Revision of Draft Final Contract Report/The Initials RL work.

   The problem with the initial RL2 arose because Major Logan
somehow was entered twice. Some time ago we cleaned out the
second entry. RL works now and should continue to work.   1

As you know we mailed an advanced draft of the contract report
on June 10th.   2

   Jim Norton told me you have some camments which can be
   included in revision. I look forward to seeing them.   2a

   You can find our present plans for revision in
   (journal,10758,).   2b

(J10856) 26-JUN-72 16:28;   Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Duane L. Stone, James C. Norton, Paul Rech, Dirk H. van
Nouhuys/DLS JCN PR DVN; Sub-Collections: RADC; Clerk: DVN;
Origin: <VANNOUHUYS>J2RBMS.NLS;1, 26-JUN-72 16:24 DVN ;

Net Status file backup procedure?

Dick,

Since the nls commands necessary to access and list the Server
Site Status file would be simple and stable, the backup sites
should not have very much trouble writing programs which would
automatically call-up, enter and list the status files and place
the info in their own files.

I do not see any problem in having the programs use the logger
circuit, over the net, and appear to the nic like a regular user
listing the status file.

 Am I missing some procedural problem?   1

Net Status file backup procedure?

(J10857)   26-JUN-72 17:44;   Title: Author(s): David H. Crocker/DHC;
Distribution: Richard W. Watson/RWW; Sub-Collections: NIC; Clerk: DHC;

Request change in permanent-job ranking so they print last in
response to TENEX Exec's SYS command

Smokey, Jim, et. al.: when I do a SYS in EXEC, to see who is on,
I find myself getting increasingly irritated by having to wait
for the system jobs to be listed before I get to the people. I'd
like to see the people listed first, and the others listed last,
so that I could d a Control-C and quit when I've seen what I
want. Seems to me that most of the times that this function is
called from the EXEC the caller would have the same preference.
Can you consider some way in which the order of listing is
changed -- or else educate me on accepting he current order
because in most cases that is what the user would rather have?
Thank you in advance.   Doug.   1

Request change in permanent-job ranking so they print last in
response to TENEX Exec's SYS command

(J10858)   26-JUN-72 18:02;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: James C. Norton, Donald C. Wallace, James
E. White, Charles H. Irby, Kenneth E. Victor, William R. Ferguson,
Richard W. Watson/JCN DCW JEW CHI KEV WRF RWW; Sub-Collections: SRI-ARC;
Clerk: DCE;

Interrupt

hi, cindy;

I got the output processor guide. thanx. If (when) you get a
chance, may I also get a copy of the Content Analyzer users guide
and the L-10 user guide?

I will be more than haappy to do the bursting of the output. No
need for you to hassle with that kind of stuff for this kind of
stuff. (I know what I just typed, but what did I just type?)

Anyhow, thanx. D/   1

Interrupt

(J10859)   26-JUN-72 19:25;   Title: Author(s): David H. Crocker/DHC;
Distribution: Cindy Page/CXP; Sub-Collections: NIC; Clerk: DHC;

A Message for Stan

It is 9:30 and I still have not received your message. Will try again
tomorrow. Your author copy was there however.   Arnie   1

A Message for Stan

(J10860)   26-JUN-72 19:32;   Title: Author(s): Arnold M. Ostebee/AMO;
Distribution: Stanley Cohen/SC; Sub-Collections: NIC; Clerk: AMO;

IS Management quidance on AHI project

Controlled Experiment (AHI) 9 SEP 71   1

   From: Frank Tomaini   1a

   To: D. Stone   1b

   It has been suggested that ISC be constrained to function
   within present Standard Operational Proceedures for
   Administration and Management, while ISI be allowed to
   experiment with SRI (AHI) techniques and comparative
   evaluations be made. It is directed that this suggestion be
   transformed to a controlled experiment within the following
   guidelines: 1c

      ISI will have to maintain parallel SOPs.   1c1

      That the plan not be scheduled for implementation until
      after installation of the ARPA Net or 1January 1972, which
      ever is later.   1c2

      That the Division (IS) be involved through the planned
      utilization of Mrs. Kobos and/or Miss DeConde.   1c3

      That the time between now and the availability of the ARPA
      Net be utilized for training IS and ISI subjects.   1c4

   It is requested that a date for the plan and its presentation
   to IS and ISI Management be established by 15 Sep 71.   1d

IMLAC 26 Aug 71   2

   to: J. McNamara, D. Stone   2a

   From: F. Tomaini   2b

   We should not proceed with procurement of IMLACs in parallel. 2c

   Let's go all out for the ARPA approach: 2d

      Prepare brief work statement for amendement to existing
      ARPA/SRI contract.   2d1

      Call and then visit ARPA (Larry Roberts) to persuade him to
      issue the direction to RADC to accomplish the proposed work
      statement.   2d2

      It would be great if ARPA would partially or totally fund
      the effort— but not necessary. RADC will fund. Larry
      Roberts can include words like—"Request that RADC

participate in the evolutionary intergeration of Augmented
Intellect Techniques into the Air Force environment through
the expenditure of resources in support of the following
change to the SRI contract: 2d3

------------------------"change X"---------------------   2d4

This approach will get us involved and, hopefully, allow
SRI to obtain IMLACs and modems for us.   2d5

Only if this approach fails should we then pursue the 300
series and PMR route.   2d6

Quick reaction is important.   2d7

IS Management guidance on AHI project

(J10861) 27-JUN-72 7:04;   Title: Author(s): Duane L. Stone/DLS;
Sub-Collections: RADC; Clerk: DLS;
Origin: <STONE>GUIDE.NLS;1, 28-APR-72 8:15 DLS ;.

TITLE: Baseline Management System Development

ENGINEER: D Stone ISIM 7834

OBJECTIVE: The objective of this effort is to develop a management system based on the use of NLS for ISI, which will reflect the basic direction of each effort within the branch, and exercise and debug it prior to the controlled evaluation.

REQUIREMENTS: This effort is required before the effect of AHI technology on team performance can be evaluated in the FY-73 controlled evaluation.

APPROACH: This effort will be carried out in-house using th NLS system. Assistance from SRI will be given in the programing area as required. The development will be evoloutionary in the sence that initial BMS operations will be performed using the available commands of NLS--later content analyzer packages will be written to facilitate extensive reformating and viewing operations--still later a sub set of BMS commands will be devised to allow direct insertion, deletion, and updating of BMS data.

