SECTION VI

SUMMARY AND CONCLUSIONS

This study has reported the findings during a seven month period during which the AHI System was implemented, users were trained, numerous problems were encountered and overcome, and the organization began to evolve toward an Augmented Knowledge Workshop. The study provided data to support many intuitive observations and documented the experiences with this first-of-a-kind situation.

There was an important methodlogical finding that does directly pertian to the hypotheses. There was no significant difference between the mean attitude of the groups toward the general technology. However, all other findings strongly support conclusions about positive effects. Therefore, it must be concluded that the test instrument and its administration to this small sample, was not sensitve to the effects of the AHI System. It appears that measuring the attitude toward a general technology is not a reliable method of ascertaining the specific effects on a small population. The consistancy between the behavior and the responses to the other instruments did, however, detect strong attitudinal implications.

Learning to Use the System: Effects on the Individual

Certain prerequisites were found that are necessary for the individual to begin to become an Augmented Knowledge Worker based primarily on subject responses, the proficiency exercise, and observation of behaviors. In general, the findings support the hypotheses, however, certain they were not pertinent to aspects of the hypotheses presented in Section I.

The necessary hardware must be avaiable and in dependable operation. This had a negative effect on those who were trying to learn, under presessure and manifesting a below aerage attitude. In a minority of cases this had a strongly deliterious effect. The unavailability of terminals and the inoperative printer were cited most often. System down time remained a major obstacle throughout the period, although the down time was characteristic of experimental systems. At least every effort must be toward System availability at predetermined times.

Introductory and self explanatory documentation is necessary. The lack of a reference manual and a trouble manual posed significant problems initially. The number

and variety of operational difficulties and failures require that an extensive reference be made avialble at the outset of usage. Many of these problems, it should be noted, are with the Network and invovle retaining a connection to the System computer.

Training could help solve this problem and could relieve much of the initial frustration manifested. Supported by reference materials, small classes, and a structured course, trianing could potentially speed the individual's progress. It was found that motivated subjects could learn with minimal training, however, the negative reactions were almost prohibitive in saome cases.

Training must include some indoctrination about the purpose and definition of the System. It was found that only one or two of the subjects understood the concept of full augmentation, which was necessary to realize the full potential for that individual. Experience with previous computer technology interfered with this understanding, limiting use to text editing in many subjects.

The sphere of personnel for the individual was found to be very influential. Thsi was found to be composed of managers also who were users, suport people to help, advise, console, inform, repair, maintain, etc. for

individuals who responded most positvely. Positions should esablished to ensure that persons are responsible for the hardware, softare, and training, paricularly, communication information about changes and other operations functions.

Standard operating procedures were found to be necessary to establish what tasks should be done on the System, and the structure and methods for these tasks. This also had important organizational implications.

Within the limits of human nature, if these prerequisites are met, then distinct thresholds may be passed for the individual.

A great deal of momentum to retain the modis operandi was found. The rountine work methods were engrained to the habitual level, and required some extinction and adaptation during the learning process. This coupled with the usual "rejection phenomenon", can potentially prevent transitioning to augmentation, however, it was found that it was posible in this working environment.

Thresholds were discovered that must also be passed during the individuals evolution. A strong tendency to use the System as an auotomatic typewriter for text editing existed initially in most subjects. After

atainine a certain level of usage and proficiency, he crossed the threshold to usage for on-line composition.

A definite system transparency was concommitant with on-line composition. Subsequent to surpassing this threshold, the individual dealt with the material and content at hand not burdened with the distracting thoughts about procedure and system operation. This tended to free him for spontaneous, creative work while the rules of operation and syntax remained subliminal in much the same way as with the use of language in conversation. It was noted that the command language is particularlly suited to this due to its similarity to natural language. Prior to this threshold, subjects would report a considerable loss of efficiency. When these thresholds were passed, it was found that the hypothesized effects were realized for a majority of the population.

The individuals reported and demonstrated increased flexibility with written information and associated thought. A definite increase in effectiveness in the handling and preparation of paperwork, and the accomplishment of the overall job was consistantly indicated. Effectiveness included an increase in

efficiency reported as a reduction in throughput time= the system hierarchcial structure was important.

There was no increase in quality based on subject judgements, however. Neither was there a loss in quality. There was some question about this kind of jugdement, which was largely a function of the individual evaluating his own work.

The display was found to be more effective than the teletypewriter mode of usage. Certain individuals found that it was orders of magnitude more effective and there was some feeling that only through the display subsystem could full augmentation be realized. Its power should be available to all users, and it may actually be easier to learn.

Proficiency was found to be a function of intensity of use, rather than longevity with the System. Intensity was was important to retain skill as well. The proficiency test also showed that an alternative editing technique was more effective, execute edit. Proficiency was closely associated with the thresholds to more sophisticated augmentation, and was highly related to the positive effects on the individual in general.

The strong and consistant evidence across the various

analytical techniques that were employed to support the hypothesized effects on the individual, also supported the hypothesis concerning effects on groups and teams.

Effects on Communication

The communication facilities were used with increasing intensity throughout the experimental period. Of these, Send Message was used most extensively with the Journal a close second, and shared files and linking relatively little. The Journal was not used for dialogue support, however, it served to send documentation and messages. The responses about the effectiveness correspond to use levels.

AHI did enhance team activities around a common task, however, it did not affect integroup communication, nor were the instrumnets able to detect any positive toward more ideal group dynamics. Communication through the system was dependent upon need, much as it is through traditional channels. The scope of the on-line community was important a subset of the population did not have as large a group of on-line recipients. Some communication increase among peers was related to the commom enemy problem, ie. the system was a common challenge with associated problems to be discussed.

Channels were openned with persons who otherwise would not have contacted. The System provided the informational incentive and made the contact possible. AKWs in general were found to have a broder base of contacts than the like control group.

RECOMMENDATIONS

There is a high probability that attitude will be an indicator of system effectiveness for a prospective user population. This could conceivably be employed in a requirements analysis to determine AHI's applicability in another environment.

Consistant effort is required to become proficient on a basic level. Some of this problem would be alleviated by employing a CRT display terminal to be permanently installed in the managers' offices, providing a more attractive interface.

The attitude questionnaire should be given as a predictor of system efctiveness for a potential useer group.

Personalities are such a significant factor in system use, that study should be done correlating personality

with system effectiveness. eg. the Stern activities index.

The OCI should be given in 1 - 2 years to ascertain the effects on organizational climate. The Communication Tally method should definitely be given again after the entire branch has passed the communication threshold.

18790 Distribution
Edmund J. Kennedy, Roger B. Panara, Duane L. Stone, John L. McNamara,

draft report

(J18790) 31-AUG-73 12:32; Title: Author(s): James H. Bair/JHB;
Distribution: /EJK RBP DLS JLM; Sub-Collections: RADC; Clerk: JHB;
Origin: <BAIR>SEC6.NLS;1, 30-AUG-73 20:32 JHB ;;

SUMMARY -- SEC3 1

an aggregate of knowledge workers successfully using AHI. 1a

Knowledge work in this case consisted of research and development in computer technology for the Air Force. Individuals learning to use the system experienced certain problems before becoming Augmented Knowledge Workers. 1b

There was a strong resistance to changing habitual work methods and communication patterns. There were psychological as well as hardware causes for the resistance which were mutually escalating. Weak training techniques, system failures, and hardware unavailability were some of the difficulties encountered. As the problems were overcome, thresholds were observed in the way the system was used and perceived. 1b1

Observations of the population subsequent to training noted three areas of effect, (1) on the individual, (2) on groups and teams, and (3) on the organization. 1c

Hypothesized effects were not entirely realized, however, they may be with additional time and system development. At present there are profound changes that point toward that realization. Individuals experienced an unprecedented flexibility and involvement with textual information through powerful features such as the link address, viewspecification system, and information structure. 1c1

This power facilitates the construction of an information space which may be easily and rapidly communicated and shared with other AKWs to promote dialogue among task teams. The communication facilities, Send Message, Linking, and the Journal System, were employed to create new patterns of communication that would not have been attained through alternate means. The resultant documented team collaboration extended to the organization. 1c2

Vertical communication improved, as new channels were opened and formal channels were modified from the traditional patterns. The system capabilities became a new management tool which increased openness without a loss of efficiency. A number of examples of this were discussed, including collaboration with geographically distributed groups and the sharing of special dialogue files. 1c3

Display terminals were available to a few of the population promoting a fuller realization of the impact of AHI aided by human engineered interface devices. A dynamic information visibility

was achieved by utilizing "windows" into the information space. The result was like traveling through the dynamically structured information space of a community of knowledge workers with such rapidity and ease that it was almost addictive to the user. 1d

The dramatic changes in the work methods and communication of our population in the time span of six months indicates that Peter Drucker's "knowledge revolution" will arise from the use of systems such as AHI. At least for a population of scientific and engineering personnel in the government, AHI's potential is on the way to being that which it's designers at SRI intended: a revolution in communication in the broadest sense. 1e

18791 Distribution
Edmund J. Kennedy, John L. McNamara, Roger B. Panara, Duane L. Stone,

draft report

(J18791) 31-AUG-73 12:35; Title: Author(s): James H. Bair/JHB;
Distribution: /EJK JLM RBP DLS; Sub-Collections: RADC; Clerk: JHB;
Origin: <BAIR>SUM3.NLS;1, 31-AUG-73 12:20 JHB ;

GROUPS AND AVERAGES

Below are results formulated from analyzing the activity of individual users over a period of ten successive weeks for all those possible. The value given is the mean ratio of cpu per connect time over that period.

GROUPS AND AVERAGES

(SYSTEM JOBS)

SYSTEM		3.4	
PRINTER	4.9		
BCKGRND	2.4		

AVE	3.6		

(STAFF)

DCE	Doug Engelbart	2.9	
DVN	Dirk van Nouhuys	4.0	
JCN	Jim Norton	5.1	
PR	Paul Rech	2.3	
RWW	Dick Watson	2.8	
SRL	Susan Lee	3.0	

AVE		3.4	

(PSO)

BAH	Beau Hardeman	4.5	
KIRK	Kirk Kelley	4.7	
JML	Jeanne Leavitt	1.4	

GROUPS AND AVERAGES

MEJ	Mil Jernigan	2.6	3d4
		-----	3d5
AVE		3.3	3d6
(NIC STAFF)			3e
CBG	Carol Guilbault	3.2	3e1
EJF	Jake Feinler	2.6	3e2
JBN	Jeanne North	3.9	3e3
JDC	Judy Cooke	3.8	3e4
MDK	Mike Kudlick	3.7	3e5
MLK	Marcia Keeney	2.3	3e6
NIC-WORK			3e7
NETINFO		3.7	3e8
		-----	3e9
AVE		3.4	3e10
(FACILITY)			3f
EKV	Ed Van De Riet		3f1
JCP	Jeff Peters	3.8	3f2
JR	Jake Ratliff	1.6	3f3
MAB2	Mark Beach		3f4
MEH	Martin Hardy	2.2	3f5
OPERATOR		8.9	3f6
		-----	3f7
AVE		4.2	3f8
(PROGRAMMERS)			3g
CFD	Chuck Dornbush	3.4	3g1

GROUPS AND AVERAGES

CHI	Charles Irby	3.6	3g2
DCW	Don Wallace	4.3	3g3
DIA	Don Andrews	5.2	3g4
DSK	Diane Kaye	3.6	3g5
EKM	Elizabeth Michael	2.0	3g6
HGL	Harvey Lehtman	4.3	3g7
JDH	Dave Hopper	2.8	3g8
JEW	Jim White	2.5	3g9
KEV	Ken Victor	3.9	3g10
WRF	Bill Ferguson		3g11
		-----	3g12
AVE		3.6	3g13
(XEROX)			3h
CMG	Chuck Geschke	3.2	3h1
EHS	Ed Satterthwaite	2.9	3h2
JGM	Jim Mitchell	1.4	3h3
LPD	Peter Deutsch	4.5	3h4
RES	Dick Sweet	2.0	3h5
		-----	3h6
AVE		2.8	3h7
(RADC)			3i
DAL	Dave Luther		3i1
DFB	Dean Bergstrom	2.2	3i2
DLD2	David Daughtry		3i3
DLS	Duane Stone	2.1	3i4

