KIRK 12-DEC-74 22:28 24748

Proposed change in command syntax conventions

I think we should add a command syntax description convention in help for when you cant tell from the commandwords what the selection type is. In those cases, the proper syntax should be "ENTITY-SELECTION" e.g.: NUMBER-DESTINATION, IDENT-CONTENT, LINK-CONTENT. 1

KIRK 12-DEC-74 22:28 24748

Proposed change in command syntax conventions

(J24748) 12-DEC-74 22:28;;;; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /DIRT([ACTION]) DIRT([INFO-ONLY]) ;
Sub-Collections: SRI-ARC DIRT; Clerk: KIRK;

DVN 13-DEC-74 09:10 24749

Fo Specifying Types of Selections in Help Syntax

I would particularlly like to hear coments on this from people in the field like JHB RLL SRL DLS EJK.

DVN 13-DEC-74 09:10 24749

Fo Specifying Types of Selections in Help Syntax

I like the suggestion in 24748, I don't think the way Kirk suggests writing out the SELECTIONS is quite right...it implies that the two parts are paralell when in fact they are a class and subclass, I would like something like DESTINATION[NUMBER]. 1

DVN 13-DEC-74 09:10 24749

Fo Specifying Types of Selections in Help Syntax

(J24749) 13-DEC-74 09:10;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /DIRT([ACTION]) JOAN([ACTION] this and 24748 to the dirt notebook please) ; Sub-Collections: SRI-ARC DIRT; Clerk: DVN;

half-duplex, line at a time terminals continued

There appear to be two basic approaches in dealing with half-duplex, line at a time terminals: 1

In one method, the default keyboard state is locked, and the keyboard is only unlocked when a program asks for input from the user. This is a basically you talk, I talk, approach and forces a synchoneous approach. It elimates a type-ahead type of interaction, and can conceivably be frustrating to use. It would also seem to prohibit asynchronous input from a user. 1a

In the other approach, the default keyboard state is unlocked. Using this approach the user can type ahead and enter asynchonous input. However, the keyboard can and will be locked whenever the program does output to the terminal. This can occur in the middle of user input. If this happens, in the worst case the user loses all that he has typed since his last transmission; in the best case nothing is lost, but the terminal typescript may not look nice; in between these extremes, the user may or may not lose the last character, i.e. the character he was typing at the time the line was turned around. 1b

Multics uses the latter approach, and I beleive the NSW should also use the latter approach, i.e. the default will be to leave the keyboard unlocked. I would appreciate any comments with regards to this issue. 2

half-duplex, line at a time terminals continued

(J24750) 13-DEC-74 11:05;;;; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Distribution: /NPG([INFO-ONLY]) RWW([INFO-ONLY]) ; Sub-Collections: SRI-ARC NPG; Clerk: KEV; Origin: < VICTOR, HALF-DUPLEX-TERMINALS.NLS;1, >, 13-DEC-74 11:02 KEV ;;;;####;

JCN 3-JAN-75 15:38 24751

Some ARC Documentation

Augmentation Research Center
Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

Dr. John S. Perry
USC-GARP
National Academy of Sciences
JH 426 C
2101 Constitution Avenue
Washington D.C. 20418

Dear John:

It is good to hear from you again, friend, this person having spent considerable time since June slogging through the masses of relatively humourless beings we live between. Global is spelled: glow-bell, I think. A bit of free augmentation. 1

Here's the stuff you want--two copies--one for Dick Belknap. 2

Also included is a copy of the little proposal we just sent off in a rush to NSF. Still fighting the printer, but the sentiment is there. 3

Sincerely,

Jim Norton
Augmentation Research Center

Some ARC Documentation

(J24751) 3-JAN-75 15:38;;;; Title: Author(s): James C. Norton/JCN;
Sub-Collections: SRI-ARC; Clerk: JCN; Origin: < NORTON,
PERRY,NLS;1, >, 17-DEC-74 09:39 JCN ;;;;
####;

RWW 13-DEC-74 16:40 24752

Off the Top of My Head Thoughts on NSW Message System and Relationship to COICO

copy of message sent to carlson kahn, warshall,millstein

RWW 13-DEC-74 16:40 24752

Off the Top of My Head Thoughts on NSW Message System and Relationship to COTCO

Message services inside the NSW should support communication between people inside NSW with others inside and outside in a easy uniform way. 1

Within the NSW, people should have an identification that is used for sending them mail (ident). People outside should address them as ident@nsw. There should be no concept of a mail receiving host for NSW people. 2

The NLS Journal will be available in NSW. SNDMSG and its associated programs MAILSYS MAILSTAT etc should also be supported inside NSW. 3

I understand the motivation to build a simple message capability at the Works Manager level, quick entry, use of NSW project names as group idents etc. 4

There are many subtleties associated with the mail business when dealing with the outside NSW world,when thinking about the various categories of dialog support features one would like and I think MCA should only provide a primitive that SNDMSG or NLS or other mail tool could get to that would take an NSW Group Ident and expand it according to the project model and insert that expansion into its address list. If there are other useful functions that could be provided based on Works Manager data bases, primitives to access these should be provided for mail tools. The Works Manager will contain many datafiles of great value to future management and other tools and mail is a good place to start making these available. I think it would be a mistake for the Works Manager to get in the message game unless it is built on top of SNDMSG so that communication inside and outside is uniform. At the very least message services should be viewed as tools and not part of the works manager. It should be fast and easy to get into them. 5

Quick hacks tend to develop a life of their own and if we are going to have a new message service even if simple NSW management should be aware of what pressures are likely to come along to grow it further. It would be much better to understand deficiencies in the Journal and SNDMSG and either grow them or see that the basic functions to be provided by the COTCO system contain solutions rather than getting into duplication of effort in this area. 6

The COTCO message system that ISI is building has what seems to be a very elastic delivery date that was originally Jan 75, then July 75 and now is projected at July 76 for an initial version. I understand why there is this slippage as ISI gets deeper into the issues and sees the levels of complexity involved, as I never believed the earlier dates. NSW must have something in the meantime even if one believes the most recent estimate. 7

Off the Top of My Head Thoughts on NSW Message System and Relationship to COTCO

However when the planned COTCO system does come along it should be viewed as another tool an be inserted into NSW cleanly as such. It can be inserted as delivered in transparent mode or as I believe more likely a subset of its functions can have an NSW user interface put on them easily (a man month type task) as its functions will be accessible in a PCP environment. A possible strategy that might get a COTCO system delivered earlier would be to concentrate on the message functions and architecture and use the NSW Frontend for an initial user interface and then go on from there to experiment with adaptive features. In any case it should be built so that its adaptive stuff is not central to being able to get at its functions, as I believe it will be some time before adaptive things are well enough understood so as notto be more of a pain than an asset (useful research but should not be in the critical path of the project), not to mention having adequateCPU cycles available to do fancy adaptive computing. 8

Mail files whether for SNDMSG or Journal should be normal NSW type files. 9

We will look at the issues in getting the works manager to expand a NSW group ident for the Journal. BBN and MCA should talk about what would be required to either build a NSW mail system on top of SNDMSG or haveSNDMSG use NSW idents and group idents. 10

RWW 13-DEC-74 16:40 24752

Off the Top of My Head Thoughts on NSW Message System and Relationship to COTCO

(J24752) 13-DEC-74 16:40;;;; Title: Author(s): Richard W. Watson/RWW; Distribution: /DCE([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RWW;

DVN 13-DEC-74 17:25 24753

Where is Review Copy of Final Report on Training?

Jim Norton says he reviewed the final report section on training (documentation, Final, 7d) a long time ago, gave a marked up copy to you, We are making a serious effort to get the final report out this year, Can you tell me where the marked up draft is or something? Any suggestions? Help! 1

DVN 13-DEC-74 17:25 24753

Where is Review Copy of Final Report on Training?

(J24753) 13-DEC-74 17:25;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JHB([ACTION]) JOAN([ACTION] dpcs notebook please) JCN([INFO-ONLY]) HGL([INFO-ONLY]) ; Sub-Collections: DPCS SRI-ARC; Clerk: DVN;

DVN 13-DEC-74 17:42 24754

Informal Weekly Documentation Report

KIRK: added the keyset card to help (named mouse-keyset, or menu 1 under keyset) and converted the description of the Format subsystem NDM wrote into proper format, terminology, and conventions; added several general terms and modifications...reviewed POOH's work. 1

DVN: 2

COM:Viewspec Cards, the paper by Larry Day of Bell Canada, and Ken's paper on CML came back from DDSI. Viewspc Cards are OK and I ordered Camera Ready Copy. The other two papers need some minor format changes. 2a

I have brought the Lineprocessor User's Guide almost to a state ready to print. Should get it out next week with recent changes in TIP login, error messages. No progress on TNLS Addressing, printing the Command Summary, or the Introduction to NLS to go infront of the glossary. Interviewd with Kirk and Ann a documentation applicant. The Preafce to NLS a, three-page document intended to bring the user to the point she can begin to use Help, remains with Applications. 2b

pooh: proofed and edited martin's document: Workstation Equipment Reference Manual and it is ready to go to print the first of next week, continued working in help wich is a slow but steady process. 3

JMB On Vacation 4

DVN 13-DEC-74 17:42 24754

Informal Weekly Documentation Report

(J24754) 13-DEC-74 17:42;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JOAN([ACTION] dirt notebok please) DIRT([INFO-ONLY]) ; Sub-Collections: SRI-ARC DIRT; Clerk: DVN;

DCE 13-DEC-74 19:43 24755

Kudlick's Jul 74 notes re, NIC Experience with Dialogue Support

Extracted from MDK's Draft Section for ARC's 1974 Final Report --
Plex(DOCUMENTATION, FINAL, 02171), Journalized by DCE.

DCE 13-DEC-74 19:43 24755

Kudlick's Jul 74 notes re, NIC Experience with Dialogue Support

1) Purpose and Scope 1

The most outstanding accomplishment of the NIC was in the area of dialogue support. 1a

The purpose of the NIC's dialogue support system was to make it easy for the Network's developers and other persons and groups engaged in network-related R&D activities to communicate technical material to one another. The technical material included brief memos, drafts of design documents, final reports and specifications, and any similar documents. 1b

The NIC's system for input and distribution was based partly on computer and network technology, and partly on traditional hardcopy and manual mailing systems. 1c

The main aspects of this system were: 1d

- the NLS Ident File and Journal System, and FTP-Journal;
- permanent storage and indexing of individual pieces of mail;
- group and individual dialogue support, including hardcopy distribution of documents and indexes to these documents. 1d1

The least well-developed aspects of the system were: 1e

- providing sufficient access to the NIC's on-line services;
- making the on-line services easy to use yet comprehensive in the context of the overall services;
- coordinating the indexes of off-line documents with those of on-line documents. 1e1

2) How the Dialogue System Worked 2

General Procedures 2a

Most authors used their own facilities, whether on- or off-line, for preparing their documents, and sent them to the NIC via U.S. mail. The Station Agent at the NIC duplicated the required number of copies, and mailed one copy to each member of the group that the author was addressing. 2a1

Some authors prepared their documents in computer-readable form, at Hosts of their choosing. When authors chose to use SRI-ARC's NLS system for this, their documents were submitted to the NIC directly through the Journal. The Journal produced

a hardcopy printout which was used in the duplicating and distributing processes. 2a2

In mid-1973, an additional mechanism for submitting and retrieving mail on-line was inaugurated. It allowed documents to be submitted directly to the Journal from another Host system via the Network's File Transfer Protocol (FTP). [In this report, we refer to this mechanism as "FTP-Journal" for brevity.] The overriding importance of FTP-Journal was that it removed the requirement that on-line usage of the Journal had to be channeled through NLS. This is discussed separately below. 2a3

All documents submitted as part of the dialogue were permanently stored at the NIC. Documents submitted on-line were stored both on-line and in hardcopy. Documents submitted in hardcopy were stored in hardcopy only. Indexes to these two separate classes of documents were separately prepared and maintained, and made available through separate mechanisms. 2a4

Ident File 2b

The Ident File contains the names, NIC idents, addresses, phone numbers and other information about all authorized Network users. An individual only need make his data known to the NIC. The NIC maintained the file. (Originally, an individual was allowed to use the NLS "Ident System" to create or modify his own entry. This service was discontinued in early 1974, however, as it was found to have caused more data errors, format errors, and mail distribution errors than the NIC's staff had time to correct.) 2b1

Idents are assigned automatically and unambiguously by the Ident System. An ident is usually a person's initials. To resolve conflicts when initials are shared by more than one person, a sequence number is appended to an individual's initials by the Ident System, making the ident unique for each individual. 2b2

The usefulness of idents is in specifying the distribution list for a document. An author need only specify a list of idents; the Ident System does the necessary translation from ident to name and address. 2b3

The Journal uses the Ident File to determine how and where to distribute documents addressed to individuals. Distribution can take any or all of three forms: hardcopy U.S. mail delivery, on-line delivery to NLS users, and (when FTP-Journal was implemented; see below) on-line delivery to users at any

Network Host implementing the appropriate FTP process. Each individual can specify, as part of his Ident File data, which form(s) of delivery he desires. 2b4

In addition, group and organization idents, and group and organization memberships, are maintained in the Ident File. This facilitates group dialogue (discussed below). A correspondent can address his document to a group or organization ident, and the Journal determines to whom and where to distribute the document, by using the Ident File mechanisms. 2b5

The principal problems in using the Ident File, from the NIC's standpoint, concern data maintenance. These problems stem from the lack of data management facilities in NLS. 2b6

The Ident File and its maintenance procedures are designed and implemented as an integral part of NLS and apply primarily to the processing needs of the Journal. The consequence is that, as new needs arise, incorporating new data elements and maintenance procedures in the Ident File is not practicable under the present design. Since both the ARPANET Directory and the Resource Notebook rely in part on the Ident File data, and in part on other data, integrating these two sets of data into one set of file maintenance procedures for the preparation of these two documents has never been accomplished. Thus, the NIC maintains separate, duplicate sets of data about Host names and addresses, and key personnel at Hosts. 2b6a

The Journal and Its Indexes 2c

The Journal allows documents to be "mailed" through the Network to any combination of valid users the author(s) specify. (A valid user is an individual, group, or organization for which an Ident File entry exists.) 2c1

The essential aspect of the Journal is that each mailed document is assigned a unique accession number (commonly called the Journal or NIC number) and permanently stored in a read-only file. 2c2

Permanent storage allows each mailed document to be retrieved any number of times, provided only that a user knows the correct number of the document he's seeking. 2c3

Permanently stored with each Journal document are several pieces of information: 2c4

- its Journal number; 2c4a

- its title, author(s), date of issuance, and distribution list; 2c4b

- any keywords assigned by the author; 2c4c

- subcollections assigned in the manner described below; 2c4d

- formatting directives, some of which the user specifies, and some of which the system inserts for uniformity of hardcopy appearance. 2c4e

Retrieval of a document is possible only by use of its Journal number, the component of the "pathname" that uniquely identifies the document. 2c5

To make it possible for a user to determine the Journal number of a document of interest, a program periodically searched the Journal's directories and produced three indexes: an author index, a title-word index, and a number index. Each index contained the author(s), title, number, and date of issuance of all documents submitted on-line to the Journal. 2c6

In order to distinguish Journal documents that were pertinent primarily to SRI-ARC from those pertinent primarily to Network users, two nearly non-overlapping sets of these three indexes were produced: one set was comprised of all documents bearing SRI-ARC as a subcollection, the other all documents bearing NIC as a subcollection. (Subcollections are described below.) These NIC and ARC indexes were stored on-line and were accessible through NLS. 2c7

The indexes, however, only referred to documents submitted through the Journal on-line. This was a serious drawback to the indexing procedures. Any document submitted off-line (i.e., through the U.S. mails) was usually NOT recorded in the Journal; it was separately (manually) indexed, as discussed further below. 2c8

Several other drawbacks to the Journal system were recognized but never corrected: 2c9

- No subsequent changes or comments could be made to the document's contents, distribution list, format, etc. 2c9a

- Documents could be redistributed, but the original distribution list was not modified, and no record of the additional distribution list was kept in accessible form. 2c9b

- The system made it necessary to submit comments or corrections for any given document as separate documents, but provided no cross indexing of these comments or corrections. 2c9c

Subcollections 2d

Each Journal document submitted on-line is permanently assigned to one or more "subcollections". (Each subcollection is the identity (NIC "Ident") of a group of users. Each group ident has its own subcollection.) 2d1

The subcollection mechanism has significant potential for enhancing selective dissemination of documents, but is not implemented well and never attained its potential. 2d1a

For example, it is not invokable for documents submitted to the NIC via U.S. Mail; and additional subcollection assignments could not be made for a given document after it was submitted on-line to the Journal. 2d1b

The decision as to what subcollection(s) should be assigned to a given document is determined by the following two-step algorithm: 2d2

(a) When submitting a document on-line through NLS, the author determines the subcollections for his document in either of two ways: by tacitly choosing the Journal's default procedure, or by explicitly designating some group idents to be the subcollections. 2d2a

(b) When the Journal itself distributes the document to the list of addressees, it appends additional subcollections depending both on what the author has done, and on the distribution list itself. 2d2b

(a) author-selected subcollections 2d3

Default Procedure: 2d3a

The default procedure depends on whether the author has previously declared (in the Ident File) that he wishes ALL his documents to be placed in subcollections x, y, z, ... If so, those are used. If not, then the subcollection becomes one of the following: if the "author" is not an individual but is instead a group, then that group is used as the subcollection; or if the author is a member of SRI-ARC, then SRI-ARC is the

subcollection; or if the author is NOT a member of SRI-ARC, then the subcollection is simply "NIC". 2d3a1

Explicit Procedure: 2d3b

There is a "subcollection" command in the Journal's command repertoire. This allows the author to override the defaults by designating specific groups as subcollections. 2d3b1

(b) selection during Journal-delivery 2d4

The Journal delivery proceedure adds to the subcollection list any group ident that is in the addressee list (provided it isn't already in the subcollection list). 2d4a

In addition, for RFC's (defined below), the delivery process ensures that the two subcollections "NWG" (NetWork Working Group) and "NIC" are present in the list. 2d4b

In these ways, subcollection assignments are automatically appended to and become a permanent part of an on-line document. 2d5

The indexing programs of the NIC used each document's subcollection list to determine the groups for which the document should be indexed. [The particular implementation of these programs, however, only produced documents for the NIC and SRI-ARC subcollections, as mentioned above.] Unfortunately, two major drawbacks to the subcollection mechanism prevented these programs (and the resulting indexes) from being used to their fullest potential: 2d6