EFFORTS: This effort will involve the design of the BMS within ISI to include:

    the file system

    the file format

    the internal (to NLS) proceedures for updating and linking

    the external SOPs

    the analyzer-formatter programs

    and the individual roles and responsibilities within ISI.

    The end products will be documentation describing the system, SOPs and definition of the training requirements.

RELATIONSHIP: This effort is dependent upon the ARPA Network task (lawrence,netsk), the terminal effort (stone,term) to provide the facilities for accessing SRI economically with multiple terminals. It will also require that certain individuals become trained in the basic use of NLS commands before it can be exercised.

MILESTONES:

    effort   OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

```
---------------------------------1--2-------3---4---->
```

1. BMS initial design complete

2. begin use of BMS within AHI group, Mac and FT.

3. revised system design and SOP's for branch.

4. begin use of BMS within branch

MANNING:

BMS DEV		APR				MAY			JUN				
wk	02	09	16	23	30	06	13	20	27	05	12	19	26	comp
DLS	02	.4	.4	.4	.3	.3	.3	.3	.2	.2	.2	.2	.2	4mm
TFL	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	2mm
RBP	.1	.1	.1	.1	.2	.2	.2	.2	.3	.3	.3	.4	.4	3mm
JPC	.1	.1	.1	.1	.2	.2	.2	.2	.2	.3	.3	.3	.3	2mm

DOLLARS:

STATUS:

APR Planned:

Meet with SRI at RADC to go over existing ISI/BMS design. Try to find out in more detail what SRI considers to be their BMS and if there is any way we can take advantage of their software--I expect that there is not too much overlap since ISI is not working on a single system and much of the work is not done in-house. Meet with RBP and JPC to determine the overlap between IDS and BMS.

MAR Accomplished:

No work was done this month on BMS except to discuss the system with AHI troops. There may be a basic incompatability between BMS and the work RPB is doing for Frank T.

MAR Planned:

Complete BMS design and brief to IS and ISI. Need prior to complete definition of evaluation effort.

FEB Planned:

BMS DEVELOPMENT

Complete the BMS design and brief it to ISI and IS.

JAN Accomplished:

The file designs for BMS were completed, however the proceedures for implementing it within ISI have yet to be worked out in detail.

JAN Planned:

The BMS document should be completed and coordinated through at least ISIM. The definition of files and their format should be finalized.

DEC Accomplished

Discussions were held within the AHI group on the proceedures within the branch that would allow a BMS for ISI to operate most effectively. The BMS design document was started.

SUMMARY:

Title: BMS DEVELOPMENT

Dollars: 00

Manyears: 1.0

Type: in-house

Symbol: ISIM

Name: D. Stone X7834

BMS DEVELOPMENT

(J10862)   27-JUN-72 7:08;   Title: Author(s): Duane L. Stone/DLS;
Distribution: Duane L. Stone, James H. Bair, Thomas F. Lawrence, James
C. Norton, Paul Rech, Dirk H. van Nouhuys, John L. McNamara/RBMS JLM;
Sub-Collections: RADC RBMS; Clerk: DLS;
Origin: <STONE>BMSEFF.NLS;1, 17-APR-72 7:22 DLS ;

TITLE: AHI Terminals

ENGINEER: D Stone ISIM 7834

OBJECTIVE: The objective of this effort is to evaluate commercially
available terminals in order to specify the most cost effective
configuration for RADC/ISI and potential user populations.

REQUIREMENTS: This effort is required to allow specification and
purchase of terminals and related peripherials for phase 1 and phase2
evaluations of AHI at RADC and for eventual application within Air Staff
and other user organisations.

APPROACH: The approach will be to closley follow the surveys and
compendiums of terminals in trade magazines, to coordinate with the
Display Branch, and finally to procure and evaluate specific terminals.
The evaluation will be aimed at uncovering the functions that can be
best performed at the terminal vs the CPU and at describing the text
manipulation activities that are best performed using CRTs,
teleprinters, line printers, and off-line cassette recorders.

EFFORT: This effort involves the initial purchase of state-of-the-art
terminals which are readily compatable with the NLS system via the ARPA
Net. A mix of CRT, teleprinter, and off-line cassette recorders will be
used to train participants in the phaseI evaluation and to elecit any
problems encountered with the specific terminals purchased. The CRT
terminals will be general purpose, ie. programmable and hence capable of
emulating a wide range of commercially available terminals. They will
also be used to evaluate which functions can most appropriately be
assigned to the terminal and which should be handled by the CPU in an
highly interactive environment. The end products of this effort will be
a report summarizing the utility of the specific terminals used during
phase I, specification of the terminal configuration for the PhaseII
evaluation, and recommmendations for those functions which most
appropriately should reside in the CRT terminal.

RELATIONSHIP: This effort is required before any extensive training of
evaluation subjects can commence see(bair,plan).

MILESTONES:

        OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP

        ------1------------2-3----------4-5-6-7-8-9

    1. specify terminal configuration for phaseI and begin procurement
    2. contract with SRI for terminals
    3. delivery of 4 Execuports
    4. delivery of 4 Termicette Recorders

5. delivery of 3 IMLACs
6. delivery of 6 Execuports
7. order line printer
8. order 3 alpha-numeric CRTs and two IMLACs
9. delivery of 4 cassette recorders
MANNING:

				JAN			FEB			MAR				
wk	02	09	16	23	30	06	13	20	27	05	12	19	26	comp
DLS	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.2	.2	.2	2mm

DOLLARS:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	COMP
		14.4			7.8	57.9						192

see (journal,9249,) for SRI quote on initial 4 Exec, 4 Termicette,
and 3 IMLAC buy. see (term,20) for terminal cost breakout.
STATUS:
JUN Planned:
Firm up specs for line printer. Tom L. was given the job of
ordering it. It looks like we'll have to go open bid since a
number of suppliers appear to offer medium speed line printers
with upper/lower case ability. Hopefully we'll get the IMLACs
this month.--transmission baud rate remains up in the air.
MAY Accomplished:
Nothing--only problems--the Execuports are not covered by on-call
maintaintence after the warrenty expires (90 days from receipt).
Walker had one of the Honeywell guys look at #2238 there was
nothing wrong but a burned out light bulb. I (DLS) signed the work
sheet but Parker informs me that the Gov't is not obligated to pay
since we have no formal agreement with Computer Tranceivers Inc to
provide maintence. The group was instructed not to ask Honeywell
to fix any more units until the maintence problem is straightened
out.
MAY Planned
Finalize specs for the line printer. Take up the question of the
Alpha-numeric display units for the managers.
APR Accomplished:
APR Planned:
start procurement of line printer, additional IMLACs, and
alpha-numeric CRT's.
MAR Accomplished:

AHI TERMINALS

The plan for the ISI branch terminal configuration through the
controlled experiment was generated and pitched to ISI and IS at
the special confessions session.(,term,) The paperwork to get an
additional 6 Execuports (as indicated by the plan) was written and
sent to DO. The line-printer literature obtained from the Fall
Joint computer conf. and the Feb.71 issue of Modern Data was
reviewed to find a medium speed relatively inexpensive line
printer with upper-lower ASCII character set. Two sources were
identified--ODEC and VOGUE. Phone calls were made to each and we
are awaiting futher literature. Coordination with the computer
facility was made to determine if we could use one of therir
printers--the answer is negitive.(

FEB Planned:

The EXecuports should be delivered near the end of Feb. Computer
trancievers is quoting a 21Feb shipping date. Also the contract
with SRI should be signed this month. SRI should issue an order
to IMLAC corp see(8746,).

Jan Accomplished:

The final specifications for the IMLACs were sent to SRI for their
comment. SRI placed the order for the Execuports see (8612,).
They have ordered model number 310 vs the model 300 that we now
have. The differences are minor but the 310's will take a month
to build (vs immediate shipping for the 300.

JAN planned:

SRI should order the Execuperts and cassettes and possibly order
the IMLACS if problems of mouse and keyset interface can be ironed
out.

DEC Accomplished:

The terminal configuration at RADC was determined to be 5
Execuports, 3 IMLACs, and 6 cassette recorders (3 for the Exec.
and 3 for the IMLAC). SRI agreed to order these in anticipation
of a contract.

SUMMARY:

Title: AHI Terminals
Dollars: 84.2K
Manyears: .3
Type: ns
Symbol: ISIM
Name: D. Stone X7834

AHI TERMINALS

(J10863)   27-JUN-72 7:46;   Title: Author(s): Duane L. Stone/DLS;
Distribution: Duane L. Stone, James H. Bair, Thomas F. Lawrence, James
C. Norton, Paul Rech, Dirk H. van Nouhuys, John L. McNamara/RBMS JLM;
Sub-Collections: RADC RBMS; Clerk: DLS;
Origin: <STONE>TERMEFF.NLS;1, 30-MAY-72 13:14 DLS ;

Submitting to journal to prevent archive--still in draft form

INTRODUCTION: 1

Over the next few months the AHI group at RADC will be developing
proceedures, record formats, and organizational responsibilites for a
management system which will be shaken down within ISIM and ISI prior
to the "controlled evaluation" which will be conducted during the
next fiscal year. The development of the baseline management system
will be supported by SRI but will primarily be the product of the AHI
group in light of their knowledge of NLS and current management
defficiencies/problems within ISI. The development of this system is
a prerequsite for any extensive evaluation of the AHI technology at
RADC. It may be possible to evaluate the effect of AHI on individual
performance without developing this system, however no real
evaluation of the effect on group/team performance can be made
without it.   1a

    It must be kept in mind at all times that an augmetation system is
    composed of: 1a1
        hardware, software, tools, artifacts   1a1a
        languages   1a1b
        proceedures, methodolgy   1a1c
        trained people   1a1d

    We will be concentrating on developing the proceedures,
    methodology, trained people and some straight forward tools--all
    to be greatly influenced by the environment within ISI and the
    outside world with which it must interface. The basic hardware,
    software, and languages which exist in NLS will not be futher
    developed or modified for this system development activity.   1a2

    This development will be an evoloutionary one. Initially BMS
    operations will be performed using the existing set of NLS
    commands. Later, content analyzer programs will be written to
    facilitate more extensive reformatting and viewing operations.
    Still later, consideration will be given to implementing BMS
    commands, which are now under development by SRI, which will allow
    direct insertion, deletion, and updating of BMS data.   1a3

PROBLEM: 2

An apparent dilemma exists in most important problem solving
situations today, particularily those which are mission or goal
oriented-ie. do not yield to mathematical treatment. The problems
are significantly complex that one or two people cannot successfully
reach a soloution in an acceptable length of time. The only avenue
open is the team approach where the problem is subdivided into
smaller parts which hopfully can be handled by individuals. This
subdivision however, necesstates a great deal of communication
between the individuals responsible for the smaller tasks to assure
meshing of form, function, and timing. Various management devices
are brought to bear to facilitate this commucation--ie, management
reporting forms, meetings, regulations governing coordination etc.
In most instances however, these "official" devices are consiered an
inconvience at best and are subverted whenever possible. If
adherance to the perscribed proceedures is rigidly enforced, the
individuals soon become bogged down in paper work to the detrement of
their main job.   2a

ISI is clearly a goal oriented organization, or in Air Force terms a
mission orientied organization.   2b

The mission of ISI is to: 2c

    conduct explotory and adanced development in the mission areas of
    operating systems,data managment, languages,etc.   2c1

    conduct research and development in Information Processing
    Technology areas to solve or contribute to the solution of "Air
    Force Unique" problems.   2c2

    provide consultant services for the Air Force in the definition of
    Information Processing softrware and hardware to solve operational
    problems   2c3

    maintain a technical competence and technical awareness of
    Informaton Processing Research and Development.   2c4

With a mission like this, a wide range of job activities is
potentially open to ISI. In practice however, the possible courses
of action are severely restricted by dollars, manpower, technical,
and political constraints. The problem of a manager within ISI is
continually to define and refine his goals and to juggle the
resources at his disposal to assure the most progress toward the
stated goals. He must accomplish this juggling act in spite of
continual changes in all facets, many of which are beyond his control
or prediction.   2d