GROUPS AND AVERAGES

DVA	Donald Van Alstine		3i5
EJK	Ed Kennedy	1.5	3i6
FJT	Frank Tomaini	2.0	3i7
FPS	Frank Sliwa	2.5	3i8
FSL	Frank LaMonica	2.5	3i9
GAB	George Borden		3i10
JHB	Jim Bair	1.5	3i11
JLM	John McNamara	1.7	3i12
JPC	Joe Cavano	2.4	3i13
JRS	Josephine Stellato		3i14
JWJ	John Johnson		3i15
MAW	Mike Wingfield		3i16
MDP	Marcelle Petell		3i17
RAL	Ray Liuczi		3i18
RBP	Roger Panara	1.8	3i19
RC2	Richard Calicchia		3i20
RED2	Robert Doane		3i21
RFI	Rocco Iuorno	1.8	3i22
RHT2	Richard Thayer	2.8	3i23
TFL	Tom Lawrence	2.1	3i24
TJB2	Tom Bucciero		3i25
WER	William Rzepka	1.5	3i26
WPB	William Bethke	1.5	3i27
		-----	3i28
AVE		2.0	3i29

GROUPS AND AVERAGES

(DOCUMENTATION)				3j
NDM	Dean Meyer	3.8		3j1
JMB	Jeanne Beck	3.1		3j2
CAT	(night only)			3j3
DOCB				3j4
DOCUMENTATION			6.7	3j5
		-----		3j6
AVE		4.6		3j7

3k

INITIAL GROUP ALLOCATIONS WITH PROJECTED AVERAGES 4

4a

NUMBERS 4b

Groups	5am-8	8am-2pm	2-5am (PDT)	
				4b1
WORLD	0	0	0	4b2
SYSTEM JOBS	5	5	5	4b3
NIC USERS	7	4	2	4b4
RADC	5	2	0	4b5
STAFF	1	2	2	4b6
PSO	1	1	2	4b7
NIC STAFF	0	2	2	4b8
FACILITY	1	0	0	4b9
PROGRAMMERS	1	4	7	4b10
XEROX	0	1	1	4b11
DOCUMENTATION	1	1	1	4b12
	--	--	--	4b13

GROUPS AND AVERAGES

Totals:	22	22	22	4b14
AVERAGES				4c
Groups	5am-8	8am-2pm	2-5am (PDT)	4c1
WORLD	0	0	0	4c2
SYSTEM JOBS	18.0	18.0	18.0	4c3
NIC USERS	15.4	8.8	4.4	4c4
RADC	10.0	4.0	0	4c5
STAFF	3.4	6.8	6.8	4c6
PSO	3.3	3.3	6.6	4c7
NIC STAFF	0	6.8	6.8	4c8
FACILITY	4.2	0	0	4c9
PROGRAMMERS	3.6	14.4	25.2	4c10
XEROX	0	2.8	2.8	4c11
DOCUMENTATION	4.6	4.6	4.6	4c12
	--	--	--	4c13
Totals:	62.5	69.5	75.2	4c14

DESCENDING ORDER BY AVERAGE 4d

Groups	AVE	
Groups	AVE	4d1
------	---	4d2
DOCUMENTATION	4.6	4d3
FACILITY	4.2	4d4
PROGRAMMERS	3.6	4d5
SYSTEM JOBS	3.6	4d6
NIC STAFF	3.4	4d7

GROUPS AND AVERAGES

STAFF	3.4	4d8
PSO	3.3	4d9
XEROX	2.8	4d10
NIC USERS	2.2	4d11
RADC	2.0	4d12
WORLD	0	4d13

DESCENDING ORDER OF USERS 5

5a

(ARC) 5b

5b1

IDENT	AVE	GROUP	
IDENT	AVE	GROUP	5b2
-----	---	-----	5b3
(DIA)	5.2	p	5b4
(JCN)	5.1	s	5b5
(KIRK)	4.7	ps	5b6
(BAH)	4.5	ps	5b7
(HGL)	4.3	p	5b8
(DCW)	4.3	p	5b9
(DVN)	4.0	s	5b10
(JBN)	3.9	n	5b11
(KEV)	3.9	p	5b12
(JDC)	3.8	n	5b13
(NDM)	3.8	d	5b14
(JCP)	3.8	f	5b15
(MDK)	3.7	n	5b16

GROUPS AND AVERAGES

(CHI)	3.6	p	5b17
(DSK)	3.6	p	5b18
(CFD)	3.4	p	5b19
(CBG)	3.2	n	5b20
(JMB)	3.1	d	5b21
(SRL)	3.0	s	5b22
(DCE)	2.9	s	5b23
(JDH)	2.8	p	5b24
(RWW)	2.8	s	5b25
(EJF)	2.6	n	5b26
(MEJ)	2.6	ps	5b27
(JEW)	2.5	p	5b28
(MLK)	2.3	n	5b29
(PR)	2.3	s	5b30
(MEH)	2.2	f	5b31
(EKM)	2.0	p	5b32
(JR)	1.6	f	5b33
(JML)	1.4	ps	5b34
			5b35

(OVERALL) 5c

5c1

IDENT	AVE	GROUP	
-----	---	-----	5c3
(CAT)	37.1	sy	5c4
(OPERA)	8.9	sy	5c5

GROUPS AND AVERAGES

(DOCUM)	6.7	sy	5c6
(DIA)	5.2	p	5c7
(JCN)	5.1	s	5c8
(PRINT)	4.9	sy	5c9
(KIRK)	4.7	ps	5c10
(LPD)	4.5	x	5c11
(BAH)	4.5	ps	5c12
(HGL)	4.3	p	5c13
(DCW)	4.3	p	5c14
(DVN)	4.0	s	5c15
(JBN)	3.9	n	5c16
(KEV)	3.9	p	5c17
(JDC)	3.8	n	5c18
(NDM)	3.8	d	5c19
(JCP)	3.8	f	5c20
(MDK)	3.7	n	5c21
(NETIN)	3.7	n	5c22
(CHI)	3.6	p	5c23
(DSK)	3.6	p	5c24
(CFD)	3.4	p	5c25
(SYSTE)	3.4	sy	5c26
(CMG)	3.2	x	5c27
(CBG)	3.2	n	5c28
(JMB)	3.1	d	5c29
(SRL)	3.0	s	5c30

(DCE)	2.9	s	5c31
(EHS)	2.9	x	5c32
(JDH)	2.8	p	5c33
(RHT)	2.8	r	5c34
(RWW)	2.8	s	5c35
(EJF)	2.6	n	5c36
(MEJ)	2.6	ps	5c37
(FSL)	2.5	r	5c38
(FPS)	2.5	r	5c39
(JEW)	2.5	p	5c40
(BACKG)	2.4	sy	5c41
(JPC)	2.4	r	5c42
(MLK)	2.3	n	5c43
(PR)	2.3	s	5c44
(DKB)	2.2	r	5c45
(MEH)	2.2	f	5c46
(TFL)	2.1	r	5c47
(DLS)	2.1	r	5c48
(EKM)	2.0	p	5c49
(RES)	2.0	x	5c50
(FJT)	2.0	r	5c51
(RADC)	1.9	r	5c52
(RFI)	1.8	r	5c53
(RBP)	1.8	r	5c54
(JLM)	1.7	r	5c55

GROUPS AND AVERAGES

(JR)	1.6	f	5c56
(JHB)	1.5	r	5c57
(WPB)	1.5	r	5c58
(EJK)	1.5	r	5c59
(WER)	1.5	r	5c60
(JML)	1.4	ps	5c61
(JGM)	1.4	x	5c62
			5c62a

(KEY) GROUP 5d

5d1

d	documentation	5d2
f	facility	5d3
n	nic staff	5d4
p	programmer	5d5
ps	pso	5d6
r	radc	5d7
s	staff	5d8
sy	system job	5d9
x	xerox	5d10

5d11

18792 Distribution
Beauregard A. Hardeman, Paul Rech, Susan R. Lee,

GROUPS AND AVERAGES

(J18792) 31-AUG-73 16:51: Title: Author(s): Beauregard A. Hardeman/BAH; Distribution: /BAH PR SRL: Sub-Collections: SRI-ARC; Clerk: BAH:

Where You Can Find My Contribution to the Planned Syntax Changes

You can find my contribution to the syntax changes in
<vanNouhuys.acronym.>

1

18793 Distribution
Michael D. Kudlick. N. Dean Meyer, Jeanne M. Beck,

DVN 31-AUG-73 17:22 18793

Where You Can Find My Contribution to the Planned Syntax Changes

(J18793) 31-AUG-73 17:22; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /MDK NDM(fyi) JMB(fyi); Sub-Collections: SRI-ARC; Clerk: DVN;

The Last Will of Dr. Maboos

You can discover from your intial file what we have done in general. 1

Friday morning I met with Diane and Mike and we agreed in certain changes in the syntax. For the most part they are in the command syntax but they also affectthe examples. 2

We have left the journal to you. Next week (the week of of Sept fourth) could you write thefunction syntax, examples, confirmation, and what ever else you beileve the user should know abot the journal commands in te manner of the other commands? 3

I don't want to bother with the number and ident system this pass. 3a

Mike plans to issue my file acronym along with the rest of our views on syntax (his, mine, and Diane's) in a journal item to specify the revisions in syntax. 3b

If it looks like there will be more haggling, I would consier writing the syntax and examples in the old way and editing them when everything has jelled. 3c

In <userguides,nonplus,> see---journal,18733>. you will see your ident attatched to various conepts. Please define them in six lines or so as we discussed. 4

If you,Dean, and Jeanne Beck get finised with the concepts, devide up mine; if you get through with them; edit one anothers. 5

Jeanne is in charge of how the help file should be organized, since she will have to maintain it. 6

If you have confusions you think I could hlp with, I will be here the beinning of te week..don't hesistate to call. 7

18794 Distribution
Kirk E. Kelley. Elizabeth J. (Jake) Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, N. Dean Meyer, Jeanne M. Beck, Charles F. Dornbush, Dirk H. Van Nouhuys, Michael D. Kudlick, Diane S. Kaye, James C. Norton.