(1) One can not ADD a subcollection to an existing Journal item. This precludes an item's appearance in subcollection indexes that are not specified by the author at the time of submission or by the Journal's delivery procedures. In particular, on many items of correspondence between SRI-ARC and Network persons, the documents originated by the latter would wind up in the "NIC" subcollection, while those originated by the former would wind up in the SRI-ARC subcollection, and the separate indexes generated for these two subcollections would each be incomplete as far as that dialogue was concerned. 2d6a

(2) Off-line documents and on-line documents can not be tied together through the subcollection mechanism: as mentioned earlier, they are indexed by entirely separate procedures. 2d6b

Consequently, neither the manually-created indexes for off-line

documents, nor the automatically-created indexes for on-line documents, were complete on a given subject or for a given author. 2d7

NIC (or Journal) Numbers 2e

Every document distributed by the NIC was identified by a unique number. This "NIC number" had no inherent meaning; it was simply a sequentially assigned accession number designed to facilitate subsequent reference and retrieval of the document. 2e1

NIC numbers were assigned in one of three ways, all involving the master "Number System" that operates within NLS: 2e2

- the Journal system uses the master Number System to automatically assign a NIC number to each piece of mail (document) submitted on-line; 2e2a

- an author can manually assign a NIC number to his document before submitting it off-line to the NIC, either using numbers that were pre-assigned "en bloc" to each site's Station Agent, or by obtaining a number from the NIC Station Agent by phone or other means; 2e2b

- the NIC Station Agent could manually assign a number to un-numbered documents that were submitted off-line. 2e2c

The "pre-assigned" numbers, of course, do not conflict with the numbers assigned on-line. Each Station Agent's pre-assigned numbers differed from all other Station Agent's numbers. And each block of pre-assigned numbers causes a "hole" to be left in the set of numbers available on-line from the master Number System. 2e3

The main problems arising from this number system scheme cause varying degrees of difficulty: 2e4

- having no inherent meaning, numbers can not be used to identify a document's on-line/off-line status (a major problem when searching on-line), nor its subject matter (a minor problem); 2e4a

- the numerical sequence of NIC numbers do not correspond to the chronological sequence of document issue dates (a minor problem); 2e4b

- some pre-assigned numbers are never used, resulting in gaps in the sequence (seemingly minor, but often causing confusion); 2e4c

- pre-assigned numbers could not be used when submitting a document via FTP-Journal (a serious deficiency in FTP-Journal); 2e4d

- documents submitted through the U.S. Mail are not recorded on-line as an integral part of the Journal system (the most serious problem; this is discussed below under "Manually Generated Note Indexes"). 2e4e

3) Group Dialogue Support 3

Groups 3a

The Network's developers communicated through a series of notes known as "RFC's". Other special-interest-groups have since conducted their dialogue through a similar "Group Note" mechanism. 3a1

(The letters "RFC" originally meant "request for comments" though that meaning became obsolete. RFC came simply to denote any technical correspondence through the NIC by the Network's developers.) 3a1a

RFC's were distributed by the NIC to three groups of persons --- Technical Liaisons, Station Agents, and Network Associates. (These groups are discussed elsewhere in this report.) Group Notes were distributed by the NIC to the respective Group memberships. Group memberships were controlled not by the NIC, but by each Group's "coordinator". The main Groups served by the NIC are listed below, in the section on "Group Note Statistics". The full set of RFC's and Group Notes were maintained in hardcopy at the NIC for subsequent re-distribution, whenever requested. 3a2

Note Numbering 3b

For each Group Note series (including RFC's), number systems supplementary to the master Number System were maintained. 3b1

The RFC numbering system was built into the Journal in much the same way as the master NIC Number System; RFC numbers could be assigned automatically on-line, or manually via pre-assigned numbers. 3b2

However, the other Group Note numbering systems were NOT built into the Journal; all Group Note numbers were assigned manually, under the coordination of the NIC Station Agent. 3b3

This discrepancy in Note numbering systems was due to the fact

that group dialogue (other than RFC's) grew up in an ad hoc way: The NIC responded with manual procedures to expressed user needs, but did not have the resources to automate and integrate these procedures into the rest of the dialogue system. 3b4

RFC's and Group Notes probably would have been completely unnecessary had the subcollection feature been more useful. The need was to provide a way for a user to be certain he was aware of every document in exstence in a particular dialog. RFC's worked because if you suddenly ran across RFC# "N" and hadn't seen RFC# "N-1", you knew you missed one. But an up to date subcollection catalog in hardcopy could have done as well. 3b5

Manually Generated Note Indexes 3c

The NIC periodically distributed a hardcopy index of the RFC's and of each set of Group Notes, to the same individuals who were on the respective distribution lists. These indexes were sequenced by Note Number, and contained simply each document's author, title, date of issuance, NIC number, and Note Number. 3c1

The indexes were prepared and maintained manually. A copy of the manually-produced indexes was available on-line to NLS users. 3c2

There was a serious deficiency in this procedure: 3c3

No on-line record of RFC's and Group Notes was made in the Journal's files except when a Note was submitted on-line via the Journal. Since most Notes were submitted to the NIC via the U.S. Mail, this meant that most were not recorded on-line. 3c3a

The consequences of this deficiency were two-fold: 3c4

(a) Users searching on-line for a Note by its NIC number, author, or title-word could not find it in the usual on-line indexes; they had to consult special, separate index files. 3c4a

(b) The general-purpose index-generating programs could not be used to generate the Note indexes, as the data needed to generate the indexes was not stored or formatted with the other index information. 3c4b

This could have been corrected in a simple way, had the Journal been modified to allow "document references" to be submitted as on-line Journal items using the document's NIC number itself as the number of the "document reference". [The "document

reference" could have contained simply the author(s), title, abstract (if any), date of issuance, Group Name and Note Number, and relevant subcollections.] If that had been done, the index data would have been in the correct format and location for the index-generating programs to utilize. 3c5

But, the Journal only allows documents themselves to be submitted. A reference entry can be made as a fresh document, but it can not be assigned the same NIC number as the referred-to document. Use of a NEW number for the reference entry would not have solved the problem. 3c6

That the manual indexes were reasonably successful despite this deficiency was due to one person, Mil Jernigan, who assiduously maintained the information. But it was time-consuming, ultimately unnecessary manual work, given that the system had almost all the procedures needed to do it automatically. And it resulted in necessarily incomplete indexes on any given subject. 3c7

Some Group Note Statistics 3d

In 1973, the NIC distributed 24,490 copies of RFC's, and 8,787 copies of Group Notes. The breakdown of this distribution activity is as follows: 3d1

RFC's 3d2

membership		#members	#notes	#copies sent
NLG	(Technical Liaisons)	67	158	10586
NSAG	(Station Agents)	54	158	8532
NAG	(Network Associates)	34	158	5372
		155	*	24490

3d2a 3d3

* The total number of RFC's distributed in 1973 was 158. 3d3a

GROUP NOTES 3d4

group		#members	#notes	#copies sent
ASS	(Satellite Syst)	25	22	550
CBI	(Computer Based Instr)	48	4	192
IIG	(Imlac)	29	3	87
INWG	(Intl Netwk Workg Grp)	63	33	2079
NGG	(Graphics)	45	5	225
NMG	(Measurement)	84*	6	504

3d4a 3d5

NSC	(Speech Compression)	7	12	84	
PR	(Packet Radio)	15	82	1230	3d6
SUR	(Speech Understanding)	27	59	1593	
TIPUG	(TIP Users)	117*	17	1989	
USERS	(Network Users)	18	3	54	
USING	(Users Interest)	25	8	200	
			254	8787	3d7

* includes 54 Network Associates 3d7a

[Additional statistics are in NIC Document # 21624,] 3d8

4) Individual Dialogue Support 4

The Journal is also used for correspondence among individuals, This correspondence is not Group Dialogue as discussed above, but is handled in almost exactly the same way by the NIC, The only difference is that no special note number is assigned to these pieces of mail, only NIC numbers, 4a

In 1973, 5,439 pieces of mail in this category were distributed through the Journal by Network (i,e,, other than SRI-ARC) users, Of these, approximately 4800 were distributed in hardcopy by the NIC, (Hardcopy mailing was provided for those who requested it,) 4b

5) Permanent Storage of Documents 5

All RFC's and Group Notes were permanently stored at the NIC, in hardcopy form, (There was no provision for NOT permanently recording and storing a NIC document,) 5a

Storage made subsequent re-distribution, in response to users' requests for back copies, a relatively straightforward process, However, the fact that ALL pieces of mail were permanently stored and indexed led to unnecessary clutter in the file system, because many pieces of mail were simply personal notes or tests of the Journal system as it was developing or as new users were trying to learn how to use it, What was clearly needed was a mechanism to allow a user to specify that a piece of mail should NOT be permanently stored and/or indexed, But this capability has never been added to the Journal, 5b

6) FTP-Journal 6

The overriding importance of FTP-Journal was that it permitted on-line use of the Journal by a mechanism much simpler to learn

and use than NLS. FTP-Journal provided these three significant enhancements to the NIC's NLS-Journal system: 6a

(a) it allowed users to submit pieces of mail directly to the Journal via the Network's File Transfer Protocol (FTP). 6a1

(b) it allowed users to obtain documents that were on-line at the NIC via FTP, rather than requiring them to enter NLS to obtain these documents. 6a2

(c) it allowed users to receive on-line notification of mail delivery at the Host of their choosing, rather than having to get their on-line notification via NLS. (The notification was in the form of citations containing author, title, and pathnames for retrieving the full document from the NIC via FTP. Only short pieces of mail were delivered in full.) 6a3

NIC Document # 17777 described how to use FTP-Journal. A supplementary document (NIC Document # 22383) gave scenarios for various types of FTP-Journal usage. Use of this mechanism was never monitored, however, so its impact cannot be reported here. 6b

FTP-Journal freed an important aspect of NIC services from the constraints of NLS usage. But it unfortunately did not evolve beyond its initial implementation state (other than the correction of bugs, of course). 6c

This meant that several important NLS-Journal capabilities were not available in FTP-Journal: 6d

- specifying subcollections;
- obtaining RFC and/or NIC numbers at time of submission;
- using pre-assigned numbers;
- specifying other documents superseded or updated by the submitted document;
- specifying that a document be "private";
- and specifying that an existing document be sent to users not on the original distribution list. 6d1

Because of these omissions, FTP-Journal was not a complete substitute for NLS-Journal. But it was a major step in the right direction. It alleviated the computer system bottleneck caused by requiring NIC users to use NLS for submission and retrieval of on-line Journal documents. And it provided a means for using the Journal that was much simpler than NLS for NIC users to learn and use. 6e

7) Directory of Participants (ARPANET Directory) 7

Network users needing to locate other Network individuals could do so by querying the NIC's Ident File, which contained address and phone information about each individual who made himself known to the NIC. 7a

The Ident File, however, was not available on-line except through NLS at SRI-ARC (and later, at OFFICE-1). 7b

Consequently the NIC published and distributed a hardcopy, looseleaf "Directory of Participants" two or three times a year. The Directory was distributed only to NIC Station Agents and Technical Liaisons: others who needed it were limited to using it through one of these individuals. In other words, it was distributed as a (rather bulky) NIC Functional Document, with the attendant update and distribution problems described earlier in this section. 7c

The Directory contained the following information (sorted various ways for ease of use): 7d

- names, addresses, phone numbers, and idents of individuals and organizations, and membership of organizations; 7d1

- names, addresses, phone numbers, and Idents of Technical Liaisons, Station Agents, and ARPA Principal Investigators; 7d2

- Group names and coordinators. 7d3

When the community of Network users was small in number, the mechanisms for distributing, updating, and using the Directory of Participants (one of the NIC's Functional Documents) were felt to be adequate. As the numbers of users grew, it was recognized that the Directory of Participants was no longer adequate. Consequently it was replaced in early 1974 by the compact paperbound ARPANET Directory discussed later in the "Current Status" section. 7e

8) Phone Service 8

When the NIC was initiated, both the Network technology and the Journal technology were shaky. In order to be sure that important communications were not thwarted by breakdowns in the new technology, the NIC instituted a toll-free incoming phone service. 8a

Since usage was not expected to warrant WATS facilities, a lower-priced alternative was chosen: Enterprise/Zenith service. (Inbound WATS cost roughly $2000/month; Enterprise/Zenith, about $900/month.) A user could contact the NIC at no expense to him,

by giving the operator the Enterprise or Zenith number appropriate for his area, 8b

The NIC phone was answered by NIC staff during NIC working hours, and by a private "answering service" ($40/month) during non-working hours. The NIC was billed automatically by the initiating phone companies, 8c

DCE 13-DEC-74 19:43 24755

Kudlick's Jul 74 notes re, NIC Experience with Dialogue Support

(J24755) 13-DEC-74 19:43;;;; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /DCE([INFO-ONLY]) DVN([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DCE;

DIA 14-DEC-74 11:23 24756

Re: 24750, Half-duplex etc. terminals on frontend

(message) 1

I would like to see a session scenario of a TNLS user on a half-duplex line-at-a-time terminal, with type ahead, Does prompting play a role at all? Also, typing ahead need not be the same for frontend users as it is for TENEX users. The frontend processor COULD talk with him, rather than just keep characters, no? It might be nice to have feedback for the next command (if possible) while some bits fly across the country. 1a

DIA 14-DEC-74 11:23 24756

Re: 24750, Half-duplex etc, terminals on frontend

(J24756) 14-DEC-74 11:23;;;; Title: Author(s): Don I. Andrews/DIA;
Distribution: /NPG([INFO-ONLY]) RWW([INFO-ONLY]) ;
Sub-Collections: SRI-ARC NPG; Clerk: DIA;

DCE 14-DEC-74 16:42 24758

Proposal ISU 74-263: A Special-Studies Support Center

This proposal responds to Category 2 of the Program Solicitation NSF 74-38, 'Improved Dissemination of Scientific and Technical Information,' issued by NSF's Office of Science Information Service. [Prepared under great time pressure, five days over-all; magnificent all-day-Sat help in final push by Jim Norton, Jeanne Leavitt, and Sandy Johnson]

ABSTRACT

It is proposed to organize a new set of operational services to be offered by SRI's Augmented Knowledge Workshop Utility. The Utility already supplies many clients across the country with very advanced computer aids to support many basic knowledge-work activities, including recorded dialogue among distributed collaborators. The newly extended set of services would be especially tailored to provide an innovative support package for the participants of special study groups. These are groups whose memberships are drawn from different organizations, different parts of the country, and usually from different specialties or disciplines.

This kind of special study group plays an important role in many of today's critical activities, to help evaluate situations, formulate plans, set policies, etc. Participants are often people whose time and energy are very valuable; society's need for the integrated product of their combined experience and knowledge is often a critical one -- timeliness, comprehensiveness, careful integration and balance of opinion and attitude, accurately formulated expressions of principle and policy, and the like are exceptionally important facets of their work.

In the context of this proposal, such a group is likened to a scaled-down version of a scientific/technical community, and the special information services that we propose represent the sort of advanced computer/communication tools and associated techniques that are likely candidates for the future large-scale "Scientific/Technical Information" systems which NSF's OSIS is chartered to encourage.

Support is needed to: a) set up the new service package, comprised of modified, extended, and specialized versions of current text-handling tools for documentation, recorded and catalogued communications and bibliography, online collaboration for study and alteration between distant sites, and so forth; b) in spaced stages, and under combined-funding arrangements with selected study-group sponsors, begin to provide full service of this support package to two or more test groups; c) analyze, improve, coach, etc. in an evolutionary manner toward an optimum set of methods, procedures, training and supporting services, user-interface options, and computer/communication tools.

NARRATIVE 2

INTRODUCTION 2a

This proposal responds to the program Solicitation NSF 74-38, "Improved Dissemination of Scientific and Technical Information," issued by NSF's Office of Science Information Service. It specifically addresses Category 2, "Innovations and Improvements in Science Communications Systems and Services." 2a1

In response to Category 2, SRI proposes to establish an operational information service for a special type of miniature scientific/technical community, applying recently developed innovations in both the service technology and in the organization and management of scientific communications. 2a1a

The innovations, described in some detail below, represent a singularly rich and coherent set of tools and techniques for handling textual information among widely dispersed collaborators. 2a1a1

They were developed over the last decade at considerable government expense (well over $10 million). The direct goal of development was to boost the effectiveness of individuals and groups of knowledge workers, and heavy emphasis has been placed upon collaborative dialogue among geographically distributed workers. 2a1a1a

Considerable experience has accrued in delivering operational service, including training and application-development assistance to several hundred users. 2a1a1b

The tools and techniques seem squarely placed in the center of innovative possibilities for the future Scientific and Technical Information (STI) systems, and warrant serious experimental application. NSF is the logical agency to assist development of this kind so that, instead of evolving along parochial lines, or under the aegis of a private, multinational corporation, tomorrow's STI system develops in a way that benefits the entire U.S. scientific/technical community. 2a1a2

We propose that these innovative services be applied experimentally in specially selected, real-world, operational projects. These experiments would have

importance as stepping-stones in innovative evolution toward the larger, highly technological STI systems of the future. They also promise to provide significant performance payoff to some important scientific/technical endeavors. 2a1a3

The special type of scientific/technical community targeted for the service package to be assembled and experimentally applied is that of the "Special Study Group on ..." (or the Policy Development Panel for ..., or the Special President's Commission on ...); here are the typical characteristics: 2a1b

Some sponsoring body determines that an authoritative study is desired. It requires specialized knowledge, capability and experience not found in an existing, localized, organizational grouping -- and so a temporary organization is created by enlisting selected specialists from different fields of knowledge, usually from different organizations, and generally from geographically distributed locations. 2a1b1

An organizational structure is established; a Chairman is appointed who nominally will coordinate activities as well as exercise a certain degree of executive control. Sometimes this person is provided special support staff for this endeavor. Often a senior committee will serve in an advisory or executive-support capacity. Special study panels may be formed to cover explicitly outlined study/analysis tasks. 2a1b2

The group's activities will typically include the following: 2a1c

Collectively, members will gather information -- via bibliographic surveys, site visits, consultation with selected experts, etc. 2a1c1

From time to time they will gather for face-to-face dialogue, which is supplemented by correspondence and telephone calls of varying degrees of managed effectiveness. 2a1c2

Thinkpieces, position papers, summary survey papers, and other documents will be generated as part of the process of problem analysis and relevant-knowledge integration. 2a1c3

Review, deliberation, untangling of differences, and the like must go on as an important component of harnessing the multi-party resource. 2a1c4

In each of the above activities, there are pieces of information that should be recorded, organized for useful retrieval, accessed as part of the study, analysis, and integration, sometimes pirated and massaged to produce a next-stage record of study-group or individual progress, and so on. 2a1c5