In practice a high percentage of ISI personnel are managers of one
type or another. There is an heierachial management structure
imposed by the organizational structure of the branch. There is an
Air Force imposed structure for managing R&D resource expenditures;
ie project, task, and effort. There is a third management structure
for the technical management of R&D consisting of TPOs and Tech Areas
which cuts across projects, but is roughly equivalent to branch chief
and group leaders (at least within ISI). With these different
aspects of management operating concurrently, it is small wonder that
confusion about status, progress, and allocated resources on efforts
frequently arises.   2e

A method is needed to make this process of goal definition and
progress visible. Currently, a look is taken once or twice a year by
upper management (at program call time and at procurement time). In
between various changes in direction, thinking, and progress are made
at all lower levels which results in an incomplete picture at any
given instance of time and some times a totally inaccurate picture.
It is possible to devise an elaborate system whereby everyone in the
branch knows where all efforts pertainent to his job are. However,
the implementation of such a system using conventional techniques
would be prohibitively expensive in terms of the time it would take
to accomplish the reporting required (even if you could get the
engineers to comply). It should be possible to implement such a
system however, using the techniques of AHI, to the benifit of all
concerened.   2f

4

ISI BMS DESIGN CRITERIA: 3

A set of proceedures, tools, methods, and organizational
responsibilities will be devised to allow complete tracking,
projection, reporting, management, and accounting for the technical
efforts within ISI using the basic techniques of AHI. The baseline
management system (BMS) design is influenced by the following
considerations: 3a

out-of-date or inaccurate information is probably worse than
useless.   3a1

a system that gives an easily assimilated view of what is
currently transpiring in the branch would be of value.   3a2

a system that gives a picture of the directions in which the
branch is moving would be of more value.   3a3

a system that allows an individual to trace and reconstruct the
historical development of a particular effort would be of
additional value.   3a4

a system which allows easy preparation of management reports which
are required to be forwarded would be of additional value.   3a5

a proper balance must be maintained between the amount of
information that people are willing to keep up-to-date and the
amount and detail necessary to provide the   information desired by
the users of the system.   3a6

As regards the question of the balance of the amount and detail
of information, there are several things that can effect that
balance.   3a6a

The individuals who spend the most time using certain kinds
of information will be willing to assume the primary
responsibility for updating that information.   3a6a1

Easily used tools or aids to entering new and update
information would make the burden lighter.   3a6a2

If users of the information made their use visible to the
suppliers of the information, the suppliers motivation would
be raised.   3a6a3

If people were also users of the information they supplied,
they would be highly motivated to keep it up-to-date.   3a6a4

COMPONENTS OF BMS: 4

For purposes of discussion the BMS will consist of the following
components: 4a

a set of records contained within NLS files and conventions for
storing information within these files. These files will include
as a minimum: Plans, Effort, Task, Manpower Accounting, Dollar
Accounting, Meeting Note, and Program Summary files.   4a1

proceedures for updating and adding new information to these
files--both internal to NLS and SOPs external to NLS.   4a2

proceedures and/or programs for creating useful views of these
files.   4a3

people with well defined roles and responsibilities with regard to
the BMS.   4a4

These components will be discussed under the heading of BMS RECORDS,
BMS PROCEEDURES, BMS PROGRAMS, and BMS PEOPLE ROLES.   4b

BMS RECORDS: 5

PLAN FILE   6

For each effort in the branch there should be an approved (at least
through division level) plan documenting the objectives of the
effort, the requirement for it, and the alternative approaches
considered to reaching the objective. This document "ISI Baseline
Management System" is an example of such a plan. No particular
format is required, but it obviously must contain sufficient
information to sell it to management. In addition to this effort
type plan, special plans such as: TPOs, Tech Area Writeups, Project
Plans may be maintained in this file by individuals who are required
to generate and update them.   6a

EFFORT WRITEUP FILE   7

The effort writeups will represent the section's latest thoughts on
the technical program in existance and plans for the immediate future
and as such (together with the plan file) are the heart of the ISI
BMS. They will be used as the official vehicle to record proposed
and approved changes in the program. They will also be used by
management to decide the priorities, manpower allocations, and
expenditure rates. It therefore is necessary to keep the effort
writeups as up-to-date as possible. It will be the responsibility of
each effort engineer to accomplish this; either directly if he has
access to NLS or indirectly through secretaries if he does not have
access to NLS. It is expected that each effort will be backed up by
a detailed plan which has been approved by management up through IS.
The purpose of the effort write up is to summarize this plan and to
provide a vehicle for reporting on a systematic basis any changes in
activity which deviate from the original plan.   7a

The following is a description of the format and contents of each of
the elements of the effort writeup file.   7b

TITLE: A short descriptive title of the work to be accomplished
under the effort.   7b1

ENGINEER: The name of the engineer responsible for this effort,
his symbol and phone number.   7b2

REQUIREMENT: a statement indicating why this effort is being
persued, in addition to any formal AF directives.   7b3

OBJECTIVE: A brief narrative outlining the goals and desired end
products of this effort.   7b4

APPROACH: A general description of the technical approach to be
used in persuing the objectives outlined above. The approach
should contain references to any plans which give the alternative
approaches and the rational behind the one chosen (if the plan is
in the system then a link should be constructed).   7b5

RELATIONSHIP: A description of the relationships this effort has
to other efforts in the branch. The narrative should answer the
question, "Which efforts depend upon this effort being
successfully completed on schedule and which efforts in turn must
be completed before this effort can be accomplished?"   7b6

EFFORT: This element should contain a more detailed description of
the jobs (in-house and contractual) which must be done to
accomplish the effort. They should be characterized by a definite
end product, ie-a report, trained people, purchased equipment. If
the effort engineer feels it is necessary, he may break the effort
into a number of subefforts--each with their own description. 7b7

MILESTONES: The milestone chart should show the beginning and
ending points for each effort as well as any important products
which go into the effort or fall out of the effort, ie contract
packages, contract, reports, etc. This will be updated monthly.
An example of a milestone chart with several subefforts follows:
                                                            7b8
effort   OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP   7b9