The Last Will of Dr. Maboos

(J18794) 31-AUG-73 17:31; Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /KIRK DIRT(fyi): Sub-Collections: SRI-ARC DIRT; Clerk:
DVN:
Origin: <VANNOUHUYS>KIRK.NLS;1, 31-AUG-73 17:29 DVN ;

DVN 31-AUG-73 17:36 18795

Where to Expect Opinions of Organization of HELP

Mike Kudlick is interested in the final organization of the data base in <userguides>help. He will come and talk with you about it. Keep up the good work. 1

18795 Distribution
Jeanne M. Beck.

DVN 31-AUG-73 17:36 18795

Where to Expect Opinions of Organization of HELP

(J18795) 31-AUG-73 17:36; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JMB; Sub-Collections: SRI-ARC; Clerk: DVN;

VGC 31-AUG-73 18:23 18796

New PIaddition request supercedes earlier one

Principal Investigators List 1

Dear Jeanne: 2

I have been authorized by Steve Crocker to request that you add my name to the principal investigator's list. In addition, since I will have a PDP-11 installed shortly. I would like to create a regular staff with liaison. station agent, etc. 2a

The following information will be relevant. I hope: 2b

Stanford University - Digital Systems Lab (SU-DSL) 2b1

ERL 407 2b2

Stanford University 2b3

Stanford, California 94305 2b4

VGC Cerf, Vinton G. (415) 321-3300 x365 Principal Investigator 2b4a

CET Taynai, Carolyn (415) 321-3300 x364 Station Agent 2b4b

ɯjfw Wakerly, John (415) 321-3300 x377 Technical Liaison 2b4c

JEM Mathis, Jim (415) 321-3300 x445 2b4d

RCC Crane, Ron (415) 321-3300 x445 2b4e

JCW Warren, Jim (415) 321-3300 x445 2b4f

AMU Usas, Alan (415) 321-3300 x457 2b4g

GLL LeLann, Gerard (415) 321-3300 x370 2b4h

YKD Dalal, Yogen (415) 321-3300 x(unknown) 2b4i

CAS Sunshine, Carl (415) 321-3300 x245 2b4j

You may have to add distinguishing digits after the idents proposed above. I would also like to request creation of an new directory <SU-DSL> with 100 pages maximum allocation. My personal ident whould have all messages recorded in <SU-DSL> rather than SU-AI, and my site designation should change from SU-ERL to SU-DSL. Let me know if further information is needed. 2c

We will be running ANTS on our PDP-11/20 so will not qualify as a service site. There will be graphics work, as well as protocol

New PIaddition request supercedes earlier one

development (both for ARPA and for the International Network Working Group). 2d

Thanks for your help. Vint Cerf 2e

18796 Distribution
Jeanne B. North, Steve D. Crocker, Robert E. Kahn,

VGC 31-AUG-73 18:23 18796

New PIaddition request supercedes earlier one

(J18796) 31-AUG-73 18:23: Title: Author(s): Vinton G. Cerf/VGC;
Distribution: /JBN SDC2 REK2; Sub-Collections: NIC; Clerk: VGC;
Origin: <SU-AI>PIADDITION.NLS;4, 31-AUG-73 18:21 VGC ;

DCE 1-SEP-73 09:14 18797

Visit Log: 30 Aug 73. Robert Lee Chartrand, Library of Congress, and Ted Wassam, Palo Alto School System

Chartrand said he'd contact DCE later; if not, we should keep in touch as for future AKW exploratory application.

Visit Log: 30 Aug 73. Robert Lee Chartrand, Library of Congress, and Ted Wassam, Palo Alto School System

Their visit was set up by Steve Miller, who was accompaning them around the Institute. Look for contact report from him re. their entire visit (XDOC -- 18593.). 1

They stayed with me about 75 minutes. Wassam apparently is a friend of Chartrand's, and came along for the stimulation and general interest. 1a

I showed them our facility, demonstrated some DNLS (basic study, compose, linkup, Journal), discussed exploratory application support, client architects, the AKW Utility, etc. 2

Chartrand mentioned an increase in the level of interest in special-purpose automation in support of Congressmens' needs; said that he would get in touch with me later to discuss some of them. From the brief discussion, I'd gather that we can at least give them useful guidance, and that there is a reasonable chance that their starting on the AKW exploration route would be possibile and sensible. 3

Gave them the following material: 4

Chartrand: 4a

D. C. Engelbart, AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK, SRI Project AFOSR-3223, October 1962 (XDOC -- 3906) 4a1

D. C. Engelbart and W. K. English, "A Research Center for Augmenting Human Intellect", AFIPS Proceedings, Fall Joint Computer Conference, 1968, Washington, D.C. (XDOC -- 3954.) 4a2

D. C. Engelbart, "Intellectual Implications of MULTI-ACCESS COMPUTER NETWORKS", A paper for the Proceedings of The Interdisciplinary Conference on Multi-Access Computer Networks in Austin, Texas, April 1970. (XDOC -- 5255.) 4a3

D. C. Engelbart and Staff of Augmentation Research Center. "Advanced Intellect-Augmentation Techniques", Final Report, July 1970. (XDOC -- 5140.) 4a4

Augmentation Research Center, ONLINE TEAM ENVIRONMENT: NETWORK INFORMATION CENTER and COMPUTER AUGMENTED TEAM INTERACTION, Final Report on project RADC-TR-72-232, June 1972 (Journal -- 13041.) 4a5

D. C. Engelbart, COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY, paper presented at

Visit Log: 30 Aug 73. Robert Lee Chartrand, Library of Congress, and Ted Wassam, Palo Alto School System

the Second Annual Computer Communications Conference, San Jose, California, 24 January 1973. (Journal -- 12445.) 4a6

D. C. Engelbart, R. W. Watson, J. C. Norton, THE AUGMENTED KNOWLEDGE WORKSHOP, paper presented at the National Computer Conference, New York City, June 1973. (Journal -- 14724.) 4a7

Wassam 4b

D. C. Engelbart, AUGMENTING HUMAN INTELLECT: A CONCEPTUAL FRAMEWORK, SRI Project AFOSR-3223, October 1962 (XDOC -- 3906) 4b1

D. C. Engelbart and W. K. English, "A Research Center for Augmenting Human Intellect", AFIPS Proceedings, Fall Joint Computer Conference, 1968, Washington, D.C. (XDOC -- 3954.) 4b2

D. C. Engelbart, "Intellectual Implications of MULTI-ACCESS COMPUTER NETWORKS", A paper for the Proceedings of The Interdisciplinary Conference on Multi-Access Computer Networks in Austin, Texas, April 1970. (XDOC -- 5255.) 4b3

/NOTE: This branch to be deleted before Journalizin/
Jeanne North: Would you please contact Steve about this -- show him this writeup and see if he can provide us with background memos and soon wit his contact report. I'd like to Journalize this one including the citations to related material. 5

18797 Distribution

Richard W. Watson, James C. Norton, Jeanne B. North, Elizabeth J. (Jake) Feinler, Paul Rech, Michael D. Kudlick, Bonnar Cox, David R. Brown, Stephen W. Miller.

Visit Log: 30 Aug 73. Robert Lee Chartrand, Library of Congress, and Ted Wassam, Palo Alto School System

(J18797) 1-SEP-73 09:14; Title: Author(s): Douglas C. Engelbart/DCE ; Distribution: /rww jcn jbn jake pr mdk bc drb swm ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 1-SEP-73 09:31 18798

Phone Log: 29 Aug 73, from Nat Rochester, IBM, re 17 Sep 73 visit to ARC

Nat will contact JCN

Phone Log: 29 Aug 73. from Nat Rochester, IBM, re 17 Sep 73 visit to ARC

Tentative arrangement -- most likely the day of Sept 17, at least sometime that week. He'll call JCN to firm up the date. 1

Nat is a long-time acquaintance of mine, and an old hand in the computer field. He wrote one of the first publications on an implementation for a symbolic assembler in the early '50s; we were roomates for several weeks at the 63 Project MAC Summer Study Session: 2

> he has mostly worked in software systems, I think, but has been involved in many different activities, including having fooled around some with two IBM groups (Boston and Yorktown Heighs) collaborating via shared files: I have repeatedly encouraged him to visit ARC. 2a

I asked him to contact JCN, not having time at the moment to determine what his interests now were in particular. Jim can put him in touch with RWW, JCN, MDK, PR, or etc. according to Nat's interest. This visit will, Nat says, be in the nature of a short look, and pick up of whatever literature is relevant (he had been intending to do a lot of homework, and then see if he could come for several days). 3

18798 Distribution
James C. Norton, Richard W. Watson, Charles H. Irby, Paul Rech, Michael D. Kudlick, Bonnar Cox, David R. Brown,

DCE 1-SEP-73 09:31 18798

Phone Log: 29 Aug 73. from Nat Rochester, IBM, re 17 Sep 73 visit to ARC

(J18798) 1-SEP-73 09:31; Title: Author(s): Douglas C. Engelbart/DCE ; Distribution: /jcn rww chi pr mdk bc drb ; Sub-Collections: SRI-ARC: Clerk: DCE :

ARPA Network Scheduled Software Maintenance

As you may be aware, the Network Control Center (NCC) staff at Bolt Beranek and Newman (BBN) has reserved the hours of 7 a.m. to 9 a.m. Eastern Time every Tuesday for ARPA Network software maintenance. Since there has recently been increasing interest in the operational stability of the ARPA Network, this note is an attempt to describe the reasons for the software maintenance requirements, explain the constraints within which such software maintenance must be done, and solicit opinions from you as to improvements in the scheduling of this maintenance. 1

The ARPA Network is simultaneously a research and development project and an operational entity. From an operational point of view, its clientele is spread from London, England to Honolulu, Hawaii, with a total time zone difference of ten or eleven hours. There is discussion of plans to extend the Network both to the east and to the west. Thus, almost any hour of the day is someone's prime time. The Network Control Center strives to minimize disruptions to operational Network utilization, while at the same time continuing the necessary R&D work. This R&D work covers such areas as: modifications to the Network routing algorithms, expansion of addressing within the IMP subnetwork to permit growth beyond 63 nodes (the current limitation), improving the design of IMP algorithms, provision for the use of lines of differing speeds, provision for singly connected nodes, provision for the use of broadcast satellite communications, preparation for the introduction of the High Speed Modular IMP in various configurations, and so on. These R&D goals may, at some times, come into conflict with the operational aspects of the Network; in particular they may come into conflict when the release of new Network software is required. 2

It is important to note that all software is checked in a Network test cell at BBN before it is released to the field. Thus, we feel reasonably confident that glaring bugs or operational deficiencies will be detected before a Network user ever "sees" the new software. This test cell, incidentally, is constructed on an ad hoc basis from machines in transit through BBN (e.g., being checked out before delivery to the field) and at times the test cell contains as many as six or eight IMPs and TIPs, thus making it larger than most of the proposed experimental networks of which we know (of course, it is not always this large). Problems which are encountered after a new software release to the field are therefore generally problems of scale; after all, a network with 35 or 40 nodes and as many Hosts cannot possibly be totally simulated within a test cell containing even as many as six or eight machines. Without an enormous expenditure for a much larger test cell it is not possible to be certain that all software releases will be completely problem-free. 3

Several considerations have led us to choose the particular time (namely, every Tuesday from 7 a.m. to 9 a.m. Eastern Time) to be

reserved for new software releases. First, we have chosen to reserve time every week rather than once a month or once a quarter, so that we may make large software changes incrementally. This strategy gives us a smaller number of things to debug, when something goes wrong, than would a smaller number of more massive releases. Second, we would like to release near the beginning of a work week so that all sites will be manned for several days after the release. This increases the likelihood that assistance will be available, when it is needed, to help us diagnose bugs which have intermittent effects. Thus we have chosen Tuesday as the day on which software releases should take place. 4

On those release days when the release runs smoothly, there are either only very short interruptions in Network service or none at all. Thus, it would appear that on these "good" days the hour chosen for software releases is relatively unimportant. On the other hand, software releases on "bad" days may cause IMPs to crash in such a way that manual intervention is required to get them going again. Further, if one or two machines crash during or immediately after a release, the NCC software team may be able to diagnose a minor bug on the fly and repair it, but this ability is usually dependent upon sufficient availability of site personnel for assistance in reading registers and reporting their contents, restarting machines, etc., in cooperation with the NCC staff. Thus, we would like to choose a time for software releases when the probability of having site assistance available at all sites is maximized, while at the same time not performing releases during the busiest parts of the day? Some sites, of course, are manned around the clock. Unfortunately, a significant fraction of sites (perhaps one-third in the current network) are manned only on an eight hour per day or twelve hour per day basis. In fact, some sites are locked and secured during weekends and night hours so that even hardware repair people have been unable to obtain access. Thus, the rationale for our current choice of 7 a.m. to 9 a.m. Eastern Time for releases is based on the high probability of U.S. east coast site personnel being available immediately, the probability that U.S. west coast personnel will be available either immediately or within a few hours, and the fact that releases are made from BBN (an east coast site) so that if serious difficulties develop early in the release the west coast sites need not even be involved. Further, 7 to 9 a.m. Eastern Time is within the working day of European sites. 5