The described processes are the same, everyday knowledge-work activities found in our established scientific/technical communities, where conferences, proceedings, special-interest groups and their transactions, professional journals, etc. provide the recorded media -- and libraries, abstracting services, etc. provide helpful search, retrieval and access. 2a1d

But these special-study groups have some unique characteristics that make them highly attractive for early application of advanced STI support systems. Consider that: 2a1e

In the short-term study group, the scale of things is much smaller -- if innovative STI systems will help significantly at this scale, then it seems a promising type of operation with which to experiment. 2a1e1

The out-front techniques will be extra expensive for some years, while still in the rapid-evolution stages, but they very much need to be used in real-world applications where experience and evaluation provide absolutely essential ingredients of the evolution process. To wait until pilot operations are of proven cost effectiveness would be a very serious mistake where such an extremely important and large system is involved (the world's STI system). 2a1e2

Not only will the smaller size of this type of activity enable significant experimentation with out-front techniques at relatively low cost, but since the studies are generally of relatively short duration -- one to two years -- the payoff from experimentally "augmenting" selected test groups can be gauged sooner and more accurately than would be the case for operational experiments with activities embedded deep within larger, slower-changing activities. 2a1e3

Also, the majority of participants will be high-level people, for whom an investment toward increased effectiveness is especially worthwhile from the point of

view of maximizing the utilization factor of very scarce commodities (their energy, knowledge, capability). 2a1e4

And further, it would seem important, in trying to effect a more rapid evolution in the large-scale STI system, to provide real working experiences for the leaders that affect policies, directions and practices in the scientific/technical communities. 2a1e5

We are suggesting above that the special-study group provides a very good type of experimental test bed. 2a1f

The proposed project would be based upon the Augmented Knowledge Workshop (AKW) capabilities developed at the Augmentation Research Center (ARC) of Stanford Research Institute (SRI), and upon an extensive program already under way at ARC that is developing a growing clientele of exploratory users around the country.ARC has developed and brought to prototype operation a set of computer-based tools and procedures for developing and controlling textual information that applies closely to the needs of this solicitation, and allows for extension of its results. These tools have already proved useful to distributed groups carrying on research, and this project is a logical next step in our development. 2a2

Description of ARC's long-time activities and the AKW capabilities that we have developed are summarized in Section 2E, with selected supporting documents in the Appendices. 2a2a

In January of 1974, ARC began operating an "AKW Utility Service" as described in (App-6). Basically, it provides: 2a2b

1) exploratory usage of its AKW computer aids, with on-line service delivered at working terminals at the home locations of its distributed clientele; and 2a2b1

2) technical support for training subscribing clients in basic skills and for helping develop new working methods. 2a2b2

ARC also continues to be committed to seeking sponsorship of analysis and development work at all levels of the total workshop system, aiming constantly to expand and improve the services offered through the Utility. 2a2c

For instance, we are currently developing some important

improvements and extensions as part of ARPA's National Software Works Program (App-7). 2a2c1

The combined activity of continued analysis and development work, together with buildup of an active community of real-world exploratory application clientele, is ARC's strategic approach to the evolution of a large, coherent system of computer-communication tools. 2a2d

We assume that the problem of evolving a complete, coherent, out-front, experimental AKW System is too large for any one organization, and aim to provide a cooperative environment in which many organizations can participate in the continuing cycle of application, analysis/evaluation, and improvement. 2a2d1

We view this solicitation as an excellent opportunity to extend the size and nature of this system-evolution community in a strategically very important way. Our rapidly growing base of "heavy, longer-term" application clientele will be contributing significantly to the continued evolution of solid, basic tools. The necessary next stage, of extending our exploratory service packages and support capability to working with higher-level, intensive-study users, is something that will require special support and involvement by a type of sponsoring agency not yet part of our world -- there must be a continuing, basic concern for the larger-system evolution (e.g. where the "system" includes much that is beyond the technological tools). 2a2d2

Our goal is to see a large, "cooperative association" emerge to collaborate in the evolution of what we view as a very large system -- what we call the Augmented Knowledge Workshop (AKW) System. The AKW System begins with the way individuals learn and do their work, and extends to the organizations and large communities in which they contribute. The role of today's STI system falls within this domain; but it is obvious that the evolution of a really advanced, coherent STI system would expand to include all that we view as the AKW System. 2a2d3

In view of the above, we feel that it is important that a non-commercial group undertakes the cooperative evolution effort. Private, commercial interests can and should play important roles, but for them to control the evolution would threaten a constriction of the future by orienting development and application

experience solely to the largest and most profitable markets. 2a2d3a

[Incidentally, we don't feel that SRI is large enough to be "the non-commercial group" mentioned above. We can at best help nucleate what most likely should be an association of agencies and private organizations.] 2a2d3b

One of ARC's principal long-range goals is to facilitate the knowledge work of distributed, discipline- or mission-oriented communities. 2a2e

The approach being taken is as described in Appendix 2 (App-3), a paper entitled, "Coordinated Information Services for a Discipline- or Mission-Oriented Community." 2a2e1

It seems that this set of services represents a very feasible, prototypical candidate for the STI system of the future. It is being approached in an evolutionary manner; several Utility clients are working on the longer-range development of communities supported in this fashion, and we are soliciting more -- but these are of necessity limited-size communities compared with those that the future STI systems must support. 2a2e2

It is herein proposed to add a specialized set of services to those offered now by our Utility, aimed especially at supporting a "miniature" discipline- or mission-oriented community made up of the participating members of a special study group (e.g., President's Commission on Energy, Congressional Commission, or AAAS Study Panel). 2a2f

Project Goals: 2a3

To establish two or more test cases: each providing advanced tools and giving close application support to specially selected communities of distributed investigators using AKW techniques to develop, integrate, control, and disseminate their results. The operation of these test cases will serve: 2a3a

To demonstrate how centralized, computer-communication STI services can be of value to a distributed mission- or discipline-oriented community. 2a3a1

To advance the evolution of technologically augmented knowledge work in support of distributed communities by

exploratory, real-work support of short-term "minicommunities." 2a3a2

To explore solutions to the problem of integrating innovative, all-embracing computer information services into the working lives of researchers. 2a3a3

To increase the real payoff of the work of selected, important, special-study groups. 2a3a4

To provide high-visibility examples of selected, highly advanced STI services. 2a3a5

To expose key persons within important domains to the potentials of new technologies for improvements of STI systems. 2a3a6

To advance the techniques for making STI-system development more cost effective by: 2a3a7

1) sharing equipment and communication resources, as enabled by computer networking and remote terminal service, and 2a3a7a

2) sharing "human resources," as represented by the humans who can be simultaneously participating in the whole evolutionary process more effectively, while still carrying their specialized roles within their "regular" organizations and pursuits, as enabled by incorporating the use of the collaborative "STI techniques" integrally into the ongoing interactions among the developers, users, planners, evaluators, etc., of the evolutionary system. 2a3a7b

[Note: It is assumed that OSIS and other NSF personnel could be actively coupled into these experiments, as could other agencies and contractors, who can together represent a group, e.g., a "special study group assessing and planning STI-system evolution".] 2a3a7b1

Detailed Objectives: 2a4

Establish a special service center that can contract to support certain types of special study groups with valuable, basic, "central information services" of the sort described in (App-3). The services are described in more detail below; but, in brief, are designed to facilitate:

information collection, organization, control, and integration; planning; analysis; memoranda exchange; and report development -- collaboratively, among the widely dispersed specialists of a special-study group. 2a4a

Promote cost-shared trial application(s) with two or more study groups, selected in collaboration with OSIS staff. 2a4b

Produce explicit evaluative summaries during the course of the study, with particular emphasis upon the needs and immediate possibilities for improving the value of the service. 2a4c

Where project funds permit, implement improved methods, techniques, or technological services towards increasing the payoff/cost ratio. 2a4d

Where implementing an improvement would be beyond the project budget, produce a special report detailing the need/possibility, its implementation approach, rough costs, and payoff, and distribute to potential sponsors among those interested in the AKW activity, to give them an opportunity to invest in such an improvement where it may also contribute to the AKW applications that they are exploring (e.g., ARPA, Air Force, Army Materiel Command, Navy, NSF'S Division of Computer Research). 2a4e

Anticipated benefits and impact of the proposed activity on STI services and/or use: 2a5

Over the long term, continued and increasingly skilled use of tools such as ARC's AKW System will produce a very different way of life within the scientific and technical communities. 2a5a

The base of accrued dialogue among the members, together with the mutually developed base of external-information items, will produce a dynamic knowledge base visible and accessible to all. 2a5a1

Purposefully fabricated super-documents representing the "Community Handbooks" (as in App3) will provide a central focus for the developers, and a central source for practitioners and learners. 2a5a2

In the short term the participants of special study groups are often people whose time and energy are very valuable; society's need for the integrated product of their combined

experience and knowledge is often a critical one -- timeliness, comprehensiveness, careful integration and balance of opinion and attitude, accurately formulated expressions of principle and policy, and the like are exceptionally important facets of their work. 2a5b

While engaging in a next stage of the long-term, STI-system evolution, involving combined technical and cultural development, this project opens the parallel, shorter-term opportunity to establish specialized and limited types of out-front service in strategic parts of the STI world, 2a5b1

where the high value of improved effectiveness offers an early chance to get effectiveness/cost payoff above the breakeven point for real-world application of very advanced techniques, 2a5b1a

where exposure by key people will accelerate a sounder level of planning and investment toward modernizing the larger-scale STI System, and 2a5b1b

where important kernels of experience and specially integrated knowledge bases will be generated at strategic points in the scientific-technical communities. 2a5b1c

To be able to gain experience with interactive STI products and services, while at the same time giving material aid to the above purposes and processes of some significant study groups, is an important feature of the proposed project. 2a5b2

As various improvements are realized, there are many activities involving communities of distributed users that could benefit from such facilitation. The Office of Science Information Services could thus be launching directly useful services while also contributing to the evolution of the wide-base STI System. 2a5b2a

Of particular value would be the facilitation of the special studies commissioned by the President, those done to support legislative inquiries or to help establish plans and policies in large and critical programs (energy, environment, health care, international economy, etc.), or those of the National Academy of Sciences. 2a5b2b

Note that the impact of such services on this type of clientele creates some special problems: 2a5c

The key participants are operating in a transient working arrangement (even if for two years), generally outside of their regular (and simultaneously continuing) environment, and collaborating with unfamiliar and widely distributed fellow participants. 2a5c1

They won't have the time (nor often the inclination) to become skillful with specialized tools. 2a5c2

But the clerical staff can be taught tool-use skills that can facilitate the work of their employer-participants without requiring the latter to master new skills. 2a5c3

Relation to the present state of knowledge and activity in the field: 2a6

ARC developed and operated the Network Information Center to serve the users of the ARPA Network. As part of its work for the NIC, ARC provided relevant information services to several groups with a widely distributed clientele. See (App-9) for more details. 2a6a

Two ARC staff members (Engelbart and North) participated in a special Workshop on Interactive Bibliographic Retrieval, sponsored by AFIPS. We used ARC computer aids to organize by subject, author, and titleword the extensive bibliography assembled by a number of participants and published in the Workshop proceedings (Ref-3). 2a6b

D. C. Engelbart served for two years on the Information Systems Panel, under the Computer Science and Engineering Board of the National Academy of Sciences. 2a6c

The memoranda, correspondence, and bibliography generated by the middle part of the study, about 175 items, were organized and catalogued in ARC. (We were in transition between two computer systems during the final stages, and couldn't provide completion of the services.) 2a6c1

See (Ref-4) for the final report of this Panel. We can't say that our services facilitated the Panel's work particularly, since they never were formally adopted by the Panel. But the experience on our part was important, and the many Panel activities that could have been

facilitated were a continuing stimulus to the ARC participant toward the type of project herein proposed. 2a6c2

For almost two years, ARC staff members provided a range of computer-aided services to the editorial staff and readers of an ACM Special Interest Group newsletter (see App12). 2a6d

Besides this proposed OSIS-supported project, there would be a steadily expanding set of service improvements and application experience among the Utility clientele, and a steadily expanding number of users and exploratory applications. Many would bear on this project. 2a6e

The parties engaged in this project would be in collaborative contact with these other activities via the same type of support systems as are being applied here. 2a6e1

Bibliography of pertinent literature: 2a7

(Ref-1) D. C. Engelbart, AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK, SRI Project AFOSR-3223, October 1962 (XDOC -- 3906,) 2a7a

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(Ref-3) D. E. Walker, ed., INTERACTIVE BIBLIOGRAPHIC SEARCH: THE USER/COMPUTER INTERFACE, proceedings of a Workshop on "The User Interface for Interactive Search of Bibliographic Data Bases", Palo Alto, California, 14-15 January, 1971 (XDOC -- 8016,) 2a7c

(Ref-4) Information Systems Panel, National Academy of Sciences, LIBRARIES AND INFORMATION TECHNOLOGY, A NATIONAL SYSTEM CHALLENGE, Final Study Report, October 1971 (XDOC -- 8016,) 2a7d

(Ref-5) Harold E. Bamford, THE NATIONAL INFORMATION PROGRAM: PART 1, INTRODUCTION AND OBJECTIVES, 1 July, 1974. 2a7e

(Ref-6) Harold E. Bamford, THE EDITORIAL PROCESSING CENTER, IEEE Transactions on Professional Communication, Vol. PC-16, No. 3, p. 82-83, September 1973. 2a7f

(Ref-7) Harold E. Bamford, A CONCEPT FOR APPLYING COMPUTER TECHNOLOGY TO THE PUBLICATION OF SCIENTIFIC JOURNALS,

Journal of the Washington Academy of Science, Vol. 62, No. 4, p. 306-314, 1972. 2a7g

(Ref-8) National Science Foundation, TO IMPROVE ACCESS AND USE OF SCIENTIFIC AND TECHNICAL INFORMATION, NSF Brochure 74-39, October 1974. 2a7h

STUDY PLAN 2b

Stage 1) ARC personnel will investigate the approach and methodology used most successfully by a representative set of special study groups. 2b1

Stage 2) ARC personnel will formulate an intial, basic combination of working mode and support package to be offered by the AKW Utility to special study groups agreed upon with the OSIS staff. 2b2

Stage 3) ARC would prepare an initial set of services. This would involve a mixture of specialized items as selected in close collaboration with OSIS staff. Examples are: 2b3

Adapting the Utility's basic core of services to the users we expect -- e.g., to facilitate a professor's secretary getting useful service for the part-time study-group participation. 2b3a

Planning for special telecommunication arrangements compatible with limited, occasional use by people not authorized to use the ARPANET, in very remote locations, who do not normally work with on-line computer systems. 2b3b

Organizing a coherent set of conventions within our catalog system for bibliographic collection, cataloguing, and control as compatible with expected needs for managing special, limited and overlapping sub-collections. 2b3c

Designing the special, nucleus supporting system for the chairman and key staff-support personnel. They would logically have clerical support staff who are trained relatively thoroughly; this staff, and the key study-group members would have close liaison with Utility staff specialists who both coach the participants and provide direct, supportive information services. 2b3d

Stage 4) Selecting and recruiting one or more test study groups who will make use of these services. Recruiting would be done either by OSIS staff, or under their very close supervision. 2b4

Our expectation is that a third party would pay for the "basic expense" of supporting each test study group. A cost-sharing assumption underlies this proposal: OSIS paying for the developing, testing, and evolutionary guidance, while much of the test's actual operating expense

as possible is charged to a sponsor of the particular study group. 2b4a

We view, as a "basic expense" that seems reasonable to charge to the test-group sponsor, the cost anticipated as being likely when the service packages are evolved to reasonable completeness, and when the Utility staff has learned how to train, coach, and serve in a necessary fashion. A rough figure for this would be of the order of $40,000 per year, plus communication and terminal-lease costs. 2b4a1

We propose that the OSIS project support one full-time, applications specialist to give extra assistance to these study groups. Launching of trial groups should be spaced over several months to smooth the load on this person. 2b4b

We note one particular possibility where such trial support could be particularly relevant: The Computer Science and Engineering Research Study (COSERS), being sponsored by NSF's Division of Computer Research. 2b4c

The chairman of this study group has expressed willingness to consider such a trial; and the NSF program manager monitoring the study group has expressed positive interest in the idea, and also has stated that possibly he could provide supporting funds. 2b4c1

Stage 5) Monitoring closely the progress of the test groups, and getting the participants up to some steady-state level of acceptance and working proficiency. 2b5

Our past experience is that the personalities, attitudes, beliefs, and early experiences with these new services strongly affect the progress of such tests, and the value derived from them. 2b5a

Until there are general environmental experiences and attitudes, such as our citizenry now have for automobiles, it requires extraordinary initial effort -- with supportive, low key, non-threatening, success-by-easy-stages attributes -- to get things rolling in a way where what is being tested are the new tools and methods rather than psycho-cultural transients of the study group. 2b5a1

To illustrate, in California very few people know how to ice skate. Suppose that high value were hypothesized for

the participants of some activity to work on ice so that their skates improved their local mobility. It is easy to picture how empathetically their initial coaching, encouragement, etc. would need to be handled until acceptance, confidence, and skills reached a certain, self-maintaining level so that getting the work done could begin to be a primary activity. 2b5a2

As these above factors begin to stabilize, in a given application group, relatively objective analysis (perhaps still more qualitative than quantitative) can begin to isolate concrete needs and possibilies for improving the system of support services and application methods. 2b5b

Stage 6) Developing improvements in the system -- in application methods and procedures, in information organization, in computer tools, in reference support materials, in methods for testing and training for requisite knowledge and skills, etc. 2b6

The equivalent of one person is set aside for the analysis and development activities. Close collaboration and considerable exchange would be expected between this role and the specialty-service support person. 2b6a

Stage 7) Reporting on the experiments would include: special, highly specific memoranda to outline the needs and possibilities evolved above that are too costly to be implemented within this project; a series of memoranda in the ARC Journal system, distributed widely among the AKW community, describing progress, problems, successes, etc. of these experiments; and a final paper describing the whole experiment. 2b7

ORGANIZATION AND MANAGEMENT PLAN 2c

The project would be supervised by D. C. Engelbart, Director of the Augmentation Research Center. 2c1

The work including application of existing NLS tools and services would be coordinated under J. C. Norton, Assistant Director for Applications; and the analysis and development work would be coordinated by R. W. Watson, Assistant Director for Analysis and Development. Each has a staff that will grow from the present 14 to about 24 persons during the coming year. In a system as large and complex as this, many specialists must be on tap for particular areas of consideration; but the Project Manager would be responsible for the day-to-day operations and detailed coordination of the project. 2c1a

