said "That's proof that your system is primative." What could I say? How can we continue to give demos when the sessions look so bad? 1

Screen Bugs and Ruined Demo

(J33414) 5-SEP-75 14:11;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /FEEDBACK([ACTION]) DCE([ACTION]) JCN([ACTION]) BJP([ACTION]) ; Sub-Collections: SRI-ARC FEEDBACK; Clerk: RA3Y;

33414 Distribution
Special Jhb Feedback, Douglas C. Engelbart, James C. Norton, Buddie J. Pine,

RA3Y 5-SEP-75 14:29 33415

RE: 33393, Recognition Bug

What is "expert" recognition. "Expert" is not in the help data base, nor canyou give it as a recognition mode in useroptions. 1

RE: 33393, Recognition Bug

(J33415) 5-SEP-75 14:29;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /FEED([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: RA3Y;

33415 Distribution
Special Jhb Feedback,

RA3Y 5-SEP-75 16:52 33416

Dave Hopper's Reply to Going Directly to NLS after Logging In

I suggested that for naive users, the user would automatically be taken to NLS immediately after logging in. This is Dave's reply.

Dave Hopper's Reply to Going Directly to NLS after Logging In

19-AUG-75 1326-EDT HOPPER at BBN-TENEXB: ENTERING NLS DIRECTLY INSTEAD OF THE TENEX EXEC
Distribution: PANKO AT OFFICE-1
Received at: 19-AUG-75 10:24:37-PDT 1

BY ADDING TO NLS LOGIN A LOGIN COMMAND AND APPROPRIATE DEVICE SETTING COMMANDS ON ENTRY , IT SHOULD BE POSSIBLE TO CHANGE TENEX TO STAR UP
A JOB IN NLS INSTEAD OF THE TENEX EXEC.
ALTHOUGH IT MIGHT BE A FAIR AMOUNT OF WORK TO DO THIS, I THINK THE OVERRIDING ARGUMENT AGAINST IT IS THAT IT WOULD BE A NON-STANDARD
CHANGE AVAILABLE ONLY AT OFFICE-1. IT IS OUT OF THE QUESTION FOR BBNB
AND ISIC. THE NUMBER OF TENEX INSTALLATIONS WE HAVE TO DEAL WITH SEEMS TO BE INCREASING AND WE HAVE ALREADY FOUND OURSELVES TRAINING
NAIVE USERS WHO ARE USING BOTH OFFICE-1 AND ISIC. 1a

Dave Hopper's Reply to Going Directly to NLS after Logging In

(J33416) 5-SEP-75 16:52;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /RLL([INFO-ONLY]) JHB([INFO-ONLY]) US([INFO-ONLY]) FEED([INFO-ONLY]) ; Sub-Collections: SRI-ARC US; Clerk: RA3Y;

33416 Distribution
Robert N. Lieberman, James H. Bair, Susan Gail Roetter, Priscilla A. Wold, Jeanne M. Beck, Pamela K. Allen, Rita Hysmith, Sandy L. Johnson, Special Jhb Feedback,