We realize, of course, that as the Network continues to grow, releases will take an increasing amount of time. We realize that the current release time is not within the working day of either continental west coast sites or the current Hawaii site and that further expansion to the west will take release time even further outside the working day of such sites. In addition, we realize that even at 7 or 8 a.m. Eastern Time there may be some east coast

personnel attempting to use the net in an operational way. In fact, one such site, Rome Air Development Center, has suggested that the release time be rescheduled to 3 to 5 p.m. Eastern Time, thereby coinciding with the lunch hour on the west coast and the end of the working day on the east coast. While RFC 546 suggests that this particular time may coincide with a fairly high traffic level at two Hosts and, further, the releases would have to be somewhat earlier so as to have site personnel available at those installations which shut down at 4 p.m., the Network Control Center would be willing to consider a modified version of this suggestion if it is better for a large majority of sites. Other sites may have other suggestions. We therefore solicit comments and suggestions from those responsible for the operation of existing or scheduled Network sites. Documentation supporting the rationale for a suggested software maintenance time would be helpful in evaluating the suggestion. Comments should be directed to:

Alexander McKenzie
Manager, Network Control Center
Bolt Beranek and Newman Inc.
50 Moulton Street
Cambridge, MA 02139

or

MCKENZIE@SRI-ARC (via SNDMSG)

or

AAM through the NIC Journal

6

18799 Distribution

T. E. Cheatham, James W. Forgie, Keith W. Uncapher, Edward A. Feigenbaum, Leonard Kleinrock, William K. Pratt, David C. Evans, Douglas C. Engelbart, Bertram Raphael, Daniel L. Slotnick, David L. Retz, Thomas R. Dines, M. W. Pirtle, James H. Bair, Thomas N. Pyke, George N. Petregal, John C. Thomas, Schuyler Stevenson, Michael J. 2nd. Lt. USAF Marcus, William W. III Whyte, William L. Andrews, Frank Dare, E. R. (Dick) Reins, Edward P. Schelonka, P. Tveitane, Michael L. Marrah, David C. Walden.

Paul J. Nikolai, Robert J. Gronek, Rein Turn, Mark Medress, Franklin Kuo, Howard Frank, Robert L. Fink, Glenn J. Culler, Frank S. Cooper, Bruce G. Buchanan, Kenneth L. Bowles, Morton I. Bernstein, Paul Baran, Saul Amarel, Roy C. Amara, John E. Savage, Butler W. Lampson, William R. Sutherland, Thomas G. Stockham, Gene Raichelson, Michael O'Malley, Peter G. Neumann, Marvin Minsky, Robert E. Millstein, J. C. R. Licklider, Robert M. Balzer, Herbert B. Baskin, Robert P. Abbott, Peter Kirstein, William B. Kehl, Roland F. Bryan, James G. Mitchell, Jeanne B. North, Allen Newell, John McCarthy, Lawrence G. Roberts, Frank E. Heart, Edward L. Glaser, Thomas M. Marill

ARPA Network Scheduled Software Maintenance

(J18799) 1-SEP-73 12:45; Title: Author(s): Alex A. McKenzie/AAM; Distribution: /PI DLR TRD MWP JHB TNP GNP JCT SS MJM WWW3 WLA FD2 ERR EPS PT MLM DCW3; Sub-Collections: NIC PI; Clerk: AAM;

Interim Dual-site Ident System

In talking recently with CHI and JEW, we have been considering changes in the Ident system of a fairly extensive nature. 1

These changes have mostly to do with handling journal delivery attributes. 1a

There are two basic kinds of delivery: hardcopy (U.S. mail) and online (computer delivered). 1b

We now have two types of online delivery: that to NLS files on our system, and that via sequential files through the network. 1b1

We now have facility for an individual to receive three copies of his journal mail, one hardcopy and two online. 1b2

A proposed generalization of our present facility would be to allow an individual a list of journal deliveries. 1c

Each element in the list would be either a hardcopy or online delivery. 1c1

A hardcopy item would essentially give the mailing address. 1c1a

An online item would give a host name and a mailbox name assumed to be know to the host. 1c1b

In addition, it might need to contain information about the type of transmission to be used (NLS file, sequential file) and file size decision parameters regarding sending just citation (for big files), citation and file (for smaller files), or entire item (for short messages). 1c1b1

Although it might seem logical to have the receiving host maintain this information and give it to the sender immediately in the process of delivery, it may prove considerably more efficient for the delivery agent to have it in advance in order to prepare a delivery. 1c1b1a

A mailbox name on a simple system might be just a user name. Where NLS delivery is in use, it might be an identifier leading to a link: (user, file, branch). 1c1b2

The proposed changes are of sufficient magnitude that I don't feel comfortable about starting them without further design/review effort. They will effect users of the Ident system. 2

In the interim, I propose we add the attribute "online host" or

"NLS host" to handle the immediate requirements of the dual-site system. 2a

Absence of this field defaults to "ARC". 2a1

If and when we implement a more general system, the program used to process the Identfile can use this field for input. 2a2

18800 Distribution 1
Charles H. Irby, James E. (Jim) White, Diane S. Kaye, 1a

Interim Dual-site Ident System

(J18800) 1-SEP-73 22:35; Title: Author(s): J. D. Hopper/JDH;
Distribution: /CHI JEW DSK; Sub-Collections: SRI-ARC; Clerk: JDH;

Has any one heard of a set of reports done by a firm called Frost & Sullivan?I got a call from Major Zarra at esd and they have been referred to these reorts as a excellent summary of the sota in daa procesing but they are quite expensive and he is hoping that we might have a set.They sound like they are simalar to the ones done by Auerabach.I have to call him back by wed.Send me a message if you have heard of them or know there where abouts. 1

18802 Distribution

Donna R. Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuczi, Richard Calicchia, John W. Johnson, Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S. LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. etell, Josephine R. Stellato, Robert K. Walkgr, Thomas F. Lawrence, James H. Bair,

(J18802) 4-SEP-73 06:26; Title: Author(s): John L. McNamara/JLM;
Distribution: /RADC: Sub-Collections: RADC; Clerk: JLM;

Tickler

Ref (mjournal,18780,) from Rog P on tickler...The date of the last file change is automatically created in the Origin statement. Maybe this should be printed out with the rest of the file. Explicitly adding the date to the first statement, flagging new statements with the (*), and then deleting the flag seems a round-about way of indicating new items. The K viewspec may also be used to indicate the exact date, time and last changer of each statement. The two week or greater timeperiod for the tickler may be a good idea, if it is not clouded by the standard garbage. It might be better to have the last statement(s) reserved for emphasizing important one-of-a-kind items. 1

18803 Distribution
Frank J. Tomaini, John L. McNamara, Edmund J. Kennedy, Edward F. LaForge, Roger B. Panara, Joe P. Cavano, Thomas F. Lawrence,

DLS 4-SEP-73 07:36 18803

Tickler

(J18803) 4-SEP-73 07:36: Title: Author(s): Duane L. Stone/DLS;
Distribution: /FJT JLM EJK ELF RBP JPC TFL; Sub-Collections: RADC;
Clerk: DLS;

DLS 4-SEP-73 07:40 18804

Fros & Sullivan

The Frost and Sullivan reports are news to Maybe we should get a more complete reference, and try the library. We could also consider getting them via UC if we can locate the source. Dennis Maynard, and maybe Walker might have heard of them. Also I'll check with the SRI troops.

1

18804 Distribution
John L. McNamara.

Fros & Sullivan

(J18804) 4-SEP-73 07:40; Title: Author(s): Duane L. Stone/DLS;
Distribution: /JLM; Sub-Collections: RADC; Clerk: DLS;

DLS 4-SEP-73 07:51 18805

Frost & Sullivan

a revision and relay of message fom jlm (,18802,)

DLS 4-SEP-73 07:51 18805

Frost & Sullivan

JLM 4-SEP-73 06:26 18802

Message: Has any one heard of a set of reports done by a firm called Frost & Sullivan? JLM got a call from Major Zarra at ESD and they have been referred to these reports as a excellent summary of the state-of-the-art in data processing but they are quite expensive and he is hoping that we might locate a set. They sound like they are similar to the ones done by Auerabach. JLM has to call Zarra back by Wed. Send me (stone) and/or JLM (mcnamara) a message if you have heard of them or know where I might obtain them. Thanks.

1

18805 Distribution

Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Mark Alexander Beach, Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee, Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Diane S. Kaye, Paul Rech, Michael D. Kudlick, Ferg R? Ferguson, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews

DLS 4-SEP-73 07:51 18805

Frost & Sullivan

(J18805) 4-SEP-73 07:51: Title: Author(s): Duane L. Stone/DLS;
Distribution: /SRI-ARC; Sub-Collections: RADC SRI-ARC; Clerk: DLS;

Boo. Mabuse

The correct spelling is Mabuse! Fritz Lang would be upset at your error as would Mabuse. 1

18806 Distribution
Dirk H. Van Nouhuys,

Boo. Mabuse

(J18806) 4-SEP-73 09:49: Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /DVN; Sub-Collections: SRI-ARC; Clerk: HGL;

Tickler for week of 4 Sep 73

(st2) 4 September 1

1630 hrs. Officers Call - Club - All Officers must attend 1a

(sw2) 5 September 2

Briefing on System 2000 in Conference Room 1 - AFSC wants IS to evaluate this system as a potential candidate for a DMS selection 0930 hrs. 2a

0830 hrs. Branch Chief's Meeting 2b

Due Date ISIS - ISIM Proj Eng Bimonthly Review of Contract Completion - Stat Runs 2c

Laboratory Activity Reports are due tomorrow. 2d

(sth2) 6 September 3

ISC Confessions 0830 hrs. 3a

Ray Liuzzi - Report for Tech Review is due Contract F30602-72-C-0491 3b

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 3c

(sf2) 7 September 4

The personnel listed below have been identified to provide technical support of the WWMCCS community on an "as required" basis to that extent it is necessary that DD Form 398 and AF Form 309, already distributed, must be completed by each individual no later than 7 sep 73 and returned to ISIM/Capt Daughtry for further processing. This action is necessary since data processing facilities and work areas at WWMCCS user sites are to be designated as Top Secret areas: 4a

Richard Nelson
Richard Robinson
David Trad
Ray Liuzzi
Robert Walker
Clem Falzarano
Don Mark
Bill Rzepka
John McLean
Don VanAlstine

FJT 4-SEP-73 10:42 18807

Tickler for week of 4 Sep 73

Lt Wingfield
Frank LaMonica
Sam DiNitto
Tom Lawrence

Hal

18807 Distribution

Donna R. Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuczi, Richard Calicchia, John W. Johnson, Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S. LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. Petell, Josephine R. Stellato, Robert K. Walker, Thomas F. Lawrence, James H. Bair,

FJT 4-SEP-73 10:42 18807

Tickler for week of 4 Sep 73

(J18807) 4-SEP-73 10:42; Title: Author(s): Frank J. Tomaini/FJT;
Distribution: /RADC; Sub-Collections: RADC; Clerk: FJT;

Note on woman versus machine

Manual (womanual?) 1

22 Aug 73, aprrox 1800 to 2100 180 minutes - Roberta Carrier typing 1a

23 Aug 73, between 0930 to 1400 120 minutes - Rebecca Levine typing 1b

Proofreading by F. Tomaini and J Mcnamara - time not recorded, in any event irrelevant. 1c

System 2

23 Aug 73, 1026-1101 35 mins E J Kennedy - create file, enter new Para., edit for DLS to copy into TPO 2a

23 Aug 73 1100-0050 50 mins D L Stone - Edit TPO file including previos file in writeup. 2b

23 Aug 73 1155-1210 15 mins D L Stone - output to printer, make extra copy for FJT. 2c

23 aug 73 1215-1300 E J Kennedy - proofread printed copy 2d

23 aug 73 1300-1345 45 mins DLS & EJK Trying to get sequential printfile processed. System overloaded - no success 2e