The work could begin on 1 April 1975. 2c2

Stages 1 through 3 would require four months at a two-person level. 2c3

Stage 4 could be begun in parallel, and by 1 August 1975 the support to the first trial group could begin. 2c4

Allowing about 4 months spacing, a second group could start 1 December 1975, and, if by then perceived as feasible, a third in April 1976. 2c4a

We estimate about two person-months to be involved in getting each group up to the point where service begins. 2c4b

Stage 5, for each group would require at least three person months of special attention, to attain a relatively stable operating basis. 2c5

The steady-state support service -- actually participating in the information-service work supporting the group, as consultant and professional information specialist -- would require three person-months in the first four months, and reduce to one half. 2c5a

In steady state, one specialist could probably support two groups. Much clearer perspective on this would be available by December 1975, and decisions about a third group (or possible further expansion, e.g., via cost participation from other sources) can be made then. 2c5b

Stage 6 would, for at least the first year of application, warrant a full-time equivalent from an unpredictable mix of specialties available within ARC. 2c6

Stage 7 is estimated at 3 to 4 person-months; definite advantage would accrue from time spent in need/possibility formulation and reporting, in the likely event that several of the cases would meet with special interest by potential implementation sponsors and thus further the STI-type of evolution considerably with minimal investment. 2c7

DISSEMINATION OF RESULTS 2d

An important aspect of this is the NLS Journal, a vehicle for information dissemination that will be intensively used throughout the community of application and development people associated with SRI's AKW systems evolution. A growing number of people with special interest in STI-like interests will become active in the recorded dialogue afforded here. 2d1

In addition, a paper in an AFIPS level conference proceedings will be planned. 2d2

INSTITUTIONAL RESOURCES AND RELATED PROGRAMS 2e

Founded in 1946 under the auspices of Stanford University and a group of West Coast industrialists, Stanford Research Institute (SRI) was affiliated with the University for nearly 25 years. SRI is now a wholly independent, self-contained, and financially viable research organization. 2e1

SRI is a nonprofit corporation, without either endowment or shareholders. Income comes almost entirely from conducting contract research for clients. Revenues in excess of operating costs are used to purchase advanced scientific equipment and to enhance the Institute's ability to pursue research in the public interest. 2e2

Of a staff of more than 2,850, nearly two-thirds are professionals in a broad spectrum of fields. They work together in interdisciplinary teams that seek practical solutions to problems confronting industries and governments throughout the world. 2e3

SRI's gross revenue topped $75 million in 1973 -- highest in the organizations's history. About two-thirds of SRI's work is carried out for national government agencies and state and local governments; most of the remainder is for private, commercial clients. 2e4

SRI's headquartes are on a 70-acre site in Menlo Park, California, a community about 35 miles south of San Francisco and a few miles from the campus of Staford University. It has other offices and laboratories in various parts of the United States, Europe and the Far East. 2e5

Regarding SRI programs related to the proposed work, of by far the most relevance are the products, knowledge, skills, and service capabilities built up by SRI's Augmentation Research Center (ARC) over the past 12 years. They are too extensive to describe in detail here. The Appendices were selected to provide detailed glimpses into important parts of our developments and activities. 2e6

ARC's staff currently numbers about 30, about a third of whom are programmers. The remainder are engineers, operators, librarians, trainers, reference documenters, and managers. 2e7

The most visible of ARC's products is NLS (our oN Line System). NLS is a large, integrated software system, currently running

under a PDP-10 TENEX time-sharing system. NLS has evolved steadily, on a constant-goal vector since 1964, through four different computer systems. We are currently running the eighth major-improvement version (NLS-8). 2e8

NLS-8 deals only with text. The core features are fairly well described in (App-2), up through Section 4. The implementation technique has improved significantly since that writing date (1968), but have followed the same directions indicated (e.g., see the "CML" item below). There are of course many additions and improvements in the range of user features, as discussed in general terms in other Appendices. 2e8a

There is now a very extensive set of functional capabilities -- editing, studying, searching, message transmission and management, cross-referencing, calculator, high-quality photo-typesetting output options, powerful text structuring and cross-file editing features. 2e8b

Special attention has been given to the user-interface adaptability. A user's "Control Language" is specified in a specially-developed Control Meta-Language (CML). ARC has been evolving this language since 1967, together with the associated special compiler. NLS-8 allows such flexibility that if desired, each user could have his own, personal system, tailored to his needs, tastes, and skills with respect to the service functions provided, and to the interactive vocabulary used to effect the service transactions. This enables different application explorations to experiment very easily, and also enables individual users to be led through smooth transitions in the staged evolution of their tool-use sophistication and their skill-knowledge capability. 2e8c

Section 4 of (App-4) provides a good overview of the working features, as of Spring 1973, in terms of the "knowledge-work" activities whose support has been given special attention. 2e8d

This last year saw the emergence of our Workshop Utility Service, whose plans were described in Section 5 of (App-4), and in (App-6), a recent summary of the status of that enterprise. This has been a very difficult thing to bring forth, from a non-profit, uncapitalized base, but we now have a service operation whose product can evolve to suit its

exploratory-application clientele; it is not a captive of any agency or private corporation. 2e9

Currently ARC's development staff is heavily involved with ARPA's National Software Works Program, producing extensions to our existing Workshop system that will be adopted by the Utility as NLS-9 sometime after mid-1975. In (App-7) are listed the development tasks being pursued there. 2e10

Note that NLS-9 will have a first stage of graphic capability, aimed at basic illustrative, diagramatic usage for mixed text/graphic technical documentation. 2e10a

Also of particular note is the "Frontend" development that should produce a significant reduction in the service costs for the whole kit of tools provided in the Utility's service. 2e10b

Access to various data-base management systems in a manner coordinated with the rest of the Workshop tools (i.e., comprised now of NLS), is one of the most important of next year's development targets. After this can come in quick succession coordinated access to analytic tools of many sorts. These other "tools" can be well-established application systems running in other computers -- the kind of distributed-resource technology that has evolved in the ARPANET, and that is being significantly extended in ARPA's NSW Program, bring a truly significant improvement in the useable access to computer tools, via a coherent user-interface environment. 2e11

One of the most effective subsystems within NLS deals with controlling, indexing, cataloging, accessing, distributing, etc. -- of "messages" that are very similar to journal papers, letters to the editor, etc. in the recorded literature. We happen to call this our Journal System -- a recent summary description (produced for another purpose) is included as (App-8). 2e12

A companion system, our XDOC System, handles the cataloguing, indexing, controlling, and retrieving of "external documents" -- actually of any information item such as reprints, books, clippings, film slides or reels, etc. In (App-5) is given a rather complete summary of the basic techniques and approach we've used in our XDOC System. 2e12a

Together with the Journal System, the two provide for a very effective method to provide coherent control, distribution,

computer-followed citation trails, and access to a whole range of research findings and dialogue records. We now have well over 20,000 combined information items catalogued in the joint system (i.e. combined full-text, computer-held Journal memoranda and "external" information items). 2e12b

ARC's longest-term external-application experience has been in serving as the Network Information Center (NIC) for the ARPANET community. We were assigned the task in April 1967, when the community first was organized, and began active service in September of 1969. Our NIC experience was very important as early preparation for the project proposed here; (App-9) is a summary of one aspect of that service, written as a critical look on our part of problems, improvements needed, etc. This section concentrated upon the "Dialogue Support" service provided by the NIC. 2e13

In combining the basic, recorded-dialogue features of the Journal System with the cataloguing, controlling, indexing, etc. of both the Journal and XDOC Systems, as in the NIC application discussed in (App-9), we have provided the base for the "intelligence" system discussed in (App-3) and (App-4). This type of system is expected to be of great importance in the "STI system" for the special study groups. 2e13a

A simple example of using this "intelligence" support is shown in (App-11). It is a report of interesting events experienced by the memo's author at a professional conference. The full text of the report is permanently recorded in the Journal catalog, under the citation number "24662". Our standard NLS citation (termed "linking") feature allows us to provide a permanently viable citation to any passage by, for instance, "see (24662,3a) for reference to Perrone's talk...." Section 3a of Journal Item 24662 in turn cites "XDOC 24510", following the reporter's practice of bringing the preprint home and cataloging it in the XDOC system. 2e13b

Another relevant example of the use of the online tools is described in (App-10). An online newsletter was produced for several years, for a professional society where some members could get online access, and the rest received regular hard-copy publications. 2e14

PERSONNEL 2f

Dr. Douglas C. Engelbart would be the Principal Investigator for this project. Other contributors to the project in addition to Dr. Engelbart would include Dr. Richard W. Watson, Dr. Raymond R. Panko, Mr. James C. Norton, Mr. David S. Maynard. Because of the scope of this project, a number of other professionals would be involved to a lesser degree. Biographies of the professional staff expected to contribute are provided in Appendix 1.

2f1

BUDGET AND CONTRACTUAL PROVISIONS 3

ESTIMATED TIME AND COST 3a

It is proposed that the work outlined herein be performed during a period of twenty-four months commencing 1 April 1975. The total estimated cost of the work proposed herein is shown below. 3a1

CONTRACT FORM 3b

Because of the nature of the work proposed, it is requested that any contract resulting from this proposal be awarded on a cost-plus-fixed-fee basis. 3b1

ACCEPTANCE PERIOD 3c

This proposal will remain in effect until 1 April 1975. If consideration of the proposal requires a longer period, the Institute will be glad to consider a request for an extension of time. 3c1

PROPOSAL BUDGET (First year)

	Man-hours	Requested
A. Salaries and Wages from NSF		
Senior Personnel		
Principal Investigator, Sr. Supv.	416	
Subtotal;	416	
Other Professional Personnel		
Research Associates (Postdoctoral) (1)	462	
Research Assistants (3)	3,080	
Subtotal;	3,542	
Nonprofessional Personnel		
1 Secreterial-Clerical (1)	924	
Total Salaries and Wages	4,882	42,026
B. Staff Benefits Charged as Direct Cost *		
C. Total Salaries, Wages, & Staff Benefits (A & B)		54,214
D. Permanent Equipment		-
E. Expendable Equipment & Supplies		-
F. Travel (Domestic including Canada)		2,700
G. Publication Costs		-
H. Computer Costs (Charged as Direct Cost)		2,450
I. Other Direct Costs		
(one Utility Slot)		40,000
(Communication Cost)		1,000
J. Total Direct Costs (C through I)		100,364
K. Indirect Costs 107% of C *		58,009
L. Total Estimated Costs (J plus K)		158,373
M. Fee		12,670
N. Total Estimated Cost Plus Fixed Fee		$ 171,043

PROPOSAL BUDGET (Second Year)

	Man-hours	Requested
A. Salaries and Wages from NSF		
Senior Personnel		
Principal Investigator, Sr. Supv.	416	
Subtotal;	416	
Other Professional Personnel		
Research Associates (Postdoctoral) (1)	462	
Research Assistants (3)	3,080	
Subtotal;	3,542	
Nonprofessional Personnel		
1 Secreterial-Clerical (1)	924	
Total Salaries and Wages	4,882	45,828
B. Staff Benefits Charged as Direct Cost **		
C. Total Salaries, Wages, & Staff Benefits (A & B)		59,596
D. Permanent Equipment		-
E. Expendable Equipment & Supplies		-
F. Travel (Domestic including Canada)		2,700
G. Publication Costs		-
H. Computer Costs (Charged as Direct Cost)		2,450
I. Other Direct Costs		
(one Utility Slot)		40,000
(Communication Cost)		1,000
J. Total Direct Costs (C through I)		105,726
K. Indirect Costs 107% of C **		63,746
L. Total Estimated Costs (J plus K)		169,472
M. Fee		13,558
N. Total Estimated Cost Plus Fixed Fee		$ 183,030

* OVERHEAD AND PAYROLL BURDEN 1975

The payroll burden rate is based on the Institute's best prediction as to financial performance for the calendar year 1975. The overhead rate has been found acceptable by DoD for billing and bidding purposes for calendar year 1974. We request that these rates not be specifically included in the contract, but rather that the contract provide for reimbursement at billing rates acceptable to the Contracting Officer, subject to retroactive adjustment to fixed rates negotiated on the basis of historical cost data. Included in payroll burden are such costs as vacation, holiday and sick leave pay, social security taxes, and contributions to employee benefit plans.

** OVERHEAD AND PAYROLL BURDEN 1976

The payroll burden rate is based on the Institute's best prediction as to financial performance for the calendar year 1976. The overhead rate has been found acceptable by DoD for billing and bidding purposes for calendar year 1974. We request that these rates not be specifically included in the contract, but rather that the contract provide for reimbursement at billing rates acceptable to the Contracting Officer, subject to retroactive adjustment to fixed rates negotiated on the basis of historical cost data. Included in payroll burden are such costs as vacation, holiday and sick leave pay, social security taxes, and contributions to employee benefit plans.

COMPUTER AND TRAVEL COSTS

Computer-service support for project personnel (not for test-group application support) -- one Utility jobslot, for two years -- $80,000.

Travel: One visit every three months to principal activity center for each test group -- coordinating to cover several activities on each trip, also including liaison visits at OSIS in Washington -- 8 one-week, round trips at $700 each = $5,400.

APPENDICES 4

Proposal ISU 74-263: A Special-Studies Support Center
Section 4: APPENDICES

TABLE OF CONTENTS
Statement Number
.HJOURNALSW=Off; .H1=Off;.F=Off;

Proposal ISU 74-263: A Special-Studies Support Center
Section 4: APPENDICES

14-DEC-74
DCE 24758

SRI Proposal for Research No. ISU 74-263

A SPECIAL-STUDIES SUPPORT CENTER

Prepared for:

Central Processing Section
Attn: Office of Science Information Service
The National Science Foundation
1800 G Street N.W.
Washington D.C. 20550

Prepared by:

Douglas C. Engelbart, Director
Augmentation Research Center

DCE 14-DEC-74 16:42 24758

Proposal ISU 74-263: A Special-Studies Support Center

(J24758 jcn) 14-DEC-74 16:42;;;; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /SRI-ARC([INFO-ONLY]) KWAC([INFO-ONLY]) JI([INFO-ONLY]) ; Sub-Collections: SRI-ARC KWAC; Clerk: JCN; Origin: < NORTON, P6DRAFT.NLS;1, >, 14-DEC-74 16:08 JCN ;;;;***

SRL 15-DEC-74 13:41 24759

Playing with my Terminal at Home

Here I am in Indianapolis having an early Christmas with my family. The following people are here: 1

My parents - Nelson and Barbara 1a

Grandma Agnes Reidy 1b

Aunt Anna Roseberry 1c

Fred - my brother 1d

Playing with my Terminal at Home

(J24759) 15-DEC-74 13:41;;;; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JML([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk:
SRL; Origin: < LEE, CHRISTMAS.NLS;1, >, 15-DEC-74 13:36 SRL
;;;;####;

YL 16-DEC-74 00:49 24760

From Yngvar Lundh, Norwegian Defence Research Establishment.

Network cooperation, 16-DEC-74 00:11 1

Doug: 1a

It was nice talking to you Friday morning. Let me list some activities which might be of common interest: 1b

1) Multiprocessor system for high-capacity (one to several hundred million instructions per second) signal processing. This activity is now picking up momentum. New hardware and new software. Several features (namely multilevel protocols) resemble those of computer networks such as Arpanet, except distances are a few feet only. Will be suitable for demanding processes such as filtering, beamforming, detection, identification, tracking, pattern recognition, etc. A system which we hope to build next year could perhaps be tied into Arpanet trought the data-lab, if there were a good purpose. (Jake Feinler has a brief paper on the concept). 1b1

2) Computer aided design of logical circuits is a field where resource sharing could be used to advantage. We have activity in such circuit design, and are planning to invest in a stand-alone interactive graphics system (which could also be connected to the net for output to the net). Fields where fruitful cooperation could take place concerns programs for transient simulation, logic simulation,test generation, test rating, circuit routing, "net auditing", etc. - All are parts of the design process of getting a circuit from the designer's mind through to a set of photolitographic IC-masks. - Some thoughts on one side of the subject are recorded in a brief report which I gave to Mike Kudlick in 1973. A lot more can be said about the subject, of course. 1b2

3) Work using the NLS is something which intrigues me, and which I would very much like to see. The practical way, I think, would probably be to USE IT for something else - some activity which we already have justification for (such as e.g. item 2 above). I should also be delighted to try to motivate students or young people here to go deeper into the subject as soon as I have a certain minimum of guarantee that the activity has a certain perspective in time - i.e. that we would be able to cooperate over a period of at least a year, preferably three. 1b3

4) The simplest, most practical proposition to get activity started quickly, might be to get involved with someone else on the Net to measure some aspect of network performance. - Something which would need to be done, and where we could

From Yngvar Lundh, Norwegian Defence Research Establishment.

contribute - while having to learn quickly how the Net works. "Studies of NCP-efficiency" has been mentioned. 1b4

Well, these were just a few thoughts. 1c

Receive my best holiday wishes, Doug, if I don't see you until after. 1d

Regards Yngvar. 1e

YL 16-DEC-74 00:49 24760

From Yngvar Lundh, Norwegian Defence Research Establishment.

(J24760) 16-DEC-74 00:49; Title: Author(s): Yngvar Lundh/YL;
Distribution: /DCE; Sub-Collections: NIC; Clerk: YL;

JBP 16-DEC-74 08:58 24761

line-at-a-time

re 24750, note that even in the first case the system may pay attention to the "attention button" (interrupt or break) and if it is pushed while the keyboard is locked, interrupt the process and accept input from the user, thus while type ahead is still prohibited, user initiated input is not.
i would again like to stress the importance of testing on a real device of the kind we are discussing any proposal that we use as a model for our designs and code.
--jon.

1

JBP 16-DEC-74 08:58 24761

line-at-a-time

(J24761) 16-DEC-74 08:58;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /NPG([INFO-ONLY]) ; Sub-Collections: SRI-ARC NPG; Clerk: JBP;

JBP 16-DEC-74 09:51 24762

NSW Distribution Lists

There are now three sndmsg distribution lists in <POSTEL> at SRI-ARC
they are [SRI-ARC]<POSTEL>NSW.DISTRIBUTION-LIST for the whole group,
[SRI-ARC]<POSTEL>NSW-PI.DISTRIBUTION-LIST for the principal
investigators only, and
[SRI-ARC]<POSTEL>NSW-STEERING.DISTRIBUTION-LIST for the steering
committee only.
--jon.