Training: --------------1   2----------->   7b10

Terminals: -3------------4---5   7b11

SRI help: ----6---------------7   7b12

Evaluation: 8-----------9-------------------10-------------> 7b13

Proceedures:--------------11-----------------12   7b14
    1 Taining of 10 initial users complete.   7b14a
    2 Start training of the rest of ISI people.   7b14b
    3 Procurement package for terminals ready.   7b14c
    4 Contract with SRI for terminals.   7b14d
    5 Terminals delivered.   7b14e
    6 Procurement package for SRI assistance.   7b14f
    7 SRI under contract.   7b14g
    8 Initial attitude questionaire administered.   7b14h
    9 Report describing results of training exercise.   7b14i
    10 Report describing initial experiment within ISI.   7b14j
    11 Proceedures established for initial experiment.   7b14k
    11 Proceedures established for controlled experiment.   7b14l

MANNING: The manning chart will contain the engineer's best
estimate of manpower required to complete each effort. The
manning estimates will be made for each individual the effort
engineer feels he needs for each week for a three month period
from the present month. In addition, the engineer will estimate
the manpower required to complete the effort (including the three
months of detailed estimate). The estimates should be expresed in
tenths of a person's time. It will be updated monthly. ex.: 7b15

Proceedures: 7b16

week	03	10	17	24	31	07	14	21	28	05	12	19	26	7b17
														7b18
DLS	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	2mm
														7b19
JHB	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	1mm
														7b20
TFL	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	1mm

Training: Oct   Nov   Dec   COMP   7b21
                                                                7b22

week	03	10	17	24	31	07	14	21	28	05	12	19	26	7b23
														7b24
JHB	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	2mm
														7b25
DLS	.2	.2	.2	.2	.1	.0	.0	.0	.0	.0	.0	.0	.0	1mm
														7b26
TFL	.2	.2	.2	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	1mm

Terminals: 7b27
                                                                     7b28

week	03	10	17	24	31	07	14	21	28	05	12	19	26	7b29
														7b30
JHB	.0	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.0	.0	1mm
														7b31
DLS	.3	.3	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	2mm
														7b32
TFL	.2	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1mm

SRI help: 7b33
                                                                     7b34

week	03	10	17	24	31	07	14	21	28	05	12	19	26	7b35
														7b36
JHB	.1	.1	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	1mm
														7b37
DLS	.2	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	3mm
														7b38
TFL	.2	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1mm
														7b39

Evaluation: 7b40
week   03 10 17 24 31 07 14 21 28 05 12 19 26   7b41

                                                                    7b42
JHB   .4 .4 .4 .4 .2 .2 .2 .2 .2 .2 .2 .2 .2 3mm
                                                                    7b43

DOLLARS: The dollars will reflect the engineers best estimate of
monthly expenditure rate for each effort requiring them, the
source of the money(P1 = #5581, P2 = 5550), and funds estimated to
completion from the present month. This will be updated monthly.
ex.:   7b44

effort   OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP COMP
                                                                    7b45

                                                                    7b46
Training:P1   2   2   0   0   0   0   0   0   0   0   0   0   4
                                                                    7b47
Terminals:P1   0   0 20 20 35   0   0   0   0   0   0   0   75
                                                                    7b48
SRI help:P1   0   0   0   0   0 10 10 10 10 10 10 10   75
                                                                    7b49

STATUS: This element will contain the planned activities for the
upcoming month and the accomplishments of the past month. It is
anticipated that these entries will be retained (not deleted) and
pushed down—thus giving a running picture of planned vs
accomplished activity. An example follows: 7b50

STATUS: 7b51

    FEB Planned: 7b51a
        The EXecuports should be delivered near the end of Feb.
        Computer trancievers is quoting a 21Feb shipping date. Also
        the contract with SRI should be signed this month. SRI
        should issue an order to IMLAC corp see(8746,).   7b51a1
    Jan Accomplished: 7b51b
        The final specifications for the IMLACs were sent to SRI for
        their comment. SRI placed the order for the Execuports see
        (8612,). They have ordered model number 310 vs the model
        300 that we now have. The differences are minor but the
        310's will take a month to build (vs immediate shipping for
        the 300.   7b51b1
    JAN planned: 7b51c
        SRI should order the Execuports and cassettes and possibly
        order the IMLACS if problems of mouse and keyset interface
        can be ironed out.   7b51c1
    DEC Accomplished: 7b51d

The terminal configuration at RADC was determined to be 5 Execuports, 3 IMLACs, and 6 cassette recorders (3 for the Exec. and 3 for the IMLAC). SRI agreed to order these in anticipation of a contract. 7b51d1

SUMMARY: The summary will contain formated information which will correspond directly to the format of the official Program Summary file. 7b52

TASK FILE   8

The format of the task file writeup will be similar to the effort
file writeup, except that the subtasks will be equivalent to the
subefforts in the effort writeup file. It will be used and
maintained by the Tech Area leader and/or the group leaders. Its
purpose is to summarize the more detailed effort writeups and to give
direction and guidance to the effort engineers.   8a

MANPOWER ACCOUNTING FILE   9

The expenditure of personnel time is currently tracked for a number
of reasons by various people/organizations. In almost every instance
the engineer must be asked for an estmate of how he spent his time.
Oft-times there is a lapse of time (as much as a month) between the
actual expenditure of time and the recording of the expenditure.
Further the engineer is asked to account for his time against
Projects which have little meaning to him. Within the BMS he will be
asked to account for his time against efforts (as defined in the
effort file) on a daily basis. The primary use of the data will be
to feedback information to the effort engineers about the amounts of
individual's time which were actuallly spent on his effort and to the
group and section leaders to help them decide priorities for the
efforts. As a byproduct it may be possible to provide information
for foward reporting--forms 2, 6, and time cards.   9a

The data would be collected for both on-base and TDY in at least the
following categories: 9b

    Direct   9b1

        regular   9b1a

        paid overtime   9b1b

        overtime not paid   9b1c

        compensatory   9b1d

        other   9b1e

    overhead   9b2

        education   9b2a

        sales   9b2b

        seminars/conferences   9b2c

  staff meetings   9b2d

  management   9b2e

If required the data for off-job could also be collected--to include:
                       9c

  sick   9c1

  annual   9c2

  compensatory   9c3

  administrative   9c4

  holiday   9c5

  other   9c6

  lwop   9c7

  awol   9c8

Analyzer-formatter and calculation packages can then be written to
sort the basic manpower expenditure data base by project, task,
effort, TPO, Tech Area, individual, type of expenditure, etc. In
addition it should be possible to create automatically the data for
form 2's, 6's, etc.   9d