23 Aug 73 1500-1530 30 mins EJK - Checking to see if sequential printfile had been processed. - no success - found out that unless the five minute load average drops below 4.00(?) there is no processing done. 2f

24 Aug 73 0900-0905 5 mins DLS - Made seqential file - machine load down in AM so everything worked like a charm. The TPO is now ready to print out on either the Tycom or preferably on Mitzi's machine. No urgency, still not done. Will do it to see how much time is required. 2g

18808 Distribution
Frank J. Tomaini. John L. McNamara. Duane L. Stone, Roger B. Panara,
Joe P. Cavano, Edward F. LaForge, Edmund J. Kennedy,

Note on woman versus machine

(J18808) 4-SEP-73 14:57; Title: Author(s): Edmund J. Kennedy/EJK;
Distribution: /FJT JLM DLS RBP JPC ELF EJK; Sub-Collections: RADC;
Clerk: EJK;
Origin: <KENNEDY>TPOREDO.NLS;1, 4-SEP-73 14:53 EJK ;

typed in at 15:00 on Tues

This is a test to see how fast Journal mail is delivered. 1

18809 Distribution
Mark C. Krilanovicn, Mark C. Krilanovich,

(J18809) 4-SEP-73 14:59; Title: Author(s): Mark C. Krilanovich/MCK;
Distribution: /MCK MCK; Sub-Collections: NIC; Clerk: MCK;

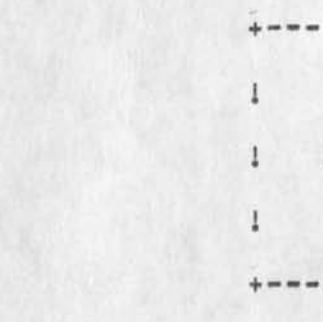
new keyboard layout and functions for IMNLS

THE KEYBOARD LAYOUT 1

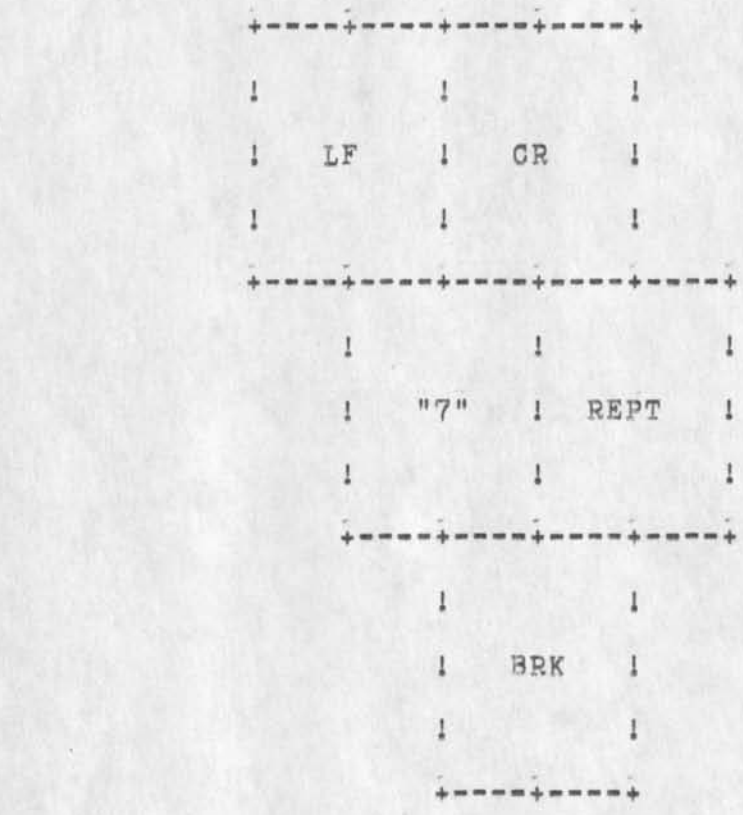
KEY NAMES 1a

There are three groups of special keys that are mapped into different ASCII characters for running IMNLS. The keys are labeled as follows on the IMLAC as delivered. 1a1

On the left side of the main keyboard: 1a1a

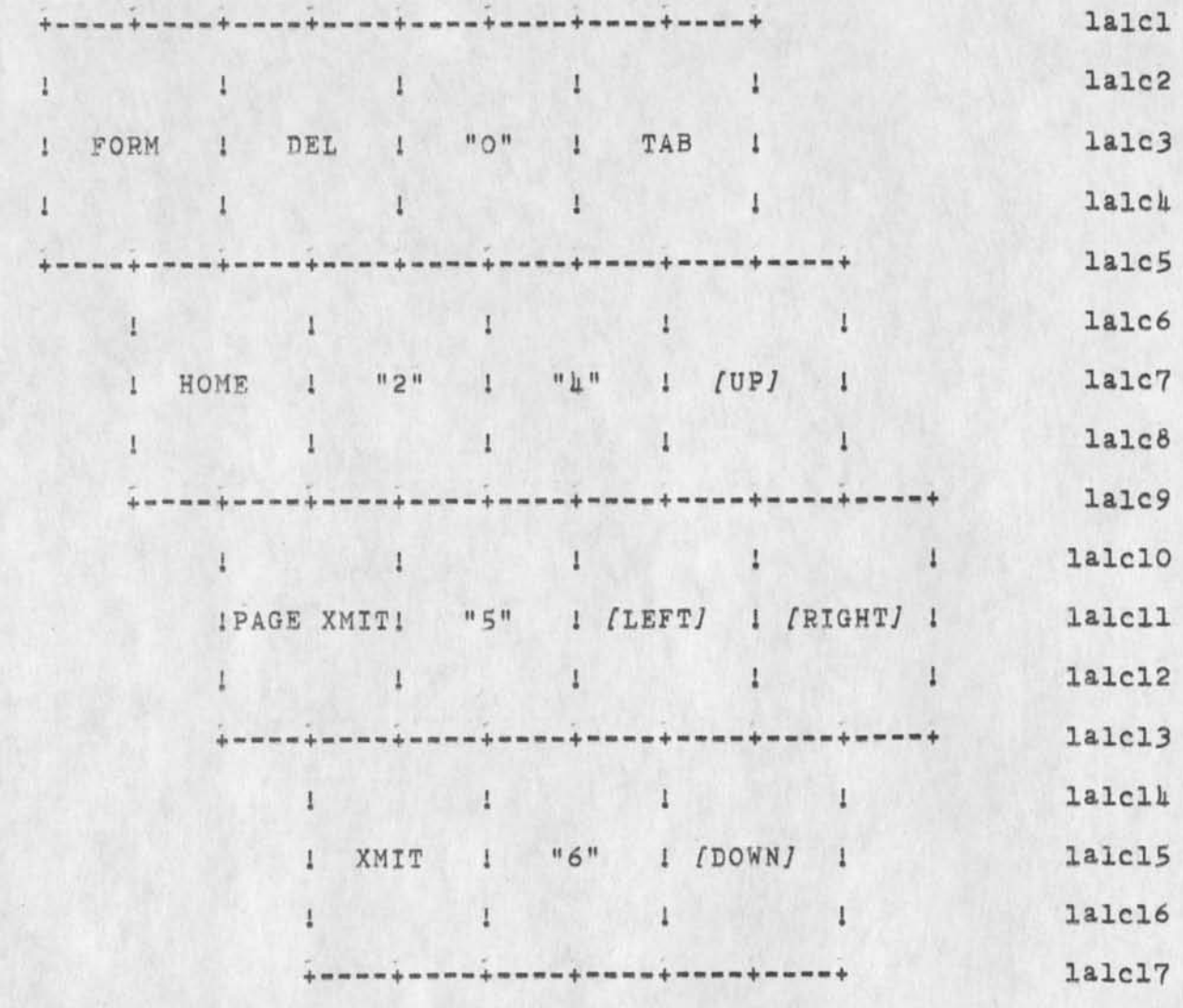


On the right side of the main keyboard: 1a1b



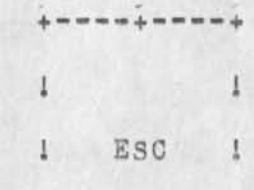
In a separate group to the right of the main keyboard: 1a1c

new keyboard layout and functions for IMNLS



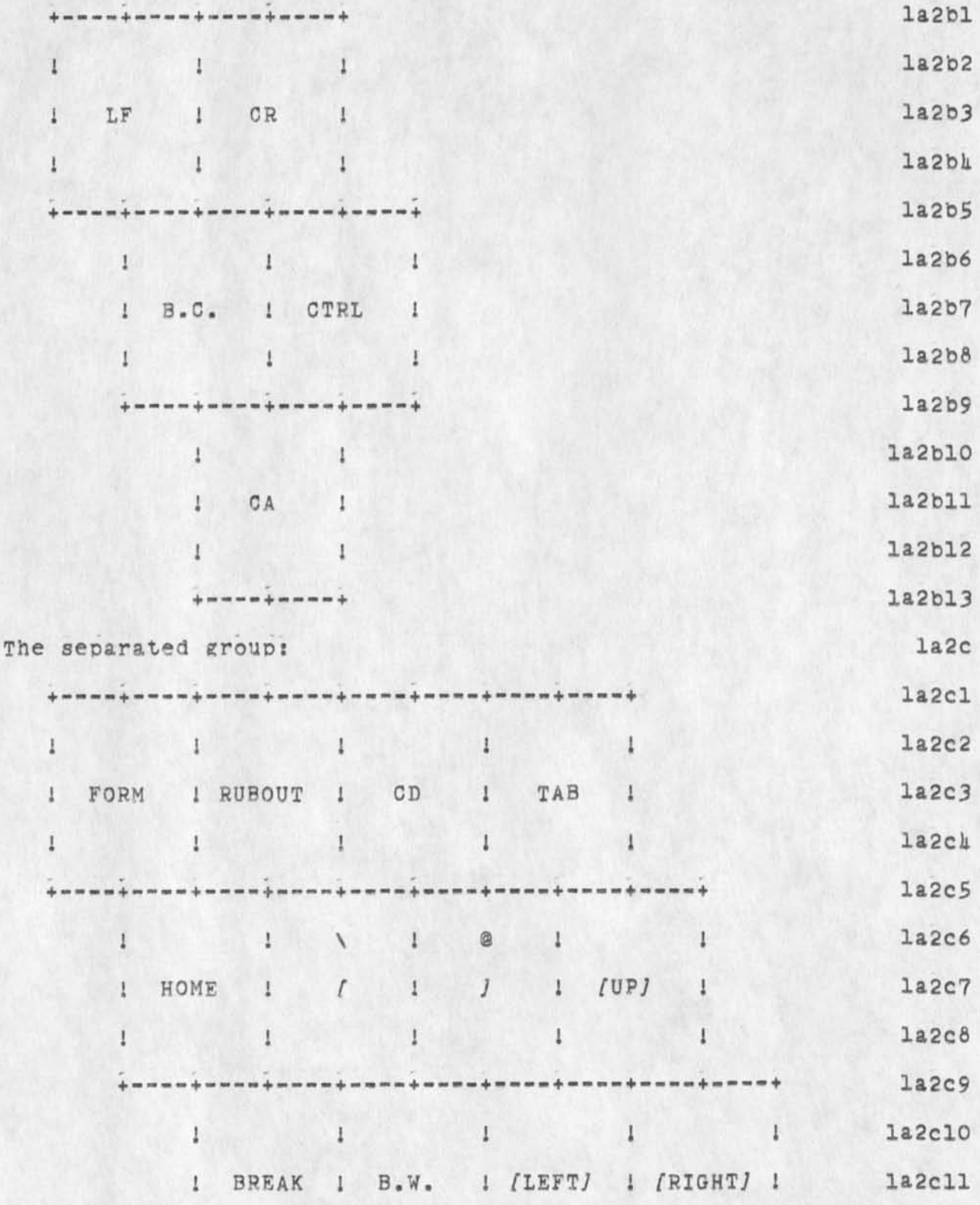
For running IMNLS, these keys are mapped as follows:

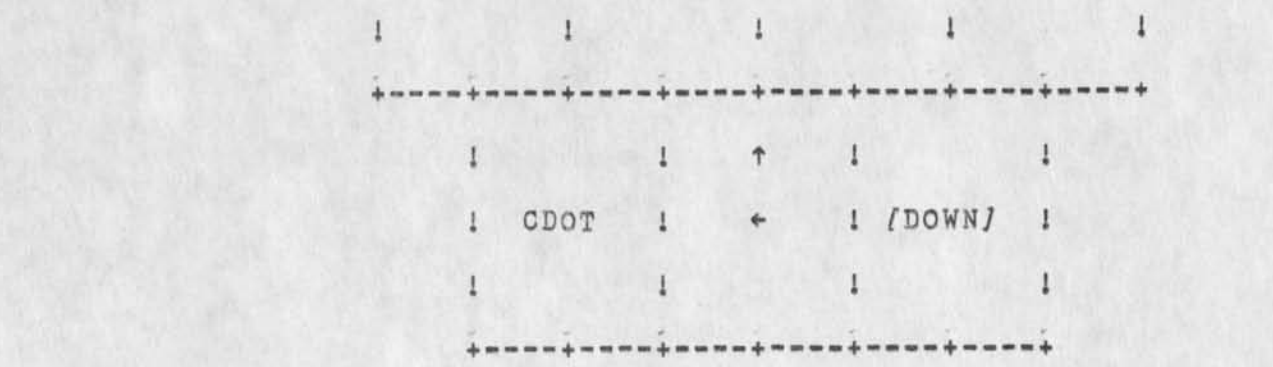
The left group:



The right group:

new keyboard layout and functions for IMNLS





MISCELLANEOUS KEY FUNCTONS

CURSOR MOVEMENT

For IMLAC configurations that have either a sylvania tablet (tablet = 1), or a mouse and keyset (iogear # 0), or a lineprocessor (msch # 0), then the "HOME" key and the four cursor movement keys have no meaning.

For IMLAC configurations that have neither a sylvania tablet (tablet = 0), nor a mouse and keyset (iogear = 0), nor a lineprocessor (msch = 0), then the "HOME" key and the four cursor movement keys are functional.

The "HOME" key will position the cursor to the lower lefthand corner of the screen.

The four cursor movement keys will move the cursor in the indicated direction one character or one line at a time.

Holding these keys down (as opposed to striking them), will cause them to repeat automatically after an initial delay.

Holding (or striking) a cursor movement key while the shift key is depressed will cause the cursor to move twice the normal amount, i.e. two characters or two lines at a time.

Holding (or striking) a cursor movement key while the ctrl key is depressed will cause the cursor to move one display increment at a time in either the X or Y direction.

Holding (or striking) a cursor movement key while both the ctrl and shift keys are depressed will cause the

cursor to move two display increments at a time in either the X or Y direction. 1b1b2d

A user can change the speed with which the cursor is moving across the screen (via the automatic repeating feature) by deppressing/releasing either the ctrl and/or shift keys while a cursor movement key is depressed. 1b1b2e

THE BREAK KEY 1b2

Holding down the ctrl and shift keys and striking the "BREAK" key will cause control to be transfered to a bootstrap loader to be used in reloading IMNLS. 1b2a

For IMLACs that have a cassette and a cassette ROM this will be a transfer to location 40 and can be used to (re)load any cassette into the IMLAC. 1b2a1

For IMLACs without a cassette, control will be transfered to a part of IMNLS that can be used in conjunction with IMLOAD for loading IMNLS. 1b2a2

KEV 4-SEP-73 16:56 18810

new keyboard layout and functions for IMNLS

(J18810) 4-SEP-73 16:56; Title: Author(s): Kenneth E. (Ken) Victor/KEV; Sub-Collections: SRI-ARC; Clerk: KEV;

Slide description for DCE: User Programs, NDDT, and NLS source code and SYSGD

Introducton 1

This note describes the slides made 30-31 August 1973 for DCE by me. Upon his return the series on NDDT should be redone and the other series should be supplemented. The numbers refer to the numbers in the upper left-hand corner of the slides. 1a

P-series: NLS Programming Tools-- File structure and SYSGD 2

P31 Title slide. 2a

P32-P36 Viewing a complicated IF-statement with level truncation. Block structure clarifies program flow in conditionals (IFs, CASEs, etc.) and iterative statements (LOOPs, etc.) This series opens up 1 level at a time. 2b

P37 A typical NLS source code file viewed with truncation. 2c

This is one file out of the more than 40 which make up the basic NLS system. There are about 2000 procedures in the basic NLS. On-line tools make it possible to deal with this large system. 2c1

Hidden beneath these comments are procedures. The file IOEXEC has procedures responsible for the I/O of files; some are responsible for file initialization. 2c2

P38-P39 Jumping to the branch on file initialization. 2d

Setting viewspecs. 2d1

P40 Two procedures are in this branch. 2e

The first comment in the code tells what the procedure does. We see the first line of the procedure; if we had a differenet viewspec on, we would see the complete comment. 2e1

P41 A typical procedure with a truncated view. 2f

Note the comments with code hidden beneath them. 2f1

P42 Same procedure with all levels shown. 2g

P43 One can jump to procedures called in other procedures by using the "Jump to name" command. 2h

P44 The code for the called procedue. 2i

Slide description for DCE: User Programs, NDDT, and NLS source code and SYSGD

P45 Jump return 2j

If a called procedure is not in this file, we may find it in the automatically generated SYSGD. We may jump on a link to the name of the procedure in sysgd. 2k

P46 Jumping to sysgd. 2l

P47 The sysgd citation. 2m

There is a link to the location of the procedure, a statement number to aid in hard copy searching, the formal parameters and the first comment. 2m1

P48 SYSGD in a truncated view. Name + link. 2n

P49 SYSGD, untruncated view. 2o

P50 The four binders contain hard copy source code for the basic NLS + sysgd. It is printed about once a month. 2p

Not contained in the binders is source code for compilers and other processors. 2p1

Q series: NLS-DDT (Some pictures are missing.) 3

Q31 NLS-DDT title 3a

Q32 A procedure in NLS source code. 3b

We may split the screen and have NLS-DDT in one of the windows. Items in other parts of the screen may be bugged as parameters to the debugger. 3b1

We set a breakpoint at a procedure called when the insert statement command is executed. 3b2

Q33-Q36 Splitting the screen and putting NDDT into a teletype simulation window. 3c

Q37-Q38 Setting a breakpoint by bugging a procedure in the source code. 3d

Q39 Executing a command which will call the procedure whose source code is displayed: "Insert Statement". 3e

Q40 Hitting the breakpoint. 3f

Slide description for DCE: User Programs, NDDT, and NLS source code and SYSGD

Material in the Teletype simulation window scrolls up. 3f1

Q41 We may examine the call/return stack., change values of parameters, etc. Here we see the top frame. 3g

Q42 Viewing parameters of a frame in the call stack. 3h

Missing slides show us examining the global string ""LIT" and changig its contents then continuing the executio of the commad. The string inserted is the one set in NDDT. 3i

Q43 The changed string is inserted. 3j

R series: User programs and the user program library 4

R31 User program title 4a

R32 The user program contents file. truncated view. 4b

R33 Citation for the program "address" which inserts the address of the person whose ID is specified after the selected location. 4c

A saved relocatable file may be loaded into the running system whith the proper connections made. A library of close to 100 user programs, many written by novice programmers, which make use of various NLS primitives is currently available. 4d

R34 Getting the rel-file to operate onthetext shown. 4e

R35 Executing the program. 4f

R36 Specifying the location for the insertion. (Creators of user programs may use all procedures in NLS.) 4g

R37 Specifying the ident (DCE.) 4h

R38 The result. 4i

Thus, specialized functions may be created by users. 4j

18812 Distribution
Douglas C. Engelbart,

HGL 4-SEP-73 17:25 18812

Slide description for DCE: User Programs, NDDT, and NLS source code and SYSGD

(J18812) 4-SEP-73 17:25; Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /DCE; Sub-Collections: SRI-ARC; Clerk: HGL;
Origin: <LEHTMAN>SLIDES.NLS;2, 4-SEP-73 17:22 HGL ;

Schelonka Visit

The visit to SRI-ARC by Ed Schelonka, originally scheduled for Monday Sept 10, has been postponed till Monday Sept 17, 1973. 1

18813 Distribution
Richard W. Watson, Jeanne B. North, Elizabeth J. (Jake) Feinler,

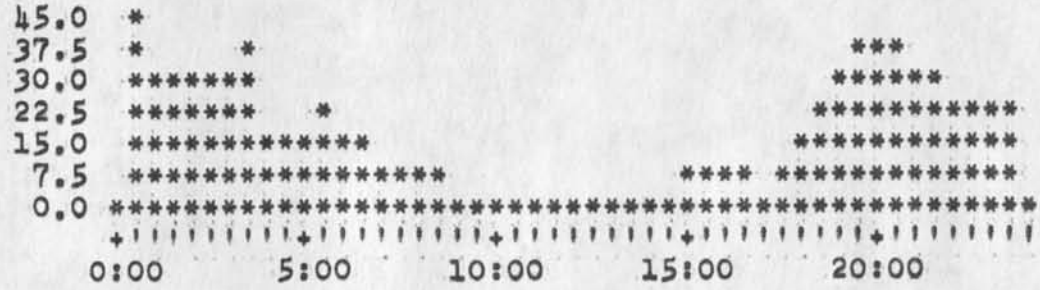
MDK 5-SEP-73 08:26 18813

Schelonka Visit

(J18813) 5-SEP-73 08:26; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /RWW JBN JAKE; Sub-Collections: SRI-ARC; Clerk: MDK;

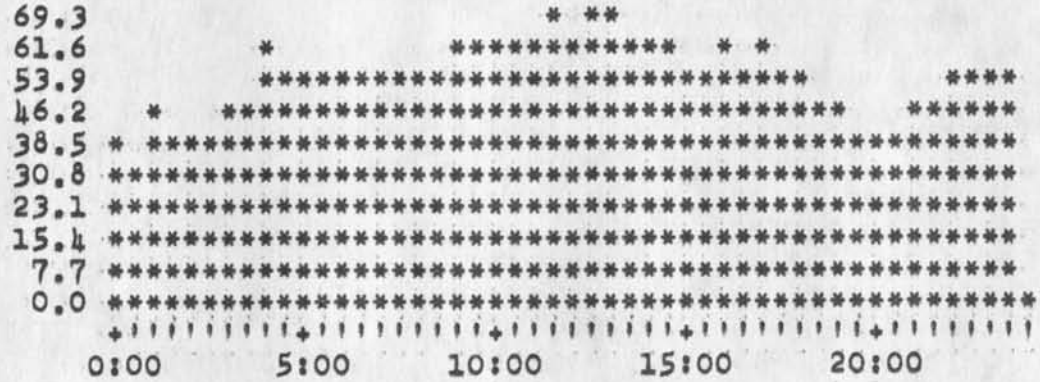
Superwatch Average Graphs for Week of 8/20/73

TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 1



1a

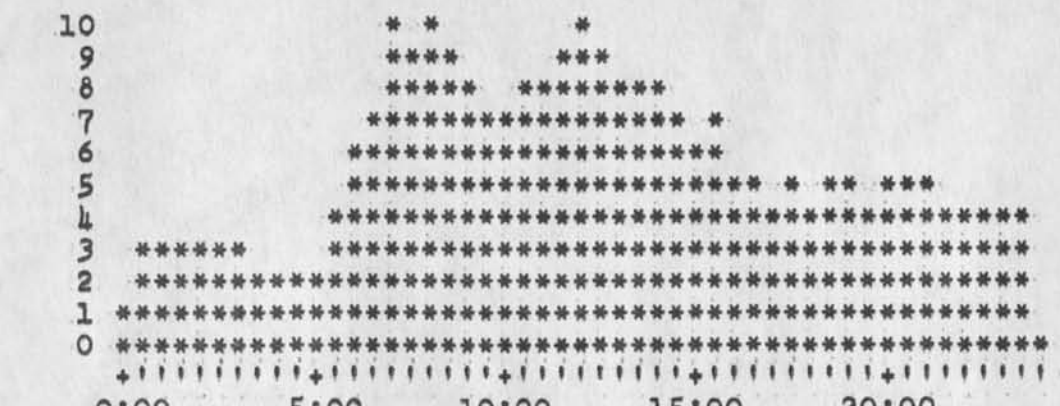
TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 2



2a

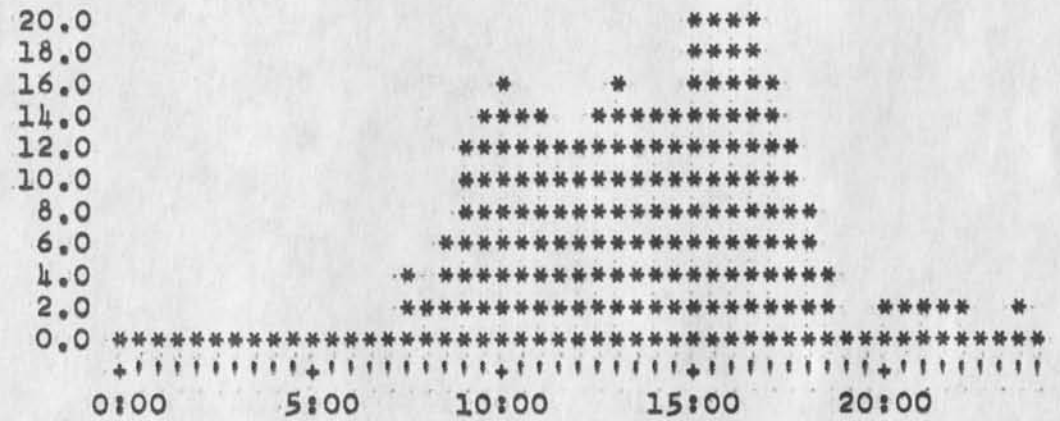
Superwatch Average Graphs for Week of 8/20/73

TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 3



3a

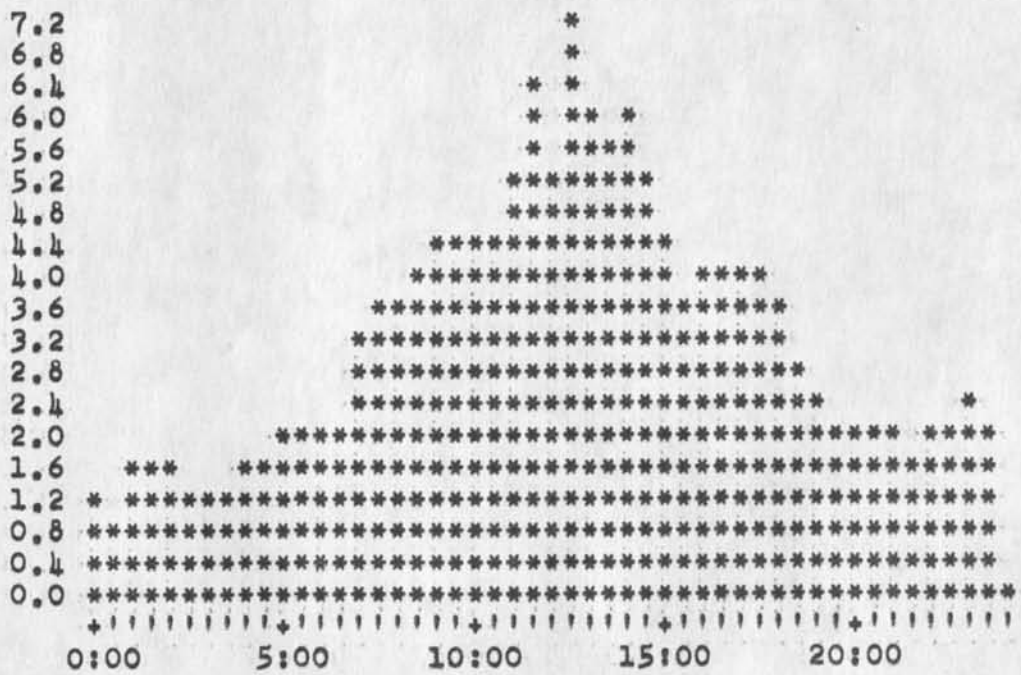
TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 4



4a

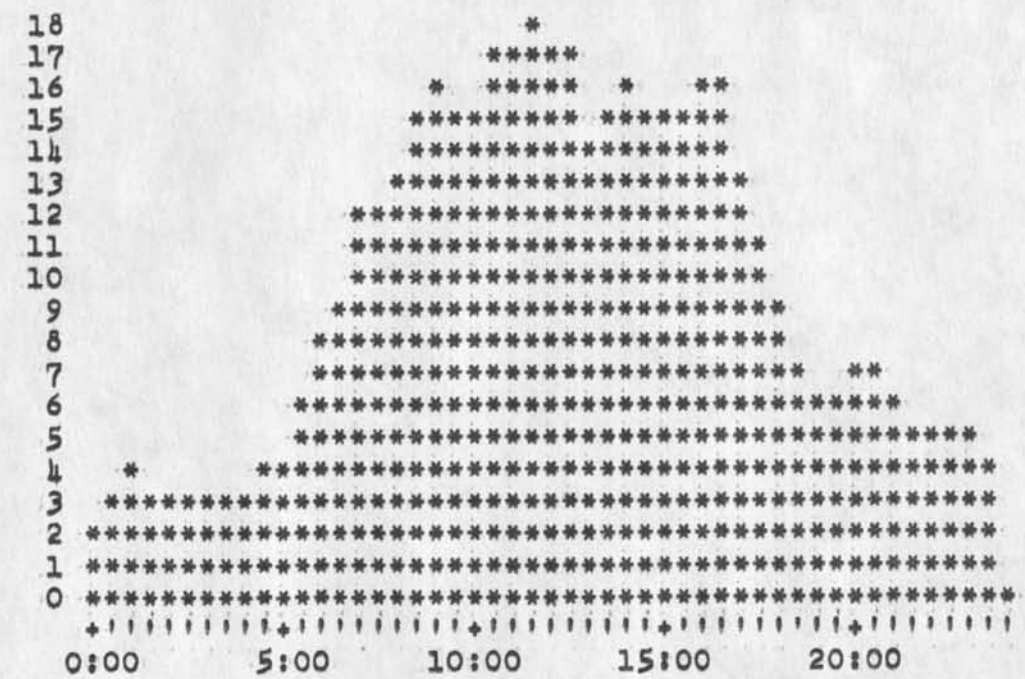
Superwatch Average Graphs for Week of 8/20/73

TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 5



5a

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 8/20/73
x axis labeled in units of hr:min, xunit = 30 minutes 6



6a

18816 Distribution

James C. Norton, Richard W. Watson, Douglas C. Engelbart, Donald C. (Smokey) Wallace, Jeffrey C. Peters, Dirk H. Van Nouhuys, Elizabeth J. (Jake) Feinler, Charles F. Dornbush, Kirk E. Kelley, Duane L. Stone, Beauregard A. Hardeman, Paul Rech,

Superwatch Average Graphs for Week of 8/20/73

(J18816) 5-SEP-73 09:05; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JCN RWW DCE DCW JCP DVN JAKE CFD KIRK DLS BAH PR;
Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>WEEK8/20GRAPHS.NLS;3, 5-SEP-73 09:01 SRL ;

More Recognizable Acronyms

We believe some of the acronyms in the proposed command language syntax will defeat naive users, or indeed most users, faster than they will educate them. 1

When ARC presents constructions like SSEL and DSEL we are asking outsiders to learn an extra layer of defintions which they will have to translate conciously every time they resort to the syntax, like reading in a foreign language with a dictionary. 1a

In some case it would be easey for an uninitated user to understand what the present acronyms stand for. In others very difficult. We plan to change the obscure acronyms to more obvious terms. In some cases, particularlly surrounding options, we will have to add an explanatory note to the simpler term. We view this necesity as rather an advatage since it shows the user of the HELP data base that she is dealing with text that has been thoughtfully constructed for her benifit rather than text mechanically derived from the command parser. 1b

We plan to replace LSEL, SSEL, and DSEL with ADDRESS and foot notes to options as appropriate.. The prompts (noise words) could make clear which applies. They should anywway. 1c

Similarlly we thinK LEVEL would make more sense to outsiders than LEVADJ. 1c1

Similarlly I would like to replace TOWHERE and WHERE with /OPTION/ and footnotes, with the prompts supplying the difference. 1c2

Finally there is a special tangle around the word "text" which in our terminology means several different things. The general meaning of the words "text" and "entity" compound the problem. "Text" does not imply shortness, one may speak of the text of the dictionary. "Entity" is very abstract and general, hence functons poorly to restrict the meaning of words that it may be attached to. 2

We plan to: 2a

replace TEXT-ENTITY with STRING; 2a1

then replace STRUCTURE-ENTITY with STRUCTURE. 2a2

This arrangement frees "text" to mean the addressable part of a statement, brother to "visisble", "word", etc. 2a3

At the same time we can replace "text" in the sense of lit with "typein", and preserve the prompt "T:". 2a4

The syntax for replace would then read: 3

```
Replace CHARACTERS (at) ADDRESS (by) [CHARACTERS] CONTENTS CONFIRM
        STRUCTURE              [STRUCTRE]                          3a
```

18817 Distribution

Elizabeth J. (Jake) Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, N. Dean Meyer, Jeanne M. Beck, Charles F. Dornbush, Dirk H. Van Nouhuys, Michael D. Kudlick, Diane S. Kaye, James C. Norton, Charles H. Irby, James C. Norton, Richard W. Watson, Michael D. Kudlick,

More Recognizable Acronyms

(J18817) 5-SEP-73 11:43; Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /DIRT CHI JCN RWW MDK; Sub-Collections: SRI-ARC DIRT;
Clerk: MDK;
Origin: <VANNOUHUYS>ACRONYM.NLS;2, 31-AUG-73 17:18 DVN ;

MDK 5-SEP-73 11:48 18818

NLS Command Language Syntax for HELP System

Would appreciate your comments, criticisms, etc.