1

JBP 16-DEC-74 09:51 24762

NSW Distribution Lists

(J24762) 16-DEC-74 09:51;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /NSW([INFO-ONLY]) ; Sub-Collections: SRI-ARC NSW; Clerk: JBP;

DVN 16-DEC-74 14:29 24763

Details on Printing the Internet Study

Got your note about the printng sample of the Internet Study. I'm glad it was generally satisfactory. 1

Re extra spacing between words in a line with an unusually long word: There is no general solution. We will fix IV 8,4,2,3 by inserting a carriage return after the hyphen in "packet-switched." 2

I assume your question about Tables of Contents, Figures, etc refers to page numbers. Once we have set aside space for the figures, we can run something here called a COM test which prints out a map of the file on the line printer. From this map we can learn the page location of the figures, section breaks, etc, and record them in the tables. 3

The veritical spacing in the lists of panel members was a feature I added to keep them from looking to spread out. I can change it back. 4

We can easilly put a stape in "Study Phase" make FOR OFFICIAL USE ONLY larger. I belive it also will be no problem to reduce the page image to 8 x 10.5. Of course we may end up with a few more pages. 5

Re the figure: I believed, mistakenly I guess, that it went at the end of the section. Space is set aside for it at the bottom of the right-hand column on page xii; but of coures it is invisible. 6

DVN 16-DEC-74 14:29 24763

Details on Printing the Internet Study

(J24763) 16-DEC-74 14:29;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JOAN([ACTION] dpcs notebook please) REL2([INFO-ONLY]) JCN([INFO-ONLY]) SRL([INFO-ONLY]) NDM([INFO-ONLY]) ; Sub-Collections: SRI-ARC DCEC DPCS; Clerk: DVN; Origin: < VANNOUHUYS, LYONSREPLY.NLS;1, >, 16-DEC-74 10:11 DVN ;;;;####;

DVN 16-DEC-74 14:35 24764

Request for Remote Review of Final Report Section

In Paul Rech's absence you have been selected by acclaimation to be reviewer of Dick's contribution to the final report on the subject of ARC Technology Transfer <documentation,final,7a >. Review means reading over and making helpful comments and criticism, (gjournal,31011,) is an example of a good review among geographically distributed colaborators, as they say. We are really tring to get this out; if you don't think you can finish by next Monday, please let me know. 1

DVN 16-DEC-74 14:35 24764

Request for Remote Review of Final Report Section

(J24764) 16-DEC-74 14:35;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RLL([ACTION]) JOAN([ACTION] dpcs notebook please) RWW([INFO-ONLY]) HGL([INFO-ONLY]) ; Sub-Collections: SRI-ARC DPCS; Clerk: DVN;

RWW 16-DEC-74 15:02 24765

TRIP ACTION AND OTHER NOTES

TRIP ACTION AND OTHER NOTES

BBN may use PCP and NLS files in mail work fr Navy if we get it delivered to ISI soon and they can believe it is there. 1b15

RFC 591 in NSW papers (JEW) 1b16

NSW Meeting 1c

Protools 1c1

JEW FTP process for NLS (JEW) 1c1a

Generic file types again (JBP) 1c1b

Document interface to old Protocols input/output to non NSW hosts to FTP. (JBP,JEW) 1c1c

Process structure writeup and scenario(JBP,CHI,JEW,KEV,DIA) 1c1d

FP functions only needed for NSW (JBP,JEW) 1c1e

Higher level FP functions for NSW (JBP,JEW) 1c1f

Deeper understanding of TBH and encapsulation (JBP,JEW) 1c1g

Documentation on how to interface PCP to user process (JEW) 1c1h

JBP review of 4700 connection (JBP) 1c1i

Accounting problems and relation to Process structure, is what BBN is going to do sufficient (JBP,JEW) 1c1j

Frontend 1c2

Must support login to non NSW hosts, how straight or through NSW using Telnet as tool (CHI,KEV) 1c2a

Document needed on initial package and procedutres for Transparent tools, RTCE PCP and grammar (CHI,JBP,JEW) 1c2b

Size of CLI-OSI-PCP per user data, Frontend must support 15-20 users (CHI,KEV,DIA) 1c2c

What to do if tool or Works Manager Crash (CHI,KEV) 1c2d

Linking should be supported (CHI,KEV) 1c2e

NLS 1c3

COBOL 132 line printer output into NLS (HGL,DSM) 1c3a

TRIP ACTION AND OTHER NOTES

Everything else OK whats really reasonable dates for completion (EKM) 1c3b

Other 1c4

Humphrey to Kehler ok (RWW,DVN,DCE) 1c4a

AMC support (RWW,JHB) 1c4b

L-10 guide to Crain (POOH,DVN) 1c4c

Triolo on Protocol do list (JEW,JBP) 1c4d

Norton data to Carlson and Mclindon (JCN) 1c4e

Proposal by Feb 1 (RWW) 1c4f

Issues needing resolution affecting us 1c5

NSW "management tools" what and who builds 1c5a

Use types and automatic translation (JBp) 1c5b

Committee on interface to DoD machines (RWW) 1c5c

Message system coordination and our thoughts (RWW,others) 1c5d

Slots and pie slices how supported in NSW (RWW) 1c5e

Help database for Works manager (RWW,DVN) 1c5f

Tenex as TBH who implements (RWW,Carlson) 1c5g

Feedback on Line at a time terminals (Carlson,RWW) 1c5h

RWW 16-DEC-74 15:02 24765

TRIP ACTION AND OTHER NOTES

(J24765) 16-DEC-74 15:02;;;; Title: Author(s): Richard W. Watson/RWW; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RWW;

JAKE 16-DEC-74 15:47 24766

Site visit by Len Fischer from Livermore

Doug, Len Fischer from the Livermore Rad Lab may be here tomorrow and he may be here for lunch (won't know until tomorrow morning). He is in the Library there and has an interest in bringing some of the large AEC data bases onto the Arpanet. I know him through ASIS and had asked him to drop by if he was down this way. Since he is coming to the peninsula tomorrow, he took me up on the offer. He has also mentioned an NLS exhibit for the 1976 ASIS as a possibility. Do you have any interest in meeting him or joining us for lunch? If so, let me know. Also, Where is NSF Program Solicitation NSF 74-38? Do we have any distribution mechanism for proposal requests? If so, would like to know procedure. Thanks, Jake 1

JAKE 16-DEC-74 15:47 24766

Site visit by Len Fischer from Livermore

(J24766) 16-DEC-74 15:47;;;; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /DCE([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: JAKE;

KIRK 16-DEC-74 16:59 24767

Bug in jump external

If it finds a broken (non-working) link in the index file, the command responds with "fst entry nonexistant" when you try to use it again 1

KIRK 16-DEC-74 16:59 24767

Bug in jump external

(J24767) 16-DEC-74 16:59;;;; Title: Author(s): Kirk E. Kelley/KIRK;
Distribution: /BGS([ACTION]) FDBK([ACTION]) JDH([INFO-ONLY])
; Sub-Collections: SRI-ARC FDBK; Clerk: KIRK;

JBP 16-DEC-74 19:26 24768

RE: 31493 -- comments on BJP

Larry:
Thanks for your comments, the ideas on priority can be easily incorporated, in the CRTJOB call. As for the Prerequsite job information, that seems to be somthing like job steps in the ibm world.
Is there such a concept in the B3500,B4700 control language now?
I think that we should be careful not to reconstruct the entire job control language in the crtjob call, prehaps even the priority is best handled in the job control language in the input files.
Comments ?
--jon.

1

JBP 16-DEC-74 19:26 24768

RE: 31493 -- comments on BJP

(J24768) 16-DEC-74 19:26;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /LAC([ACTION]) NSW([INFO-ONLY]) ; Sub-Collections: SRI-ARC NSW; Clerk: JBP;

DVN POOH 17-DEC-74 09:24 24769

An IDENT FOR DOCUMENTATION

In HELP, Sandy Johnson is listed as the person to receive requests for hard copy documentation. Since documentation may live forever while others take off for that great augmented workshop in the sky, it seems like a good idea to have an ident for documentation. Whoever was in charge of distributing documentation as well as those who wanted to know about the requests, could receive the journal items. The ident DOC is not being used and seems appropriate. If there are no objections, this ident will be set up, and those who want to receive the mail should make their wishes known. 1

DVN POOH 17-DEC-74 09:24 24769

An IDENT FOR DOCUMENTATION

(J24769) 17-DEC-74 09:24;;;; Title: Author(s): Dirk H. Van Nouhuys, Ann Weinberg/DVN POOH; Distribution: /DIRT([ACTION]) ; Sub-Collections: SRI-ARC DIRT; Clerk: POOH;

JAKE 17-DEC-74 09:38 24770

New IMPS on the Network

Craig Fields indicated that the following IMPs will be added to the Arpanet on the dates specified: Eglin AFB IMP, 1-9-75, Gunter AFB, 2-6-75, Argonne, 2-13-75, NYU (Brookhaven I believe) 2-27-75, NSA, 4-1-75, Scott AFB, 5-29-75, Univ. of Rochester, sometime in first half of 75, exact date not known. Case-10 IMP has now been removed from the network. This is just general information for those that might be interested. Jake 1

JAKE 17-DEC-74 09:38 24770

New IMPS on the Network

(J24770) 17-DEC-74 09:38;;;; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JAKE;

JAKE 17-DEC-74 09:45 24771

Datacomputer specs

Dick, can I get a copy of those Datacomputer specs when you get them or at least a brief explanation of what is in the wind with regard to the data computer. Also, hear that Hal Murray is visiting SRI-AI this week. Is he coming here also? If so, would like a minute or two with him or would like to sit in if he is describing what is going on at CCA. Thanks, Jake 1

JAKE 17-DEC-74 09:45 24771

Datacomputer specs

(J24771) 17-DEC-74 09:45;;;; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /RWW([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: JAKE;

JBP 17-DEC-74 15:57 24772

file standards

A problem that i have had sending documents online to other people over the network is that their printers are different than ours both in control functions and in the area of the page allowed for printing. This document is an attempt to set up standards for document files such that a document may be prepared in a standard format and advertised as such. Do you think that this will help solve any real problems, and how does this relate to journal documents and formats?

JBP 17-DEC-74 15:57 24772

file standards

Network Working Group
Request for Comments: rrr

J. Postel (SRI-ARC)
dd December 1974

NIC: jjjjj

Standard File Formats

Introduction

In an attempt to provide online documents to the network community we have had many problems with the physical format of the final documents. Much of this difficulty lies in the fact that we do not have control or even knowledge of all the processing steps or devices that act on the document file. A large part of the difficulty in the past has been due to some assumptions we made about the rest of the world being approximately like our own environment. We now see that the problems are due to differing assumptions and treatment of files to be printed as documents. We therefore propose to define certain standard formats for files and describe the expected final form for printed copies of such files.

These standard formats are not additional File Transfer Protocol data types/modes/structures, but rather usage descriptions between the originator and ultimate receiver of the file. It may be useful or even necessary at some hosts to construct programs that convert files between common local formats and the standard formats specified here.

Standardization Elements

The elements or aspects of a file to be standardized are the character or code set used, the format control procedures, the area of the page to be used for text, and the method to describe overstruck or underlined characters.

The area of the page to be used for text can be confusing to discuss, in an attempt to be clear we define a physical page and a logical page.

Physical Page

The physical page is the medium that carries the text, the height and width of its area are measured in inches.

The typical physical page is a piece of paper eleven inches high and eight and one half inches wide.

Typical print density is 10 characters per inch horizontally and 6 characters per inch vertically. This results in the typical physical page having a maximum

capacity of 66 lines and 85 characters per line. It is often the case that printing devices limit the area of the physical page by enforcing margins.

Logical Page

The logical page is the area that can contain text, the height of this area is measured in lines and the width is measured in characters.

A typical logical page is 60 lines high and 72 characters wide.

Code Set

The character encoding will be the network standard Network Virtual Terminal (NVT) code as used in Telnet and File Transfer protocols, that is ASCII in an eight bit byte with the high order bit zero.

Format Control

The format will be controlled by the ASCII format effectors:

Form Feed <FF>

Moves the printer to the top of the next logical page, and to the left edge of the logical page. [Note that this differs from the NVT specification].

Carriage Return <CR>

Moves the printer to the left edge of the logical page remaining on current line.

Line Feed <LF>

Moves the printer to the next print line, keeping the same horizontal position.

Horizontal Tab <HT>

Moves the printer to the next horizontal tab stop.

The default stops for horizontal tabs will be every eight characters, that is character positions 9, 17, 25, ... within the logical page.

Vertical Tab <VT>

Moves the printer to the next vertical tab stop.

The default stops for vertical tabs will be every eight

lines starting at the first printing line on each logical page.

Back Space <BS>

Moves the printer one character position toward the left edge of the logical page.

Not all these effectors will be used in all format standards, any effectors which are not used in a format standard are ignored.

Page Length

The logical page length will be specified in terms of a number of lines of text. This describes the number of lines per physical page available for text. This does not specify the size of the physical page or the font.

Page Width

The logical page width will be specified as a number of characters. This describes the number of characters per line of the physical page available for text. This does not specify the physical size of the page or the font.

Overstriking

Overstriking (note that underlining is a subset of overstriking) may be specified to be done in one or both of the following ways, or not at all:

By Line

The text of the line will be followed by a <CR> then the overstriking will follow as a series of space and overstrike characters followed by <CR><LF>.

By Character

Each character to be overstruck is to be immediately followed by a <BS> and the overstrike character.

Standard Formats

Format 1

This format is designed to be used for documents to be printed on line printers, which normally have 66 lines to a physical page, but often have forced top and bottom margins of 3 lines each.

Active Format Effectors
<FF>, <CR>, <LF>.
Page Length
60 lines.
Page Width
72 Characters.
Overstriking
By Line.

Format 2

This format is designed to be used with hard copy terminals, which in the normal case have 66 lines to a physical page.

Active Format Effectors
<FF>, <CR>, <LF>, <HT>, <VT>, <BS>.
Page Length
66 lines.
Page Width
72 Characters.
Overstriking
By Character.

Format 3

This format is designed to be used with full width (11 by 14 inch paper) line printer output.

Active Format Effectors
<FF>, <CR>, <LF>.
Page Length
60 lines.
Page Width
132 Characters.
Overstriking
None.

Format 4

This format is designed to be used for simulated card input. The page width is 80 characters, each card image is followed by <CR><LF>, thus each card is represented by 82 characters in the file.

Active Format Effectors
<CR>, <LF>.
Page Length
Infinite.
Page Width
80 Characters.
Overstriking
None.

Implementation Suggestions

Overflow

Overflow can result from two causes, first if the physical page is smaller than the logical page, and second if the actual text in the file violates the standard under which it is being processed.

In either case the following suggestions are made to implementors of programs which process files in these formats.

Length

If more lines are processed than fit within the minimum of the physical page and the logical page length since the last top of page action, then the top of page action should be forced.

Width

If more character positions are processed than fit on the minimum of the physical page width and the logical page width since the last left edge action, then characters are discarded up to the next format effector.

or

If more character positions are processed than fit on the minimum of the physical page width and the logical page width since the last left edge action, then the left edge and next line actions should be forced.

References

A. McKenzie "TELNET Protocol Specification," NIC 18639, Aug-73.

"USA Standard Code for Information Interchange," United States of America Standards Institute, 1968.

JBP 17-DEC-74 15:57 24772

file standards

(J24772) 17-DEC-74 15:57;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /DVN([INFO-ONLY]) NDM([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP; Origin: < POSTEL, FILE-STANDARDS.NLS;10, >, 9-DEC-74 17:37 JBP ;;;;####;

JBP 17-DEC-74 16:06 24773

XMAX & YMAX Directives

There should be two directives that control the area of the page accessible to the output processor XMAX and YMAX, XMAX would control the number of characters per line and YMAX the number of lines per page. All directives that set right margins would have to set values less than or equal XMAX either directly or as "XMAX=n". The YMAX control could work much as it does now.
These directives should be set to some resonable default value in the origin statement of every file but there should be a way of substituting on a per user basis another value, such that documents formatted for that user will fit on that users favorite printer.

1

XMAX & YMAX Directives

(J24773) 17-DEC-74 16:06;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /NDM([INFO-ONLY]) DVN([INFO-ONLY]) FEED([INFO-ONLY]) FDBK([INFO-ONLY]) ; Sub-Collections: SRI-ARC FDBK; Clerk: JBP;

JCN 18-DEC-74 04:52 24774

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

A complete study of Office-1 use by week, group, and individual user is about completed. It will be (24775,).