MEETING NOTE FILE   10

The purpose of the meeting note file is to record in a systematic way
the key discussion, decisions, and actions required. These files
will be linked to by entries in the status element of the effort
writeup files to indicate the authority for changes in the effort.
                       10a

Each official user of the system will keep a file in his directory
called "MEET". The file will have the following format: 10b

  1 MEET   10b1
   1A PURPOSE: 10b1a
   1B ATTENDEES: 10b1b
   1C DISCUSSION: 10b1c
   1D UNRESOLVED ITEMS: 10b1d
   1E ACTION ITEMS: 10b1e
   1F COORDINATION COMMENTS: 10b1f

the note taker will organize his notes, flesh them out and type them
into the system. This should be accomplished as soon as possible
after the meeting since people's memories tend to fade rapidly. Also
if the meeting resulted in "Action Items" then quick coordination is
desireable to assure that all are in agreement as to exactly what
action is to be taken.   10c

The "meet" element of the file should contain a descriptive title of
the meeting and the date it was held--ex. "AHI Group Meeting 25MAR72
                                                                  10d
The order in which the attendees are listed should reflect the order
in which the notetaker desires the coordination to be performed. 10e

The purpose of the "comment" element is to allow clarification of the
meeting notes as reported by the notetaker, by the meeting attendees
                                                                  10f
The comments will then be filled in by the individual who is
reviewing the meeting minutes in the following way: 10g

    NAME (or possibly initials), ---DATE---, comment narrative.   10g1

    ex. D. Stone---19AUG---I never agreed to contact him--I don't
    even have his phone number   10g2

In the beginning copies of the meeting minutes will be made by the
notaker and mannualy distributed to the attendees. Those people who
have terminals will be responsible for entering their comments
themselves. Those who do not have terminals, will write them out in
longhand and return them to the note taker who will then enter them
into the system. As secretaries become trained they may be used for
entering comments by those who do not have terminals.   10h

As individual MEET files accumulate it may be desireable to
periodically collect them into one file and output them to one
journal file or when coordination is complete they could be submitted
to a common "MEET" file held by T. Buccerio.   10i

Dollar accounting file   11

This file will have a format similiar to the dollar estimate file
which is to be kept be each engineer. It will be updated by Lou as
he recieves notice of invoices from procurement and/or the engineer
if he gets this information in his monthly progress report from his
contactors.   11a

ISI BASELINE MANAGEMENT SYSTEM

(J10864) 27-JUN-72 8:18;   Title: Author(s): Duane L. Stone/DLS;
Distribution: John L. McNamara, Duane L. Stone, James H. Bair, Thomas F.
Lawrence, James C. Norton, Paul Rech, Dirk H. van Nouhuys/JLM RBMS;
Sub-Collections: RADC RBMS; Clerk: DLS;
Origin: <STONE>BASELINE.NLS;1, 20-APR-72 13:29 DLS ;

comments on nic user guide

i have been trying to use nic and the journal to answer a
questionaire about our tip, and have had little luck
understanding
the nic users guide and/or the journal system. i was able to
get the file (the questionaire)into my file area and modify it
but was unable to send it to anyone. i think the user guide
should
be revised to include instructions on how to access journal
entries,
manipulate them, and resubmit them. thank you
    lt. james h. shiffrin, usafetac   1

comments on nic user guide

(J10865)   27-JUN-72 9:24;   Title: Author(s): George N. Petregal/GNP;
Distribution: Marilyn F. Auerbach/MFA; Sub-Collections: NIC; Clerk: GNP;

Proposed DNLS Journal Submission Scheme

Proposed DNLS Journal Submission Scheme   1

                                                                         1a

The following represents a preliminary rough draft of the
external specs for a DNLS journal submission scheme suggested
by CHI. The purpose is to provide an easy way to submit a
plex. Your comments are welcome.   1b

                                                                         1b1
(E)xecute (J)ournal CA   1b2

    This puts the user in Journal Submode.   1b2a

                                                                         1b3
(I)nsert (T)emplate CA   1b4

    This causes the system to insert a statement of the
    following format into the file at the specified address: 1b4a

        Title:(CR)   1b4a1

        Author:(CR)   1b4a2

        Distribution:(CR)   1b4a3

        Number:(CR)   1b4a4

        Clerk: 1b4a5

    The user then enters the proper information via normal
    text-editing commands. The usual journal defaults
    apply. If "number" is user-specified, it must have been
    preassigned.   1b4b

                                                                            1b5
(S)ubmit - plus one of the following possibilities: 1b6

    bug (template statement) CA - the plex assumed to be
    that directly following the template,   1b6a

    or, we might allow: 1b6b

    bug1 (template statement) bug2 (plex - could be in
    another file) CA   1b6c

The system verifies template information and gives error
feedback.   1b6d

   This could be handled as a system-initiated statement
   insert directly below the template.   1b6d1

   To avoid run-away file expansion in cases of extreme
   error, it seems necessary to limit the amount of
   error feedback possible at one time. The user could
   then fix the problems described, delete the system
   error statement, and try a resubmit.   1b6d2

The system can also supply the receipt number in the
template, if it is not user-specified.   1b6e

                          1b7

The user stays in Journal Submode until a CD is typed.   1b8

                          1c

Proposed DNLS Journal Submission Scheme

(J10866)   27-JUN-72 9:49;   Title: Author(s): Diane S. Kaye/DSK;
Distribution: Joy A. Glenn, Kay F. Byrd, Ralph Prather, James E. White,
Augmentation Research Handbook, Jacques F. Vallee, Diane S. Kaye, Paul
Rech, Michael D. Kudlick, Don Limuti, William R. Ferguson, Linda L.
Lane, Marilyn F. Auerbach, Walt Bass, 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, Cindy
Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E.
Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Donald
C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections:
SRI-ARC; Clerk: DSK;
Origin: <KAYE>JOURSUB.NLS;7, 27-JUN-72 9:45 DSK ;

Test   TEST   test

This is a message to see if on-line delivery to me works.   Arnie   1

Test   TEST   test

(J10867)   27-JUN-72 11:30;   Title: Author(s): Stanley Cohen/SC;
Distribution: Arnold M. Ostebee/AMO; Sub-Collections: NIC; Clerk: AMO;

Don't Use '*, '/, '+, or '- as Directive Right Delimiter in the
Output Processor

Mike has uncovered a subtle bug in the directive recognition
mechanism of the Output Processor: if you set the Directive
Right Delimiter to '* (asterisk), some directives cease to be
recognized. The "reason" for this is that if the directive takes
a numerical value, the directive recognizer assumes that any '*,
'-, '+, and '/ characters are part of an algebraic expression --
it then starts looking for the rest of the expression, and
finding none, decides that the directive isincorrect.