NLS Command Language Syntax for HELP System

INTRODUCTION 1

On Friday August 31st, Dirk van Nouhuys, Diane Kaye, and I (MDK) agreed on a scheme that I proposed for representing NLS command language syntax to the users of HELP. This note describes that scheme. 1a

It differs from the schemes used internally in ARC in the following respects: 1b

1) use of both global and local acronyms (defined later);
2) list of alternatives in a given field;
3) notation for some invisibles. 1b1

This note is organized as follows: 1c

Problem Definition
Global and Local Acronyms
Alternatives
Invisibles
Remaining Problems/Questions
Examples 1c1

A companion note by DVN (18817,) updates his previous journal item (18526,) on this subject. 1d

PROBLEM DEFINITION 2

The problem is that the internal ARC scheme for representing NLS command language syntax requires too much experience on the part of the user, in order for him to understand any given syntax expression. 2a

This is because of the way variables are identified, because of the way alternatives are described, and because of the occasional confusion about the use of such invisibles as "space", "alt-mode", and the "control-key". For example: 2b

In present ARC notation, variables are given names which sometimes are cryptic (such as DSEL), and always are "global" --- i.e, assumed to be known because they are defined once and for all elsewhere. 2b1

Alternatives are listed vertically, disturbing the left-to-right, line-by-line flow of a syntax expression. 2b2

The notation for invisibles is sometimes ambiguous (e.g., Laura Gould's problem with SP = substitute plex). 2b3

We think that the scheme described below resolves these difficulties. We'd appreciate your commments on this. 2c

GLOBAL AND LOCAL ACRONYMS 3

For the purposes here, we categorize NLS command language variables into two types: 3a

- variables that occur in all or many commands;
- variables that occur in one or just a few commands. 3a1

The convention we are adopting is that there will correspondingly be two classes of acronyms to describe these variables: "GLOBAL" acronyms, and "LOCAL" acronyms. 3b

Global acronyms will have the same meaning in any syntax expression in which they occur. Their meaning must be known by a user. Consequently, we intend to keep the number of such acronyms small, restricted to just these: 3b1

ADDRESS	(replaces "SSEL" and DSEL")
FILENAME	
VIEWSPECS	
LEVEL	(replaces "LEVADJ")
STRING	(replaces "TEXT-ENTITY")
STRUCTURE	(replaces "STRUCTURE-ENTITY")
TYPEIN	(replaces "LSEL" when used with the prompt "T:") 3b1a

Local acronyms will have a defined meaning only in the particular syntax expression in which they occur. Their meaning will be defined as part of the syntax expression, in the form of footnotes. Any acronym which doesn't conflict with a global acronym can be used as a local acronym. Preferably, it should have a semantic connotation. 3b2

See Example #1. NEWSTRING, OLDSTRING, and ANSWER are local acronyms in that example. 3b3

ALTERNATIVES 4

A variable whose value may be one of several pre-defined alternatives will be identified in the syntax expression by a single local acronym. The alternatives will be listed in the (local) definition of that acronym. 4a

See Examples #2 and #3. 4b

INVISIBLES 5

The notation for a user-typed invisible will include "angle brackets", as follows. (Note: The last seven of these were not discussed at the August 31 meeting. They are being proposed here.) 5a

<sp> = space
<lf> = line-feed
<cr> = carriage-return
<alt> = alt-mode
<esc> = escape
<tab> = tab
<confirm> = <cr> OR <repeat> OR <insert> OR <accept> 5a1

<repeat> = <alt> = <ctl>b
<insert> = <ctl>e
<accept> = <ctl>d = command accept
<rubout> = <ctl>x = command delete
<option> = <ctl>u
<bc> = <ctl>a = backspace character
<bw> = <ctl>w = backspace word 5a2

The notation for control characters will be <ctl>y where y is any character. 5b

THIS REPLACES THE CURRENT UPARROW CONVENTION, because (a) up-arrow is a visible, and the control-key isn't, and (b) up-arrow has a specific NLS use as a visible, so that ambiguity could result from the current convention. 5b1

REMAINING PROBLEMS/QUESTIONS 6

This list is certainly not exhaustive. It just describes the issues that we know are still not clearly resolved. We'd appreciate feedback regarding solutions or other problems. 6a

1) OPTIONS 6b

As indicated in the examples, an optional variable is represented by enclosing its acronym in square brackets. This seems to be fairly standard in other syntax notations, and it allows ordinary parentheses to be used to denote the noise-word feedbacks which are, to me at least, properly parenthetical. 6b1

The problem is that up to now square brackets have been used (e.g. by MFA and others) to denote NLS system responses. So what we've done here is change that, and I don't know if that's going to cause a lot of trouble, inconsistencies with other documents, etc. Any thoughts? 6b2

2) LEVEL ADJUSTS and VIEWSPECS 6c

It was my understanding that these two fields would always be optional (preceded by <ctl>u), but NDM's file (userguides, commands,) doesn't always show it as an optional field. Has there been a change that I'm unaware of? See Example #3. 6c1

3) VERB-NOUN Consistency 6d

I strongly recommend that the following (and any other) file handling commands require both verb and noun, not just verb as shown in (userguides, commands,): 6d1

create file
load file
update file
delete file
undelete file
copy file
move file
verify file
protect file 6d1a

This recommendation is partly a result of feedback such as that from Laura Gould. She stated for example that our efforts to make her life easy by requiring only the word "null" for "null file", resulted in many files whose name began with the letter "F". So it appears that what's "easiest" isn't always the most "natural" thing to do, given the form of other commands. 6d2

4) OTHER RECOMMENDATIONS (by MDK, for the sake of consistency): 6e

- that "restore modifications" be changed to "undelete modifications", in line with all other delete/undelete pairs; 6e1

- that there be a "protect directory" command as a companion to "protect file"; 6e2

- that "output sequential" and "output assembler" require FILENAME before asking "upper case only", not after doing so as at present. See Example #5 (compare this to "output quickprint", in which FILENAME precedes the "copies" field). 6e3

- that all questions to the user requiring a "Y" or "N" answer be redesigned so that the answer field is optional, and the <confirm> is required, regardless of whether the user typed "Y" or "N". See Examples #1 and #5. 6e4

The problem is that Network users don't get very fast

echoes, and they're often left hanging with no apparent response to the Y or N, so they type more (like a <cr>), and that's disaster in some cases. 6e4a

EXAMPLES 7

In each example, we first state the current NLS Syntax as given in (userguides, commands,), and then follow that by the syntax proposed in this note for HELP users. NLS noiseword feedbacks are in parentheses, and optional variables are in square brackets. 7a

#1 SUBSTITUTE 7b

```
Substitute TEXT-ENTITY (in) STRUCTURE-ENTITY (at) DSEL
   (new) LSEL (for old) LSEL (Finished?) CONFIRM
                                         Yes !=CA!
                                         No !repeat from
                                         (new)!
                                         /(Filtered:)
                                          VIEWSPECS CONFIRM/
```

7b1

Substitute STRING (in) STRUCTURE (at) ADDRESS /VIEWSPECS/ (new) NEWSTRING (old) OLDSTRING (Finished?) /ANSWER/ <confirm>
ANSWER = Y or N
(N means you want to designate more substituions to be made in this structure, before carrying out the command.)

7b2

#2 PROTECT FILE 7c

```
Protect (file) FILENAME (from) Self (Protection) Read (only)
                               Group              Write (&
                               Others              read)
                                                  No (access)

     CONFIRM
```

7c1

Protect File FILENAME (from) CLASS (access) ACCESS <confirm>
CLASS = SELF or GROUP or OTHERS
ACCESS = READ or WRITE or NONE

7c2

#3 INSERT SEQUENTIAL 7d

Insert Sequential (file following) [WHERE] DSEL LEVADJ (file)
LSEL [Heuristic] CONFIRM
[Justified]
[Assembler]

7d1

Insert Sequential File (following) [OPT1] ADDRESS [LEVEL]
(file) FILENAME [OPT2] <confirm>
OPT1 = FOLLOW or PRECEDE or REPLACE (these pertain to the "ADDRESS" field)
OPT2 = HEURISTIC or JUSTIFIED or ASSEMBLER (these pertain to the "FILENAME" field)

7d2

#4 COPY 7e

Copy STRUCTURE-ENTITY (from) SSEL (to follow) [TOWHERE] DSEL
LEVADJ [(Filtered:) VIEWSPECS] CONFIRM

7e1

Copy STRING (from) ADDRESS (to follow) [OPT] ADDRESS
[VIEWSPECS] <confirm>
OPT = FOLLOW or PRECEDE or REPLACE (these pertain to the "ADDRESS" field)

7e2

Copy STRUCTURE (from) ADDRESS (to follow) [OPT] ADDRESS [LEVEL]
[VIEWSPECS] <confirm>
OPT = FOLLOW or PRECEDE or REPLACE (these pertain to the "ADDRESS" field)

7e3

#5 OUTPUT SEQUENTIAL 7f

Output Assembler (file) (force upper case?) Yes (file)
Sequential (file) No
LSEL CONFIRM

7f1

Output FILE-TYPE (file:) FILENAME (upper case only?) [ANSWER]
<confirm>
FILE-TYPE = ASSEMBLER or SEQUENTIAL
ANSWER = Y or N

Note: In a SEQUENTIAL file, every NLS line will confirm with
<cr><lf>
In an ASSEMBLER file, every NLS statement but not
necessarily every line will confirm with <cr><lf>

7f2

18818 Distribution

Richard W. Watson, James E. (Jim) White, Paul Rech, Elizabeth J. (Jake) Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, N. Dean Meyer, Jeanne M. Beck, Charles F. Dornbush, Dirk H. Van Nouhuys, Michael D. Kudlick, Diane S. Kaye, James C. Norton, Kirk E. Kelley, Harvey G. Lehtman, Elizabeth J. (Jake) Feinler, Jeanne B. North, Michael D. Kudlick, Charles H. Irby,

NLS Command Language Syntax for HELP System

(J18818) 5-SEP-73 11:48; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /RWW JEW PR DIRT NIC-QUERY; Sub-Collections: SRI-ARC DIRT
NIC-QUERY; Clerk: MDK;
Origin: <KUDLICK>SYN.NLS;3, 5-SEP-73 11:43 MDK ;

<MJOURNAL>18818.NLS;1, 5-SEP-73 12:36 XXX ; .HJOURNAL="MDK 5-SEP-73 11:48 18818"; Title: .H1="NLS Command Language Syntax for HELP System"; Author(s): Michael D. Kudlick/MDK; Distribution: /RWW JEW PR DIRT NIC-QUERY; Sub-Collections: SRI-ARC DIRT NIC-QUERY; Clerk: MDK; .IGD=0; .SNF=HJRM; .RM=HJRM-7; .PN=-1; .YBS=1; .PES;
Origin: <KUDLICK>SYN.NLS;3, 5-SEP-73 11:43 MDK ;

.PEL; .PN=PN-1; .GCR;Would appreciate your comments, criticisms, etc.

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On Friday August 31st, Dirk van Nouhuys, Diane Kaye, and I (MDK) agreed on a scheme that I proposed for representing NLS command language syntax to the users of HELP. This note describes that scheme.

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In present ARC notation, variables are given names which sometimes are cryptic (such as DSEL), and always are "global" --- i.e, assumed to be known because they are defined once and for all elsewhere.

Alternatives are listed vertically, disturbing the left-to-right, line-by-line flow of a syntax expression.

The notation for invisibles is sometimes ambiguous (e.g., Laura Gould's problem with SP = substitute plex).

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The convention we are adopting is that there will correspondingly be two classes of acronyms to describe these variables: "GLOBAL" acronyms, and "LOCAL" acronyms.

Global acronyms will have the same meaning in any syntax expression in which they occur. Their meaning must be known by a user. Consequently, we intend to keep the number of such acronyms

AFSC-ACD : Col. Madril

Please send Col. Madril, AFSC-ACD, Andrews AFB, Washington, D.C. 20334 a set of the Rsource Notebooks and include him on the mailing list for the ARPANET Newsletter. If you could send him some back issues of the Newsletter, it would be appreciated. If you have previously sent John Zaner, of the same organization and addres as set of Res. Notebooks, you should disregard this request - however, in a discussion with them today, they indicated that they have not received any. These people are, I believe, at the HQTS level for the AFSC ARPANET activity and very much need the information.

Thank you, Jean 1

18819 Distribution
Michael D. Kudlick, Elizabeth J. (Jake) Feinler, Marcia Lynn Keeney, Susan S. Poh, Jean Iseli,

(J18819) 5-SEP-73 11:31; Title: Author(s): Jean Iseli/JI;
Distribution: /MDK JAKE MLK SSP JI; Sub-Collections: NIC; Clerk: JI;