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

WEEK ending 7/ 6/74				1
ARC	7/ 6/74	,56	20,31	1a
ARPA	7/ 6/74	,30	6,01	1b
BELL	7/ 6/74	,65	32,11	1c
BRL	7/ 6/74	,11	2,93	1d
ENERGY	7/ 6/74	,20	5,50	1e
MIT SEISMIC	7/ 6/74	,97	4,86	1f
NICUSERS	7/ 6/74	,36	10,35	1g
NSA	7/ 6/74	,44	16,51	1h
NSW	7/ 6/74	,28	7,99	1i
RADC	7/ 6/74	4,05	105,41	1j
TOTAL:		7,91	211,98	1k
WEEK ending 7/13/74				2
ARC	7/13/74	1,65	35,87	2a
ARPA	7/13/74	1,33	52,22	2b
BELL CANADA	7/13/74	1,02	45,83	2c
BRL	7/13/74	,17	6,02	2d
ENERGY	7/13/74	1,00	22,95	2e
ETS CBI	7/13/74	,00	,35	2f
MIT SEISMIC	7/13/74	,31	15,36	2g
NICUSERS	7/13/74	,31	15,17	2h
NSA	7/13/74	,87	38,57	2i
NSW	7/13/74	,12	4,04	2j

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

RADC	7/13/74	5,97	179,30	2k
TOTAL:		12,74	415,68	21
WEEK ending 7/20/74				3
ARC	7/20/74	1,08	48,10	3a
ARPA	7/20/74	1,31	50,70	3b
BELL CANADA	7/20/74	2,53	101,62	3c
BRL	7/20/74	,15	5,72	3d
ENERGY	7/20/74	1,06	24,24	3e
ETS CBI	7/20/74	,03	2,75	3f
MIT SEISMIC	7/20/74	,77	25,50	3g
NICUSERS	7/20/74	,42	13,01	3h
NSA	7/20/74	1,17	53,90	3i
NSRDC	7/20/74	,08	2,60	3j
NSW	7/20/74	,60	29,56	3k
RADC	7/20/74	10,61	192,30	3l
TOTAL:		19,81	550,00	3m
WEEK ending 7/27/74				4
ARC	7/27/74	,68	20,64	4a
ARPA	7/27/74	,82	37,25	4b
BELL CANADA	7/27/74	1,65	59,08	4c
BRL	7/27/74	,03	1,23	4d
ENERGY	7/27/74	,43	9,17	4e

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

ETS CBI	7/27/74	.21	10.67	4f
MIT SEISMIC	7/27/74	.51	19.57	4g
NICUSERS	7/27/74	.33	12.58	4h
NSA	7/27/74	.91	38.22	4i
NSRDC	7/27/74	.00	.02	4j
NSW	7/27/74	.62	28.25	4k
RADC	7/27/74	6.44	169.80	4l
TOTAL:		12.63	406.49	4m
WEEK ending 8/ 3/74				5
ARC	8/ 3/74	1.48	44.96	5a
ARPA	8/ 3/74	.66	20.85	5b
BELL CANADA	8/ 3/74	.64	22.75	5c
BRL	8/ 3/74	.02	.53	5d
ENERGY	8/ 3/74	.26	4.64	5e
ETS CBI	8/ 3/74	.08	6.40	5f
HUDSON	8/ 3/74	.20	13.74	5g
MIT SEISMIC	8/ 3/74	.51	18.35	5h
NICUSERS	8/ 3/74	.11	3.10	5i
NSA	8/ 3/74	1.57	60.58	5j
NSRDC	8/ 3/74	.48	23.74	5k
NSW	8/ 3/74	.64	24.94	5l
RADC	8/ 3/74	5.25	125.12	5m

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

TOTAL:		11.89	369.70	5n
WEEK ending 8/10/74				6
ARC	8/10/74	1.07	23.87	6a
ARPA	8/10/74	1.22	46.49	6b
BELL CANADA	8/10/74	.89	64.84	6c
BRL	8/10/74	.02	.43	6d
ENERGY	8/10/74	.30	7.11	6e
ETS CBI	8/10/74	.06	2.88	6f
HUDSON	8/10/74	.16	14.85	6g
MIT SEISMIC	8/10/74	.13	5.98	6h
NICUSERS	8/10/74	.14	3.49	6i
NSA	8/10/74	1.35	64.22	6j
NSRDC	8/10/74	.40	16.95	6k
NSW	8/10/74	.33	12.03	6l
RADC	8/10/74	3.58	96.07	6m
TOTAL:		9.65	359.22	6n
WEEK ending 8/17/74				7
ARC	8/17/74	.88	24.76	7a
ARPA	8/17/74	.55	34.77	7b
BELL CANADA	8/17/74	2.65	118.13	7c
BRL	8/17/74	.12	2.20	7d
ENERGY	8/17/74	.30	5.66	7e
ETS CBI	8/17/74	.08	6.21	7f

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

HUDSON	8/17/74	.09	3,80	7g
MIT SEISMIC	8/17/74	.01	.29	7h
NICUSERS	8/17/74	.05	1,63	7i
NSA	8/17/74	1,02	40,70	7j
NSRDC	8/17/74	.09	7,07	7k
NSW	8/17/74	.54	17,51	7l
RADC	8/17/74	5,29	109,30	7m
TOTAL:		11,67	372,04	7n
WEEK ending 8/24/74				8
ARC	8/24/74	1,44	37,24	8a
ARPA	8/24/74	.86	34,45	8b
BELL CANADA	8/24/74	2,97	100,17	8c
BRL	8/24/74	.02	.30	8d
ENERGY	8/24/74	.74	12,56	8e
ETS CBI	8/24/74	.02	1,00	8f
HUDSON	8/24/74	.13	6,17	8g
MIT SEISMIC	8/24/74	.04	1,83	8h
NICUSERS	8/24/74	.16	5,92	8i
NSA	8/24/74	.45	24,81	8j
NSRDC	8/24/74	.84	37,51	8k
NSW	8/24/74	.24	14,27	8l
RADC	8/24/74	4,19	96,21	8m

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

TOTAL:		12,11	372,45	8n
WEEK ending 8/31/74				9
ARC	8/31/74	,80	31,25	9a
ARPA	8/31/74	1,74	91,39	9b
BELL CANADA	8/31/74	3,09	102,51	9c
BRL	8/31/74	,24	4,78	9d
ENERGY	8/31/74	,15	6,03	9e
ETS CBI	8/31/74	,26	9,32	9f
HUDSON	8/31/74	,02	,64	9g
MIT SEISMIC	8/31/74	,06	1,49	9h
NICUSERS	8/31/74	,08	1,90	9i
NSA	8/31/74	1,10	43,76	9j
NSRDC	8/31/74	,91	46,56	9k
NSW	8/31/74	,43	18,35	9l
RADC	8/31/74	2,65	65,78	9m
TOTAL:		11,52	423,78	9n
WEEK ending 9/ 7/74				10
ARC	9/ 7/74	1,18	61,65	10a
ARPA	9/ 7/74	1,08	62,49	10b
BELL CANADA	9/ 7/74	2,91	126,19	10c
BRL	9/ 7/74	,18	9,72	10d
ENERGY	9/ 7/74	,18	4,28	10e
ETS CBI	9/ 7/74	,12	5,89	10f

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

HUDSON	9/ 7/74	.06	2,45	10g
MIT SEISMIC	9/ 7/74	.09	4,12	10h
NICUSERS	9/ 7/74	.14	4,63	10i
NSA	9/ 7/74	.61	24,34	10j
NSRDC	9/ 7/74	.91	42,19	10k
NSW	9/ 7/74	.39	19,72	10l
RADC	9/ 7/74	5,07	130,95	10m
SRI	9/ 7/74	.00	.01	10n
TOTAL:		12,93	498,63	10o
WEEK ending 9/14/74				11
ARC	9/14/74	1,05	74,53	11a
ARPA	9/14/74	2,47	129,26	11b
BELL CANADA	9/14/74	3,30	108,89	11c
BRL	9/14/74	.12	3,22	11d
ENERGY	9/14/74	.31	10,17	11e
ETS CBI	9/14/74	.11	3,17	11f
HUDSON	9/14/74	.25	8,35	11g
MIT SEISMIC	9/14/74	.04	2,32	11h
NICUSERS	9/14/74	.07	3,18	11i
NSA	9/14/74	.81	32,45	11j
NSRDC	9/14/74	.53	24,12	11k
NSW	9/14/74	.23	12,27	11l
RADC	9/14/74	5,34	146,12	11m

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

SRI	9/14/74	.04	.93	11n
TOTAL:		14.67	558.98	11o
WEEK ending 9/21/74				12
ARC	9/21/74	1.44	51.20	12a
ARPA	9/21/74	2.55	131.97	12b
BELL CANADA	9/21/74	1.74	84.37	12c
BRL	9/21/74	.38	11.54	12d
ENERGY	9/21/74	.36	20.55	12e
ETS CBI	9/21/74	.50	23.26	12f
HUDSON	9/21/74	.39	25.87	12g
MIT SEISMIC	9/21/74	.32	11.46	12h
NICUSERS	9/21/74	.08	3.67	12i
NSA	9/21/74	.61	26.56	12j
NSRDC	9/21/74	.85	38.91	12k
NSW	9/21/74	.18	9.67	12l
RADC	9/21/74	3.83	125.23	12m
SRI	9/21/74	.20	7.46	12n
TOTAL:		13.42	571.74	12o
WEEK ending 9/28/74				13
ARC	9/28/74	1.51	44.59	13a
ARPA	9/28/74	1.91	103.60	13b
BELL CANADA	9/28/74	2.03	123.85	13c

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

BRL	9/28/74	.43	15,98	13d
ENERGY	9/28/74	.63	21,03	13e
ETS CBI	9/28/74	.12	6,99	13f
HUDSON	9/28/74	.16	6,87	13g
MIT SEISMIC	9/28/74	.50	31,97	13h
NICUSERS	9/28/74	.02	.74	13i
NSA	9/28/74	1,05	40,49-	13j
NSRDC	9/28/74	.41	19,31	13k
NSW	9/28/74	.30	17,76	13l
RADC	9/28/74	3,39	103,13	13m
SRI	9/28/74	.02	.54	13n
TOTAL:		12,49	536,86	13o
WEEK ending 10/ 5/74				14
ARC	10/ 5/74	1,60	62,84	14a
ARPA	10/ 5/74	2,56	132,87	14b
BELL CANADA	10/ 5/74	2,41	115,12	14c
BRL	10/ 5/74	.49	12,87	14d
ENERGY	10/ 5/74	.63	18,11	14e
ETS CBI	10/ 5/74	.27	12,37	14f
HUDSON	10/ 5/74	.44	27,84	14g
MIT SEISMIC	10/ 5/74	.69	38,98	14h
NICUSERS	10/ 5/74	.04	1,70	14i
NSA	10/ 5/74	1,72	63,00	14j

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

NSRDC	10/ 5/74	.57	26.05	14k
NSW	10/ 5/74	.71	23.56	14l
RADC	10/ 5/74	4.36	120.61	14m
SRI	10/ 5/74	.05	1.20	14n
TOTAL:		16.53	657.12	14o
WEEK ending 10/12/74				15
ARC	10/12/74	1.90	54.45	15a
ARPA	10/12/74	2.25	121.99	15b
BELL CANADA	10/12/74	1.87	76.27	15c
BRL	10/12/74	.18	6.23	15d
ENERGY	10/12/74	.41	15.42	15e
ETS CBI	10/12/74	.34	16.30	15f
HUDSON	10/12/74	.45	42.94	15g
MIT SEISMIC	10/12/74	.31	14.91	15h
NICUSERS	10/12/74	.15	6.30	15i
NSA	10/12/74	1.17	50.43	15j
NSRDC	10/12/74	2.12	110.79	15k
NSW	10/12/74	.19	11.84	15l
RADC	10/12/74	3.83	111.61	15m
SRI	10/12/74	.10	2.07	15n
TOTAL:		15.25	641.55	15o
WEEK ending 10/19/74				16

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

ARC	10/19/74	1.44	57.41	16a
ARPA	10/19/74	1.28	90.99	16b
BELL CANADA	10/19/74	.81	49.76	16c
BRL	10/19/74	.07	2.50	16d
ENERGY	10/19/74	.49	17.66	16e
ETS CBI	10/19/74	.10	4.95	16f
HUDSON	10/19/74	.10	13.24	16g
MIT SEISMIC	10/19/74	.41	19.43	16h
NICUSERS	10/19/74	.09	3.71	16i
NSA	10/19/74	1.44	54.27	16j
NSRDC	10/19/74	.49	31.81	16k
NSW	10/19/74	.22	11.79	16l
RADC	10/19/74	5.26	104.06	16m
SRI	10/19/74	.34	15.66	16n
TOTAL:		12.53	477.25	16o

WEEK ending 10/26/74 17

ARC	10/26/74	2.53	118.37	17a
ARPA	10/26/74	1.52	80.28	17b
BELL CANADA	10/26/74	.95	55.58	17c
BRL	10/26/74	.51	55.07	17d
ENERGY	10/26/74	.58	24.59	17e
ETS CBI	10/26/74	.02	1.48	17f
MIT SEISMIC	10/26/74	.33	15.97	17g

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

NICUSERS	10/26/74	.37	24.18	17h
NSA	10/26/74	.95	65.98	17i
NSRDC	10/26/74	.67	52.96	17j
NSW	10/26/74	.21	14.37	17k
RADC	10/26/74	6.04	128.34	17l
SRI	10/26/74	.25	11.86	17m
TOTAL:		14.93	649.02	17n

WEEK ending 11/ 2/74 18

ARC	11/ 2/74	2.12	75.42	18a
ARPA	11/ 2/74	2.23	195.21	18b
BELL CANADA	11/ 2/74	1.09	99.25	18c
BRL	11/ 2/74	.27	16.01	18d
ENERGY	11/ 2/74	.50	22.58	18e
ETS CBI	11/ 2/74	.28	11.29	18f
HUDSON	11/ 2/74	.03	.67	18g
MIT SEISMIC	11/ 2/74	.41	19.90	18h
NICUSERS	11/ 2/74	.22	7.34	18i
NSA	11/ 2/74	.98	47.58	18j
NSRDC	11/ 2/74	1.23	62.00	18k
NSW	11/ 2/74	.30	17.17	18l
RADC	11/ 2/74	3.26	110.00	18m
SRI	11/ 2/74	.45	11.89	18n

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

TOTAL:		13.37	696.32	18o
WEEK ending 11/ 9/74				19
ARC	11/ 9/74	2.42	125.31	19a
ARPA	11/ 9/74	1.45	124.53	19b
BELL CANADA	11/ 9/74	1.24	82.58	19c
BRL	11/ 9/74	.38	19.16	19d
ENERGY	11/ 9/74	.27	17.13	19e
ETS CBI	11/ 9/74	.46	22.64	19f
HUDSON	11/ 9/74	.13	14.42	19g
MIT SEISMIC	11/ 9/74	.40	21.11	19h
NICUSERS	11/ 9/74	.10	3.99	19i
NSA	11/ 9/74	.87	41.77	19j
NSRDC	11/ 9/74	1.08	63.92	19k
NSW	11/ 9/74	1.70	62.48	19l
RADC	11/ 9/74	8.42	178.01	19m
SRI	11/ 9/74	.86	30.88	19n
TOTAL:		19.78	807.95	19o
WEEK ending 11/16/74				20
ARC	11/16/74	.76	28.69	20a
ARPA	11/16/74	.19	8.08	20b
BELL CANADA	11/16/74	.27	11.10	20c
BRL	11/16/74	.23	10.56	20d
ENERGY	11/16/74	.09	2.10	20e

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

ETS CBI	11/16/74	.07	4.53	20f
HUDSON	11/16/74	.02	.54	20g
MIT SEISMIC	11/16/74	.21	9.17	20h
NICUSERS	11/16/74	.05	1.61	20i
NSA	11/16/74	.29	13.11	20j
NSRDC	11/16/74	.29	17.43	20k
NSW	11/16/74	.34	17.80	20l
RADC	11/16/74	1.85	77.41	20m
SRI	11/16/74	.50	13.50	20n
TOTAL:		5.17	215.65	20o

WEEK ending 11/23/74 21

ARC	11/23/74	1.45	51.63	21a
ARPA	11/23/74	.66	42.11	21b
BELL CANADA	11/23/74	.93	63.11	21c
BRL	11/23/74	.56	28.67	21d
ENERGY	11/23/74	.11	4.21	21e
ETS CBI	11/23/74	.24	15.16	21f
HUDSON	11/23/74	.05	1.21	21g
MIT SEISMIC	11/23/74	.31	25.24	21h
NICUSERS	11/23/74	.07	3.29	21i
NSA	11/23/74	.91	31.80	21j
NSRDC	11/23/74	1.92	73.78	21k
NSW	11/23/74	.44	26.36	21l

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

RADC	11/23/74	6,24	143,09	21m
SRI	11/23/74	,46	18,82	21n
TOTAL:		14,34	528,48	21o
WEEK ending 11/30/74				22
ARC	11/30/74	1,11	51,20	22a
ARPA	11/30/74	1,07	63,53	22b
BELL CANADA	11/30/74	1,02	91,50	22c
BRL	11/30/74	,31	13,74	22d
ENERGY	11/30/74	,22	7,75	22e
ETS CBI	11/30/74	,34	17,94	22f
HUDSON	11/30/74	,01	,44	22g
MIT SEISMIC	11/30/74	,39	14,13	22h
NICUSERS	11/30/74	,24	6,74	22i
NSA	11/30/74	,67	28,35	22j
NSRDC	11/30/74	1,08	40,74	22k
NSW	11/30/74	,48	21,99	22l
RADC	11/30/74	3,41	109,02	22m
SRI	11/30/74	,79	24,47	22n
TOTAL:		11,13	491,53	22o
WEEK ending 12/ 7/74				23
ARC	12/ 7/74	1,78	73,20	23a
ARPA	12/ 7/74	,82	59,80	23b

Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

BELL CANADA	12/ 7/74	1,51	85,14	23c
BRL	12/ 7/74	,70	31,62	23d
ENERGY	12/ 7/74	,15	6,96	23e
ETS CBI	12/ 7/74	,81	34,91	23f
HUDSON	12/ 7/74	,02	3,23	23g
MIT SEISMIC	12/ 7/74	,45	21,73	23h
NICUSERS	12/ 7/74	,10	3,03	23i
NSA	12/ 7/74	,76	43,38	23j
NSRDC	12/ 7/74	1,88	90,03	23k
NSW	12/ 7/74	,99	42,64	23l
RADC	12/ 7/74	4,05	132,07	23m
SRI	12/ 7/74	,63	22,63	23n
TOTAL:		14,66	650,37	23o

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Summary of Office-1 Use: 1 July thru 7 December 1974 by Week, by Group

(J24774) 18-DEC-74 04:52;;;; Title: Author(s): James C. Norton/JCN; Distribution: /KWAC([INFO-ONLY]) ; Sub-Collections: SRI-ARC KWAC; Clerk: JCN; Origin: < NORTON, SUMMARYUSE.NLS;1, >, 18-DEC-74 04:18 JCN ;;;;

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ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

See also (24774,) for a Group summary. If you see any people who dont belong in the arpa group, let me know. Some of the names puzzel me. The DCA people ar included here, though, intentionally, for their use was supported by ARPA. Even though NSW people have been in the ARPA allocation group, I did list them separately in the summary. Details of their use are forthcoming. I am assuming that the complete use study,,all users, groups, weeks,, will be useful. I plan to send it to KWAC in a day or so. If you need more, just ask.