The jist of this is that you can not use '* (asterisk), '-
(hyphen), '+ (plus sign), or '/ (slash) as DRDs. Sorry. As a
freebie to compensate for this inconvenience, I hearby report
that there is nothing which says that the DLD and DRD characters
cannot be the same (as long as the character is legal for both
DLD and DRD). Have fun -- Walt.   1

Don't Use '*, '/, '+, or '- as Directive Right Delimiter in the
Output Processor

(J10868)   27-JUN-72 12:28;   Title: Author(s): Walt Bass/WLB;
Distribution: Joy A. Glenn, Kay F. Byrd, Ralph Prather, James E. White,
Augmentation Research Handbook, Jacques F. Vallee, Diane S. Kaye, Paul
Rech, Michael D. Kudlick, Don Limuti, William R. Ferguson, Linda L.
Lane, Marilyn F. Auerbach, Walt Bass, 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, Cindy
Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E.
Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Donald
C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections:
SRI-ARC; Clerk: WLB;

NLS Bug-Reporting Mechanism   1

                                                              1a
<MSR>NLSBUGS (password="msr") is now available as a receptacle
for local users' NLS complaints. This is an experiment.   1b

                                                              1b1
The purpose of handling bugs this way is to simplify, not
complicate things.   1b2

    It seems obvious that complaints need to undergo
    processing by someone on the NLS team before getting
    into Baseline.   1b2a

    Also, there is a need to give a little feedback in the
    form of some kind of status message to those who report
    bugs. This should take little energy expenditure on the
    part of bug-fixers.   1b2b

    Users are encouraged to notice things that are already
    known problems, since that cuts down on the frequency of
    interrupts of NLS members trying to get some work done.
    When you report a bug, the person processing NLSBUGS can
    notice duplicates, if you give enough information.   1b2c

                                                              1b3
"Bug reports" seem to fall into several categories.   1b4

    1) When we bring up a new NLS we appreciate hearing
    comments right away which seem to indicate problems
    unique to the new version. These don't necessarily need
    writing down.   1b4a

    2) There seems to be a good tradition around here of
    NLS team members stopping and fixing a problem as soon
    as they notice it, wherever applicable. This is great
    and should continue. It might help if it were noted in
    the bug file, but I don't want to beaurocratize
    spontaneous bug-fixing or hamper it in any way.   1b4b

    3) Traditional bugs no one feels are worth the expense
    now. I'd like to get them documented and not spend any
    more energy worrying about them.   1b4c

    4) Sometimes people can't resist mentioning features it
    would be nice to have, or little system philosophies

that should be changed, or apparent inconsistencies
between TNLS and DNLS.   There is a branch for this in
the file.   1b4d

5)   Other real bugs.   1b4e

                                                                   1c

Please follow the directions located beneath the origin
statement, and try not to keep it locked an unreasonable
amount of time.   If you have a listing to illustrate the
problem, drop it by my desk (DSK).   1d

                                                                   1e

Experimental NLS Bug-reporting Mechanism

(J10869) 27-JUN-72 14:22; Title: Author(s): Diane S. Kaye/DSK;
Distribution: Joy A. Glenn, Kay F. Byrd, Ralph Prather, James E. White,
Augmentation Research Handbook, Jacques F. Vallee, Diane S. Kaye, Paul
Rech, Michael D. Kudlick, Don Limuti, William R. Ferguson, Linda L.
Lane, Marilyn F. Auerbach, Walt Bass, 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, Cindy
Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E.
Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Donald
C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections:
SRI-ARC; Clerk: DSK;
Origin: <KAYE>BUGS.NLS;5, 27-JUN-72 14:10 DSK ;

This is another try at getting a message through NIC to myself.
According to Barb there is a USER field that must be filled in
before you can get your messages properly. However, this field
is not listed in the current NIC User's Guide. Well, here we go
again. Arnie   1

(J10870)   27-JUN-72 16:08;   Title: Author(s): Stanley Cohen/SC;
Distribution: Arnold M. Ostebee/AMO; Sub-Collections: NIC; Clerk: SC;

REPLY TO NOTE ON CURRENT FUNCTIONING OF THE NIC (10697,)   1

First let me state that I am in almost complete agreement
with every complaint and suggestion you offer. Some of them are
within the scope of the resources available to the NIC to fix
others are not. Let me take each of your points and discuss it.   2

Let me start with the last point, that if the network is to
function as more than a toy, it needs to be better managed. This
is the heart of the problem. A network is a many leveled thing,
all levels of which need a balanced treatment and support. The
lowest level communications aspect of the net has been well
supported and appreciated. Levels upwards including protocol
development have not received, in my view, adequate attention and
support, the NIC included. The ball here really rests with ARPA.   3

The NIC's budget is a portion of ARC's budget, from which it
pays its operational costs, some specifically NIC developments,
and a share of ARC developments more generally. I believe we can
continue to improve the service we offer, but at its present
budget level, I believe we will not be able to offer the NIC
service that we all would like to have. ARPA manages the network
and controls budget levels of various services and development
efforts and it is there that decisions affecting levels of NIC
services must be made.   4

Let us now examine each complaint and suggestion.   5

COMPLAINTS   5a

Indices need to be more current, particularly Journal entries.   6

This area of machine produced catalogs is a difficult area.
Many libraries and other organizations have found it
difficult, as have we to keep "clean" data bases and produce
timely catalogs. We can do better and we'll try to produce
weekly number and author indices on Journal items and monthly
we can produce a titleword index of Journal items as well.   6a

We are close to having a catalog production subsystem running
which should help with the production and proofing of the
larger full NIC catalog by producing catalogs incrementally
instead of from scratch. For non-Journal items acquisition,
coding, proofing and operating in an environment where the
system is constantly changing is non trivial.   6b

Creation of RFC's requiring verbal contact with Cindy.   7

This should not be necessary with the present system unless

Reply to Note on Current NIC Functioning

one calls Cindy for a preassigned number. If this is still
true a few days from now, yell at me again.   7a