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ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

WEEK ending 7/ 6/74				1
ARPA				1a
BANGERT	7/ 6/74	.02	2.39	1a1
BEARD	7/ 6/74	.00	.02	1a2
DUBOIS	7/ 6/74	.01	.09	1a3
HARTSELL	7/ 6/74	.00	.02	1a4
KRESA	7/ 6/74	.00	.02	1a5
LICKLIDER	7/ 6/74	.00	.03	1a6
MCLINDON	7/ 6/74	.02	1.47	1a7
O'SULLIVAN	7/ 6/74	.01	.14	1a8
ORSINI	7/ 6/74	.01	.14	1a9
RUSSELL	7/ 6/74	.00	.15	1a10
STO	7/ 6/74	.23	1.47	1a11
TACH	7/ 6/74	.00	.02	1a12
TTO	7/ 6/74	.00	.03	1a13
TOTAL	7/ 6/74	.30	6.01	1a14
WEEK ending 7/13/74				2
ARPA				2a
BANGERT	7/13/74	.04	3.20	2a1
BEARD	7/13/74	.00	.07	2a2
CERL	7/13/74	.00	.00	2a3
DUBOIS	7/13/74	.02	.33	2a4
EDWARDS	7/13/74	.04	1.37	2a5
GLAWRENCE	7/13/74	.00	.08	2a6

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

HARTSELL	7/13/74	.00	.01	2a7
KORENBLIT	7/13/74	.01	.34	2a8
KRESA	7/13/74	.01	.13	2a9
LAWRENCE	7/13/74	.84	19.91	2a10
LICKLIDER	7/13/74	.01	.23	2a11
MARKOWITZ	7/13/74	.02	2.56	2a12
MCLINDON	7/13/74	.02	1.12	2a13
NIEDENFUHR	7/13/74	.00	.02	2a14
ORSINI	7/13/74	.00	.01	2a15
PARISI	7/13/74	.00	.01	2a16
RUSSELL	7/13/74	.29	22.57	2a17
TACH	7/13/74	.00	.05	2a18
TTO	7/13/74	.01	.18	2a19
YEE	7/13/74	.00	.02	2a20
TOTAL	7/13/74	1.33	52.22	2a21
WEEK ending 7/20/74				3
ARPA				3a
BANGERT	7/20/74	.09	4.17	3a1
BEARD	7/20/74	.01	.07	3a2
CROCKER	7/20/74	.02	.15	3a3
DORIS	7/20/74	.02	2.09	3a4
DUBOIS	7/20/74	.01	.09	3a5
FRYKLUND	7/20/74	.00	.06	3a6
KAHN	7/20/74	.07	3.44	3a7

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

KORENBLIT	7/20/74	.01	.10	3a8
KRESA	7/20/74	.00	.01	3a9
MARKOWITZ	7/20/74	.01	.77	3a10
MCLINDON	7/20/74	.23	4.46	3a11
NEUMANNR	7/20/74	.00	.05	3a12
NIEDENFUHR	7/20/74	.00	.01	3a13
PARISI	7/20/74	.02	1.44	3a14
RUSSELL	7/20/74	.54	30.61	3a15
STO	7/20/74	.26	2.91	3a16
TACH	7/20/74	.00	.01	3a17
TIO	7/20/74	.01	.23	3a18
YEE	7/20/74	.00	.03	3a19
TOTAL	7/20/74	1.31	50.70	3a20
WEEK ending 7/27/74				4
ARPA				4a
BANGERT	7/27/74	.05	3.65	4a1
BEARD	7/27/74	.00	.00	4a2
BLUE	7/27/74	.00	.14	4a3
CROCKER	7/27/74	.01	.48	4a4
DORIS	7/27/74	.00	.07	4a5
DUBOIS	7/27/74	.04	1.13	4a6
EDWARDS	7/27/74	.07	2.75	4a7
FIELDS	7/27/74	.00	.04	4a8
HARTSELL	7/27/74	.00	.01	4a9

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

JOAN	7/27/74	.00	.41	4a10
KAHN	7/27/74	.13	9.58	4a11
KORENBLIT	7/27/74	.00	.01	4a12
KRESA	7/27/74	.01	.41	4a13
LICKLIDER	7/27/74	.00	.02	4a14
MARKOWITZ	7/27/74	.00	.29	4a15
MCLINDON	7/27/74	.13	5.97	4a16
NIEDENFUHR	7/27/74	.00	.01	4a17
PARISI	7/27/74	.01	.43	4a18
PERRY	7/27/74	.00	.01	4a19
RUSSELL	7/27/74	.21	9.05	4a20
STO	7/27/74	.08	.38	4a21
TACH	7/27/74	.00	.00	4a22
TTO	7/27/74	.01	.25	4a23
TTO	7/27/74	.05	2.04	4a24
YEE	7/27/74	.01	.12	4a25
TOTAL	7/27/74	.82	37.25	4a26
WEEK ending 8/ 3/74				5
ARPA				5a
BANGERT	8/ 3/74	.08	9.49	5a1
BEARD	8/ 3/74	.00	.03	5a2
BLUE	8/ 3/74	.00	.12	5a3
DORIS	8/ 3/74	.00	.01	5a4
DUBOIS	8/ 3/74	.01	.39	5a5

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

EDWARDS	8/ 3/74	.03	.97	5a6
HARTSELL	8/ 3/74	.00	.01	5a7
JOAN	8/ 3/74	.00	.45	5a8
KORENBLIT	8/ 3/74	.00	.04	5a9
KRESA	8/ 3/74	.00	.04	5a10
LICKLIDER	8/ 3/74	.00	.01	5a11
MCLINDON	8/ 3/74	.02	.45	5a12
NIEDENFUHR	8/ 3/74	.00	.01	5a13
ORSINI	8/ 3/74	.00	.04	5a14
PARISI	8/ 3/74	.06	2.27	5a15
RUSSELL	8/ 3/74	.12	3.46	5a16
SELFRIDGE	8/ 3/74	.00	.02	5a17
STO	8/ 3/74	.00	.01	5a18
STO	8/ 3/74	.26	1.03	5a19
TACH	8/ 3/74	.00	.01	5a20
TTO	8/ 3/74	.06	1.95	5a21
YEE	8/ 3/74	.01	.04	5a22
TOTAL	8/ 3/74	.66	20.85	5a23
WEEK ending 8/10/74				6
ARPA				6a
ARPA-PM	8/10/74	.00	.02	6a1
BANGERT	8/10/74	.13	17.26	6a2
BLUE	8/10/74	.03	2.19	6a3
CROCKER	8/10/74	.02	.81	6a4

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

DUBOIS	8/10/74	.03	2.23	6a5
EDWARDS	8/10/74	.04	1.60	6a6
HARTSELL	8/10/74	.00	.01	6a7
JOAN	8/10/74	.00	.47	6a8
KAHN	8/10/74	.04	1.58	6a9
KIBLER	8/10/74	.01	.57	6a10
KORENBLIT	8/10/74	.01	.37	6a11
LICKLIDER	8/10/74	.00	.13	6a12
LUKASIK	8/10/74	.00	.12	6a13
MCLINDON	8/10/74	.07	1.23	6a14
NEUMANNR	8/10/74	.19	1.28	6a15
RUSSELL	8/10/74	.34	13.98	6a16
STO	8/10/74	.29	2.52	6a17
TACH	8/10/74	.00	.05	6a18
TTO	8/10/74	.00	.01	6a19
YEE	8/10/74	.01	.07	6a20
TOTAL	8/10/74	1.22	46.49	6a21
WEEK ending 8/17/74				7
ARPA				7a
ARPA-PM	8/17/74	.00	.03	7a1
BANGERT	8/17/74	.19	18.67	7a2
BEARD	8/17/74	.01	.16	7a3
BLUE	8/17/74	.11	4.94	7a4
CAMPBELL	8/17/74	.00	.03	7a5

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

DCLEMENTS	8/17/74	.01	.72	7a6
DUBOIS	8/17/74	.02	.61	7a7
EDWARDS	8/17/74	.03	1.12	7a8
HARTSELL	8/17/74	.00	.01	7a9
IANSON	8/17/74	.00	.07	7a10
JOAN	8/17/74	.00	.01	7a11
KAHN	8/17/74	.02	2.22	7a12
KORENBLIT	8/17/74	.00	.01	7a13
LICKLIDER	8/17/74	.03	1.04	7a14
LUDWIG	8/17/74	.00	.03	7a15
LUKASIK	8/17/74	.00	.04	7a16
MCLINDON	8/17/74	.00	.04	7a17
NEUMANNR	8/17/74	.00	.63	7a18
O'SULLIVAN	8/17/74	.00	.05	7a19
ORSINI	8/17/74	.00	.03	7a20
PARISI	8/17/74	.00	.01	7a21
RUSSELL	8/17/74	.02	1.42	7a22
STO	8/17/74	.04	1.38	7a23
STUBBS	8/17/74	.02	1.04	7a24
TACH	8/17/74	.00	.07	7a25
YEE	8/17/74	.01	.40	7a26
TOTAL	8/17/74	.55	34.77	7a27

WEEK ending 8/24/74 8

ARPA 8a

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ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

BANGERT	8/24/74	.03	2.92	8a1
BEARD	8/24/74	.01	.17	8a2
BLUE	8/24/74	.06	2.90	8a3
CAMPBELL	8/24/74	.05	4.16	8a4
CERL	8/24/74	.00	.01	8a5
DCLEMENTS	8/24/74	.07	5.67	8a6
DUBOIS	8/24/74	.02	1.53	8a7
EDWARDS	8/24/74	.04	1.62	8a8
FRYKLUND	8/24/74	.00	.00	8a9
HARTSELL	8/24/74	.00	.01	8a10
KAHN	8/24/74	.01	.40	8a11
KIBLER	8/24/74	.00	.05	8a12
KORENBLIT	8/24/74	.01	.14	8a13
LICKLIDER	8/24/74	.02	.47	8a14
LUKASIK	8/24/74	.00	.00	8a15
MARKOWITZ	8/24/74	.00	.02	8a16
MCLINDON	8/24/74	.04	2.12	8a17
NIEDENFUHR	8/24/74	.00	.01	8a18
ORSINI	8/24/74	.00	.05	8a19
PARISI	8/24/74	.03	1.26	8a20
RUSSELL	8/24/74	.26	8.83	8a21
STO	8/24/74	.00	.02	8a22
STO	8/24/74	.15	1.02	8a23
STUBBS	8/24/74	.00	.05	8a24

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

TACH	8/24/74	.00	.06	8a25
TTO	8/24/74	.00	.01	8a26
TTO	8/24/74	.01	.08	8a27
YEE	8/24/74	.02	.85	8a28
TOTAL	8/24/74	.86	34.45	8a29
WEEK ending 8/31/74				9
ARPA				9a
BANGERT	8/31/74	.19	5.83	9a1
BARNES	8/31/74	.04	6.18	9a2
BEARD	8/31/74	.01	.08	9a3
CAMPBELL	8/31/74	.03	4.56	9a4
CERL	8/31/74	.00	.00	9a5
DCLEMENTS	8/31/74	.06	5.57	9a6
DUBOIS	8/31/74	.01	1.33	9a7
EDWARDS	8/31/74	.01	.29	9a8
FIELDS	8/31/74	.01	.10	9a9
HARTSELL	8/31/74	.00	.01	9a10
JTSA-O	8/31/74	.00	.03	9a11
KAHN	8/31/74	.01	.68	9a12
KING	8/31/74	.17	10.02	9a13
KIRKWOOD	8/31/74	.12	10.27	9a14
KOBLISKI	8/31/74	.11	9.83	9a15
KORENBLIT	8/31/74	.01	.78	9a16
KRESA	8/31/74	.01	.87	9a17

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

LICKLIDER	8/31/74	.02	1.40	9a18
LUDWIG	8/31/74	.01	1.41	9a19
LUKASIK	8/31/74	.01	.19	9a20
LYONS	8/31/74	.05	2.13	9a21
MARKOWITZ	8/31/74	.00	.03	9a22
MCLINDON	8/31/74	.12	6.32	9a23
NIEDENFUHR	8/31/74	.00	.02	9a24
ORSINI	8/31/74	.00	.26	9a25
PARISI	8/31/74	.08	3.70	9a26
RUSSELL	8/31/74	.38	9.20	9a27
STO	8/31/74	.05	1.04	9a28
STUBBS	8/31/74	.04	.91	9a29
TACH	8/31/74	.01	.08	9a30
TTO	8/31/74	.01	.16	9a31
TTO	8/31/74	.01	.12	9a32
WILKINS	8/31/74	.10	7.24	9a33
XGP	8/31/74	.03	.66	9a34
YEE	8/31/74	.01	.09	9a35
TOTAL	8/31/74	1.74	91.39	9a36
WEEK ending 9/ 7/74				10
ARPA				10a
BANGERT	9/ 7/74	.28	16.73	10a1
BEARD	9/ 7/74	.01	.27	10a2
BLUE	9/ 7/74	.02	.21	10a3

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

CAMPBELL	9/ 7/74	.06	4.35	10a4
CROCKER	9/ 7/74	.00	.03	10a5
DUBOIS	9/ 7/74	.01	.52	10a6
EDWARDS	9/ 7/74	.01	.31	10a7
KAHN	9/ 7/74	.00	.01	10a8
KING	9/ 7/74	.13	9.40	10a9
KIRKWOOD	9/ 7/74	.05	5.11	10a10
KRESA	9/ 7/74	.00	.00	10a11
LICKLIDER	9/ 7/74	.02	.33	10a12
LUDWIG	9/ 7/74	.04	4.52	10a13
LYONS	9/ 7/74	.11	4.49	10a14
MARKOWITZ	9/ 7/74	.01	.89	10a15
MCLINDON	9/ 7/74	.03	2.04	10a16
NEUMANNR	9/ 7/74	.00	.12	10a17
NIEDENFUHR	9/ 7/74	.00	.09	10a18
ORSINI	9/ 7/74	.02	1.57	10a19
RUSSELL	9/ 7/74	.05	.96	10a20
SELFRIDGE	9/ 7/74	.00	.08	10a21
STO	9/ 7/74	.00	.37	10a22
STUBBS	9/ 7/74	.01	.28	10a23
TACH	9/ 7/74	.01	.04	10a24
TTO	9/ 7/74	.00	.04	10a25
WILKINS	9/ 7/74	.16	9.29	10a26
XGP	9/ 7/74	.02	.37	10a27

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

YEE	9/ 7/74	.01	.07	10a28
TOTAL	9/ 7/74	1.08	62.49	10a29
WEEK ending 9/14/74				11
ARPA				11a
ARPA-PM	9/14/74	.01	.23	11a1
BANGERT	9/14/74	.22	15.89	11a2
BARNES	9/14/74	.07	1.63	11a3
BEARD	9/14/74	.01	.15	11a4
BEST	9/14/74	.00	.07	11a5
CAMPBELL	9/14/74	.02	1.12	11a6
CHAPMAN	9/14/74	.00	.05	11a7
DCLEMENTS	9/14/74	.11	9.84	11a8
DUBOIS	9/14/74	.01	.49	11a9
EDWARDS	9/14/74	.06	3.35	11a10
KING	9/14/74	.23	17.70	11a11
KIRKWOOD	9/14/74	.27	12.92	11a12
KOBLISKI	9/14/74	.53	29.94	11a13
KRESA	9/14/74	.00	.01	11a14
LICKLIDER	9/14/74	.02	.39	11a15
LUDWIG	9/14/74	.04	2.65	11a16
LUKASIK	9/14/74	.01	.14	11a17
LYONS	9/14/74	.12	4.50	11a18
MCLINDON	9/14/74	.05	2.31	11a19
NEUMANNR	9/14/74	.00	.08	11a20

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

NIEDENFUHR	9/14/74	.00	.01	11a21
ORSINI	9/14/74	.01	.70	11a22
PARISI	9/14/74	.05	2.50	11a23
RUSSELL	9/14/74	.10	.50	11a24
STUBBS	9/14/74	.02	.38	11a25
TACH	9/14/74	.01	.08	11a26
TTO	9/14/74	.00	.10	11a27
WILKINS	9/14/74	.48	21.21	11a28
XGP	9/14/74	.02	.30	11a29
YEE	9/14/74	.01	.05	11a30
TOTAL	9/14/74	2.47	129.26	11a31
WEEK ending 9/21/74				12
ARPA				12a
BANGERT	9/21/74	.34	15.74	12a1
BARNES	9/21/74	.24	10.76	12a2
BEARD	9/21/74	.00	.32	12a3
BLACK	9/21/74	.00	.06	12a4
BLUE	9/21/74	.04	4.91	12a5
DCLEMENTS	9/21/74	.05	4.49	12a6
DUBOIS	9/21/74	.01	.06	12a7
EDWARDS	9/21/74	.07	5.36	12a8
FRYKLUND	9/21/74	.00	.01	12a9
KAHN	9/21/74	.09	4.26	12a10
KING	9/21/74	.16	10.40	12a11

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

KIRKWOOD	9/21/74	.17	7.13	12a12
KOBLISKI	9/21/74	.38	18.14	12a13
LICKLIDER	9/21/74	.01	.16	12a14
LUDWIG	9/21/74	.02	2.24	12a15
LUKASIK	9/21/74	.00	.07	12a16
LYONS	9/21/74	.11	11.87	12a17
MARKOWITZ	9/21/74	.01	.19	12a18
MCLINDON	9/21/74	.19	8.26	12a19
NIEDENFUHR	9/21/74	.00	.02	12a20
ORSINI	9/21/74	.00	.03	12a21
PARISI	9/21/74	.00	.08	12a22
RUSSELL	9/21/74	.26	11.37	12a23
STO	9/21/74	.00	.04	12a24
STO	9/21/74	.11	2.11	12a25
STUBBS	9/21/74	.01	.10	12a26
TACH	9/21/74	.00	.08	12a27
TTO	9/21/74	.01	.11	12a28
WILKINS	9/21/74	.25	13.53	12a29
XGP	9/21/74	.00	.04	12a30
YEE	9/21/74	.00	.03	12a31
TOTAL	9/21/74	2.55	131.97	12a32
WEEK ending 9/28/74				13
ARPA				13a
BANGERT	9/28/74	.11	7.02	13a1

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

BARNES	9/28/74	.18	8.25	13a2
BEARD	9/28/74	.01	.29	13a3
BLUE	9/28/74	.00	.07	13a4
CAMPBELL	9/28/74	.00	.42	13a5
CERL	9/28/74	.00	.01	13a6
CROCKER	9/28/74	.00	.01	13a7
CROCKER	9/28/74	.01	.13	13a8
DCLEMENTS	9/28/74	.03	3.24	13a9
DUBOIS	9/28/74	.00	.37	13a10
EDWARDS	9/28/74	.07	3.00	13a11
KAHN	9/28/74	.10	6.24	13a12
KING	9/28/74	.16	11.18	13a13
KIRKWOOD	9/28/74	.16	16.08	13a14
KOBLISKI	9/28/74	.05	1.82	13a15
LICKLIDER	9/28/74	.00	.03	13a16
LUDWIG	9/28/74	.04	7.18	13a17
LYONS	9/28/74	.13	5.75	13a18
MCLINDON	9/28/74	.04	1.40	13a19
NIEDENFUHR	9/28/74	.00	.01	13a20
PARISI	9/28/74	.01	.66	13a21
RUSSELL	9/28/74	.49	20.21	13a22
STO	9/28/74	.00	.02	13a23
STO	9/28/74	.13	.80	13a24
STUBBS	9/28/74	.00	.04	13a25

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

TACH	9/28/74	.00	.02	13a26
TTO	9/28/74	.00	.05	13a27
WILKINS	9/28/74	.15	9.25	13a28
XGP	9/28/74	.00	.01	13a29
YEE	9/28/74	.00	.04	13a30
TOTAL	9/28/74	1.91	103.60	13a31
WEEK ending 10/ 5/74				14
ARPA				14a
ARPA-PM	10/ 5/74	.00	.11	14a1
BANGERT	10/ 5/74	.24	20.96	14a2
BARNES	10/ 5/74	.08	6.29	14a3
BEARD	10/ 5/74	.00	.18	14a4
CROCKER	10/ 5/74	.00	.01	14a5
DCLEMENTS	10/ 5/74	.01	.50	14a6
DUBOIS	10/ 5/74	.01	.58	14a7
EDWARDS	10/ 5/74	.03	1.62	14a8
KAHN	10/ 5/74	.05	3.85	14a9
KIBLER	10/ 5/74	.02	.81	14a10
KING	10/ 5/74	.20	12.68	14a11
KIRKWOOD	10/ 5/74	.24	15.97	14a12
KOBLISKI	10/ 5/74	.33	15.80	14a13
LICKLIDER	10/ 5/74	.01	.14	14a14
LUDWIG	10/ 5/74	.01	.64	14a15
LYONS	10/ 5/74	.48	16.74	14a16

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

MARKOWITZ	10/ 5/74	.01	1.16	14a17
MCLINDON	10/ 5/74	.08	7.45	14a18
ORSINI	10/ 5/74	.04	.91	14a19
PARISI	10/ 5/74	.19	9.40	14a20
RUSSELL	10/ 5/74	.24	7.39	14a21
STO	10/ 5/74	.00	.01	14a22
STO	10/ 5/74	.02	.08	14a23
STUBBS	10/ 5/74	.00	.03	14a24
TACH	10/ 5/74	.00	.05	14a25
TTO	10/ 5/74	.01	.10	14a26
WILKINS	10/ 5/74	.19	7.44	14a27
XGP	10/ 5/74	.03	1.87	14a28
YEE	10/ 5/74	.00	.10	14a29
TOTAL	10/ 5/74	2.56	132.87	14a30
WEEK ending 10/12/74				15
ARPA				15a
BANGERT	10/12/74	.17	13.81	15a1
BARNES	10/12/74	.12	11.30	15a2
BEARD	10/12/74	.01	.18	15a3
BLUE	10/12/74	.00	.15	15a4
CERL	10/12/74	.01	.11	15a5
DUBOIS	10/12/74	.00	.04	15a6
EDWARDS	10/12/74	.07	3.17	15a7
KAHN	10/12/74	.01	.40	15a8

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

KING	10/12/74	.44	22.12	15a9
KIRKWOOD	10/12/74	.33	25.29	15a10
KOBLISKI	10/12/74	.43	20.44	15a11
LICKLIDER	10/12/74	.01	.04	15a12
LYONS	10/12/74	.17	9.56	15a13
MCLINDON	10/12/74	.07	4.89	15a14
NIEDENFUHR	10/12/74	.00	.03	15a15
ORSINI	10/12/74	.04	.82	15a16
PARISI	10/12/74	.00	.02	15a17
RUSSELL	10/12/74	.28	7.82	15a18
STO	10/12/74	.00	.08	15a19
STUBBS	10/12/74	.00	.02	15a20
TACH	10/12/74	.00	.06	15a21
TTO	10/12/74	.00	.04	15a22
WILKINS	10/12/74	.03	1.16	15a23
WILLIS	10/12/74	.00	.02	15a24
XGP	10/12/74	.02	.37	15a25
YEE	10/12/74	.00	.03	15a26
TOTAL	10/12/74	2.25	121.99	15a27
WEEK ending 10/19/74				16
ARPA				16a
BANGERT	10/19/74	.01	.16	16a1
BARNES	10/19/74	.16	13.28	16a2
CERL	10/19/74	.00	.02	16a3

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

DCLEMENTS	10/19/74	.03	2.74	16a4
DUBOIS	10/19/74	.01	.09	16a5
EDWARDS	10/19/74	.02	1.21	16a6
KAHN	10/19/74	.00	.04	16a7
KING	10/19/74	.14	12.97	16a8
KIRKWOOD	10/19/74	.12	3.57	16a9
KOBLISKI	10/19/74	.37	25.19	16a10
LICKLIDER	10/19/74	.01	.09	16a11
LYONS	10/19/74	.07	7.60	16a12
MARKOWITZ	10/19/74	.01	1.01	16a13
MCLINDON	10/19/74	.00	.13	16a14
NIEDENFUHR	10/19/74	.00	.03	16a15
ORSINI	10/19/74	.01	.34	16a16
PARISI	10/19/74	.00	.07	16a17
RUSSELL	10/19/74	.04	2.57	16a18
STO	10/19/74	.00	.01	16a19
TACH	10/19/74	.00	.02	16a20
WILKINS	10/19/74	.28	19.68	16a21
XGP	10/19/74	.00	.16	16a22
YEE	10/19/74	.00	.04	16a23
TOTAL	10/19/74	1.28	90.99	16a24
WEEK ending 10/26/74				17
ARPA				17a
BANGERT	10/26/74	.08	4.06	17a1

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

BARNES	10/26/74	.02	.69	17a2
BEARD	10/26/74	.08	.40	17a3
BLUE	10/26/74	.00	.06	17a4
CERL	10/26/74	.00	.02	17a5
DUBOIS	10/26/74	.00	.03	17a6
IANSON	10/26/74	.00	.03	17a7
KAHN	10/26/74	.00	.23	17a8
KING	10/26/74	.24	14.20	17a9
KIRKWOOD	10/26/74	.18	7.83	17a10
KOBLISKI	10/26/74	.06	5.76	17a11
LICKLIDER	10/26/74	.00	.01	17a12
LUDWIG	10/26/74	.00	.01	17a13
LYONS	10/26/74	.13	8.68	17a14
MARKOWITZ	10/26/74	.01	.18	17a15
MCLINDON	10/26/74	.09	3.54	17a16
NIEDENFUHR	10/26/74	.00	.02	17a17
O'SULLIVAN	10/26/74	.00	.05	17a18
PARISI	10/26/74	.01	.46	17a19
RUSSELL	10/26/74	.00	.02	17a20
RUSSELL	10/26/74	.00	.06	17a21
STO	10/26/74	.19	2.31	17a22
STUBBS	10/26/74	.01	.24	17a23
TACH	10/26/74	.00	.01	17a24
TTO	10/26/74	.00	.01	17a25

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

WILKINS	10/26/74	.41	31.10	17a26
XGP	10/26/74	.00	.16	17a27
YEE	10/26/74	.00	.10	17a28
TOTAL	10/26/74	1.52	80.28	17a29
WEEK ending 11/ 2/74				18
ARPA				18a
BANGERT	11/ 2/74	.08	9.04	18a1
BEARD	11/ 2/74	.01	1.16	18a2
DCLEMENTS	11/ 2/74	.00	.49	18a3
DCLEMENTS	11/ 2/74	.00	.10	18a4
DUBOIS	11/ 2/74	.00	.04	18a5
FIELDS	11/ 2/74	.00	.03	18a6
KAHN	11/ 2/74	.00	.07	18a7
KING	11/ 2/74	.57	61.23	18a8
KIRKWOOD	11/ 2/74	.43	51.31	18a9
KOBLISKI	11/ 2/74	.25	17.67	18a10
LICKLIDER	11/ 2/74	.01	.61	18a11
LYONS	11/ 2/74	.46	22.64	18a12
MARKOWITZ	11/ 2/74	.00	.09	18a13
MCLINDON	11/ 2/74	.02	1.46	18a14
NIEDENFUHR	11/ 2/74	.00	.03	18a15
ORSINI	11/ 2/74	.00	.04	18a16
RUSSELL	11/ 2/74	.02	2.49	18a17
STUBBS	11/ 2/74	.00	.01	18a18

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

TACH	11/ 2/74	.00	.04	18a19
TTO	11/ 2/74	.00	.10	18a20
TTO	11/ 2/74	.00	.12	18a21
WILKINS	11/ 2/74	.34	25.67	18a22
WILLIS	11/ 2/74	.00	.54	18a23
XGP	11/ 2/74	.01	.17	18a24
YEE	11/ 2/74	.00	.05	18a25
TOTAL	11/ 2/74	2.23	195.21	18a26
WEEK ending 11/ 9/74				19
ARPA				19a
ARPA-PM	11/ 9/74	.15	15.87	19a1
ARPA-PRACTICE	11/ 9/74	.02	2.07	19a2
BEARD	11/ 9/74	.00	.03	19a3
BECKER	11/ 9/74	.00	.03	19a4
BLUE	11/ 9/74	.01	1.29	19a5
COOK	11/ 9/74	.00	.01	19a6
DCLEMENTS	11/ 9/74	.00	.15	19a7
DCLEMENTS	11/ 9/74	.03	3.33	19a8
DUBOIS	11/ 9/74	.01	.07	19a9
EDWARDS	11/ 9/74	.00	.13	19a10
HARRIS	11/ 9/74	.00	.01	19a11
HYDE	11/ 9/74	.00	.01	19a12
JACKSON	11/ 9/74	.00	.03	19a13
JALLEN	11/ 9/74	.00	.02	19a14

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ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

JONES	11/ 9/74	.00	.01	19a15
KAHN	11/ 9/74	.00	.32	19a16
KALLAS	11/ 9/74	.00	.01	19a17
KEHLER	11/ 9/74	.00	.02	19a18
KING	11/ 9/74	.08	8.78	19a19
KIRKWOOD	11/ 9/74	.00	.03	19a20
KOBLISKI	11/ 9/74	.03	4.43	19a21
LICKLIDER	11/ 9/74	.01	.17	19a22
LUDWIG	11/ 9/74	.00	.23	19a23
LYONS	11/ 9/74	.54	58.51	19a24
MARKOWITZ	11/ 9/74	.00	.03	19a25
MCLINDON	11/ 9/74	.05	4.92	19a26
NIEDENFUHR	11/ 9/74	.00	.02	19a27
ORSINI	11/ 9/74	.01	.09	19a28
RUSSELL	11/ 9/74	.20	6.05	19a29
STUBBS	11/ 9/74	.01	.41	19a30
SULLIVAN	11/ 9/74	.00	.01	19a31
TACH	11/ 9/74	.00	.02	19a32
TTO	11/ 9/74	.00	.01	19a33
TTO	11/ 9/74	.00	.03	19a34
VANDERBURGH	11/ 9/74	.11	7.64	19a35
WALKER	11/ 9/74	.01	.07	19a36
WALSH	11/ 9/74	.00	.01	19a37
WILKINS	11/ 9/74	.13	9.43	19a38

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

XGP	11/ 9/74	.01	.21	19a39
YEE	11/ 9/74	.00	.03	19a40
TOTAL	11/ 9/74	1.45	124.53	19a41
WEEK ending 11/16/74				20
ARPA				20a
ARPA-PM	11/16/74	.02	1.16	20a1
ARPA-PRACTICE	11/16/74	.01	.34	20a2
BEARD	11/16/74	.00	.01	20a3
COOK	11/16/74	.00	.01	20a4
DCLEMENTS	11/16/74	.01	.31	20a5
DUBOIS	11/16/74	.00	.35	20a6
JACKSON	11/16/74	.00	.12	20a7
JONES	11/16/74	.00	.01	20a8
KING	11/16/74	.02	.66	20a9
LEE	11/16/74	.02	.50	20a10
LICKLIDER	11/16/74	.00	.04	20a11
LUDWIG	11/16/74	.01	.36	20a12
LYONS	11/16/74	.01	.45	20a13
MARKOWITZ	11/16/74	.03	.47	20a14
MCLINDON	11/16/74	.01	1.31	20a15
RUSSELL	11/16/74	.02	.46	20a16
TTO	11/16/74	.00	.01	20a17
VANDERBURGH	11/16/74	.01	.20	20a18
VANNOUHUYS	11/16/74	.03	.82	20a19

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

WALSH	11/16/74	.00	.35	20a20
WILLIS	11/16/74	.00	.01	20a21
WILLIS	11/16/74	.00	.01	20a22
XGP	11/16/74	.01	.12	20a23
YEE	11/16/74	.00	.01	20a24
TOTAL	11/16/74	.19	8.08	20a25
WEEK ending 11/23/74				21
ARPA				21a
ARPA-PM	11/23/74	.01	.72	21a1
BANGERT	11/23/74	.17	8.97	21a2
BEARD	11/23/74	.01	.21	21a3
BLUE	11/23/74	.00	.31	21a4
COOK	11/23/74	.00	.02	21a5
DCLEMENTS	11/23/74	.09	5.48	21a6
DTAYLOR	11/23/74	.02	1.66	21a7
DUBOIS	11/23/74	.01	.91	21a8
IANSON	11/23/74	.04	4.69	21a9
JACKSON	11/23/74	.00	.27	21a10
JACKSON	11/23/74	.01	1.16	21a11
JALLEN	11/23/74	.00	.10	21a12
JONES	11/23/74	.00	.02	21a13
KEHLER	11/23/74	.04	1.59	21a14
KOBLISKI	11/23/74	.02	1.84	21a15
LICKLIDER	11/23/74	.01	.43	21a16

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

LUDWIG	11/23/74	.02	1.88	21a17
LYONS	11/23/74	.00	.53	21a18
MARKOWITZ	11/23/74	.00	.20	21a19
MCLINDON	11/23/74	.04	4.13	21a20
NIEDENFUHR	11/23/74	.00	.00	21a21
ORSINI	11/23/74	.01	.38	21a22
RUSSELL	11/23/74	.01	.22	21a23
STO	11/23/74	.01	.59	21a24
STUBBS	11/23/74	.00	.15	21a25
TACH	11/23/74	.00	.00	21a26
TTO	11/23/74	.00	.01	21a27
VANDERBURGH	11/23/74	.10	5.30	21a28
WALKER	11/23/74	.01	.09	21a29
WILLIS	11/23/74	.00	.02	21a30
WILLIS	11/23/74	.00	.09	21a31
XGP	11/23/74	.01	.09	21a32
YEE	11/23/74	.00	.01	21a33
TOTAL	11/23/74	.66	42.11	21a34
WEEK ending 11/30/74				22
ARPA				22a
ARPA-PM	11/30/74	.17	7.77	22a1
BANGERT	11/30/74	.03	3.16	22a2
BEARD	11/30/74	.00	.08	22a3
BLUE	11/30/74	.00	.04	22a4

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ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

COOK	11/30/74	.00	.03	22a5
DCLEMENTS	11/30/74	.11	10.45	22a6
DUBOIS	11/30/74	.01	.10	22a7
EDWARDS	11/30/74	.09	5.18	22a8
GLAWRENCE	11/30/74	.01	.96	22a9
IANSON	11/30/74	.07	4.85	22a10
JACKSON	11/30/74	.01	.68	22a11
JALLEN	11/30/74	.00	.02	22a12
KAHN	11/30/74	.01	.90	22a13
KEHLER	11/30/74	.02	.66	22a14
LICKLIDER	11/30/74	.01	.38	22a15
LYONS	11/30/74	.00	.08	22a16
MARKOWITZ	11/30/74	.00	.35	22a17
MCLINDON	11/30/74	.04	3.67	22a18
ORSINI	11/30/74	.09	1.82	22a19
RUSSELL	11/30/74	.28	14.91	22a20
STO	11/30/74	.00	.03	22a21
STO	11/30/74	.00	.17	22a22
STUBBS	11/30/74	.00	.12	22a23
TACH	11/30/74	.00	.07	22a24
VANDERBURGH	11/30/74	.03	1.12	22a25
WALKER	11/30/74	.08	5.67	22a26
WILLIS	11/30/74	.00	.12	22a27
XGP	11/30/74	.00	.00	22a28

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

YEE	11/30/74	.00	.14	22a29
TOTAL	11/30/74	1.07	63.53	22a30
WEEK ending 12/ 7/74				23
ARPA				23a
ARPA-PM	12/ 7/74	.01	.33	23a1
ARPA-PRACTICE	12/ 7/74	.02	.62	23a2
BANGERT	12/ 7/74	.05	3.53	23a3
BEARD	12/ 7/74	.00	.00	23a4
BLUE	12/ 7/74	.00	.19	23a5
CHAPMAN	12/ 7/74	.00	.01	23a6
COOK	12/ 7/74	.00	.01	23a7
DCLEMENTS	12/ 7/74	.00	.01	23a8
DCLEMENTS	12/ 7/74	.04	2.19	23a9
DUBOIS	12/ 7/74	.00	.04	23a10
EDWARDS	12/ 7/74	.28	16.37	23a11
IANSON	12/ 7/74	.02	1.87	23a12
JACKSON	12/ 7/74	.00	.02	23a13
KAHN	12/ 7/74	.00	.01	23a14
KING	12/ 7/74	.02	3.30	23a15
LICKLIDER	12/ 7/74	.01	.23	23a16
LUDWIG	12/ 7/74	.00	.01	23a17
LYONS	12/ 7/74	.11	10.75	23a18
MARKOWITZ	12/ 7/74	.02	1.44	23a19
MCLINDON	12/ 7/74	.02	3.70	23a20

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

ORSINI	12/ 7/74	.00	.03	23a21
RUSSELL	12/ 7/74	.04	2.10	23a22
STO	12/ 7/74	.00	.02	23a23
STUBBS	12/ 7/74	.00	.01	23a24
TACH	12/ 7/74	.00	.01	23a25
TIO	12/ 7/74	.00	.01	23a26
VANDERBURGH	12/ 7/74	.01	.27	23a27
WALKER	12/ 7/74	.17	12.72	23a28
YEE	12/ 7/74	.00	.03	23a29
TOTAL	12/ 7/74	.82	59.80	23a30

JCN 18-DEC-74 04:48 24776

ARPA Office-1 Use: 1 July thru 7 December 1974 by Week, by User
(Not including NSW, Seismic, ETS, NICUsers)

(J24776) 18-DEC-74 04:48;;;; Title: Author(s): James C. Norton/JCN;
Distribution: /CKM([INFO-ONLY]) DCR2([INFO-ONLY]) ;
Sub-Collections: SRI-ARC; Clerk: JCN; Origin: < NORTON,
ARPAUSE.NLS;1, >, 18-DEC-74 04:36 JCN ;;;;
(meyer,usestats,)
*** DIRECTIVE ERROR: String Too Big *** ,H3="

KIRK 17-DEC-74 20:55 24778

A bug with <CTRL-O> and outputting

With both Output Processor and Compile File, if <CTRL-O> is hit before any processing is done, the file is left busy so that you cannot do it again. With Output processor, you get a message like "nothing processed" and then if you try again, you get the message "<PRINTER>(IDENT)FILENAME.1;1 is busy". This also happens with compile file. 1

KIRK 17-DEC-74 20:55 24778

A bug with <CTRL-O> and outputting

(J24778) 17-DEC-74 20:55;;;; Title: Author(s): Kirk E. Kelley/KIRK; Distribution: /FEED([ACTION]) DSM([INFO-ONLY]) JDH([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: KIRK;