IDENT System-- cumbersome to use.   8

Yes, the IDENT system needs more human engineering and some
work is going on at a low level. Relative to other problems
it does not have an immediate high priority and I request you
bear with it or phone us and we'll put a person in for you.   8a

NIC User guide complexity   9

We have just completed a beginners manual which will be issued
shortly. We are also creating a new command summary. If
these do not meet your needs here, let me know.   9a

No formal procedures for real-time response to users "Network
Information" problems.   10

We do not have the budget for a full time network type
consultant even though I agree this would be a useful valuable
service.   10a

System reliability   11

You should notice as have we that a new disk system and net
interface as well other hardware upgrading have improved
reliability and it should continue to improve. We are
beginning to explore ways to move NLS and NIC service onto a
timesharing utility for more reliability and availability.
All that's required is money.   11a

    Suggestions   11b

More NIC personnel   12

All that's needed is money.   12a

Primer   13

We have written a beginners manual as mentioned above, and are
thinking about what a prime should contain and how it should
be written.   13a

Providing more pointers   14

We'll expand <NIC> Locator to point to other user
documentation.   14a

2

Reply to Note on Current NIC Functioning

Faster mail procedures   15

   Generally we do reasonably well. The Journal hardcopy is
   printed on SRI's computer center printer and the timing
   involved here of creating a formatted tape at night and
   getting the printing done the next night adds 2 - 3 days to
   the mailing time. We'll continue to work on this area, but
   the real goal here for fast delivery is to use the online
   Journal capabilities which work today. Delivery of documents
   and messages through the net will help greatly here, but
   depends on protocol development and approval, a weak area of
   network management.   15a

Minor problems being fixed   16

   We are constantly fixing minor problems, if one important to
   you isn't fixed, let me know. The problem of an output
   processor for model 37 teletypes is on our list (as a new
   feature not a problem), but really should be part of file
   transfer and sending of print files as a protocol. We are
   planning to implement a new device for the output processor
   called "network device" or some such thing which will send out
   form feeds, etc. and be Telnet compatible and assume user
   Telnets do the right thing for local devices.   16a

Users calling NIC for General Network Consulting   17

   Not enough funds exist, although more attention to the
   Resource Notebook should help. Even here network sites could
   do more to upgrade their entries. They must supply the
   appropriate information.   17a

I have thought for some time that it would be useful to have a
NIC advisory board from the network community, both to help
advise the NIC on needed services and to create a knowledgable
group about the problems of running an information service of
this new type as this is an area in which most computer science
people have little knowledge of the operatonal problems. Maybe
we should try to establish such a thing this year, what do you
think?   18

   In conclusion, let me again encourage you and others to
continue to bitch at us. We need feedback, suggestions, and
constructive criticism, like your note, and more importantly, we
need to know that someone cares.   19

Reply to Note on Current NIC Functioning

(J10871) 27-JUN-72 17:08;   Title: Author(s): Richard W. Watson/RWW;
Distribution: Ari A. J. Ollikainen, Jonathan B. Postel, David H.
Crocker, Bruce A. Dolan, Steve D. Crocker, Douglas C. Engelbart, James
C. Norton, Jeanne B. North, James E. White/ARI JBP DHC BAD SDC2 DCE JCN
JBN JEW; Sub-Collections: SRI-ARC; Clerk: RWW;
Origin: <WATSON>REPLY.NLS;5, 27-JUN-72 17:04 RWW ;

This is the final draft of the Plan (now being implemented).

. EVALUATION OF THE AUGMENTED HUMAN INTELLECT SYSTEM: A PLAN

1

Introduction: The Augmented Human Intellect System (AHI) has been
described in theoretical and philosophical terms by its originator,
Dr. Douglas Englebart, Stanford Research Institute, in a series of
lengthly documents presented over the past decade. This introduction
is a brief description of AHI based on the practical implications of
the system. This description is probably limited by the environment
in which the system is being evaluated, a government research and
development center. In addition to providing the unfamiliar with some
concept of what AHI is, these first paragraphs should provide a basis
for comparing our preconceptions to actual operation in a working
environment.   1a

The general purpose of the AHI system in one statement: to increase
the effectiveness of individuals and groups through the use of
on-line computer technology in the routine performance of their jobs
where these jobs are primarily the generating and recording of ideas,
notes, plans, correspondence, etc. in an organizational environment.
                                                                 1b

 Thus an individual user sits down at an interactive terminal and
creates, stores, organizes, manipulates, written textual material
that he is concerned with.   1c

   Entering written text into computer storage is very much like it
   would be on an automatic typewriter.   1c1

   Once text of any kind is entered, however, it is available for a
   whole host of operations, not the least of which is a powerful
   text editing capability. This capability is similar to
   commercially available text editing packages such as those on the
   Honeywell GECOS III Time Sharing System.   1c2

   Some important advantages of AHI in this area are the full duplex
   echo or instant feedback. Commands are recognized by the first
   character and then displayed in full automatically. The rich and
   powerful command language enables a user familiar with the syntax
   and vocabulary to do almost any conceivable editing. The command
   language includes many shortcuts such that a user can communicate
   with the system about as fast as he can type and think.   1c3

   Text editing is greatly aided by hierarchically structured
   statements. Every statement is automatically numbered and assigned
   a user determined level in the hierarchy, which determines the
   relationship to the text. This structure consists of entities such
   as plexes, branches, groups and statements. Using this structure
   any specific amount of text can be moved anyplace in the system,
   and changed or deleted in any amount.   1c4

The "tree" structure is then usable by a set of commands called viewspecs. These facilitate viewing specified levels in the hierarchy thus controlling the level of detail or whatever the user wants displayed or printed.   1c5

The tree structure works within files which are something like documents or books which are the storage unit for the executive software. These provide a means of further structuring text. Commands exist such that files can be combined, in part or in whole, with any other file, and the user can "jump" around his various files. AHI is similar to a library where a person merely types his request and all books are presented to him for instant composition into a report or other new textual entity.   1c6

It is of great importance that not only are the files in his own library available to him, but all system users' files are available if access is permitted.   1c7

Additional capabilities of AHI are beyond the most sophisicated text editor. They include communicating with other users, sending documents and correspondence, coordinating work, joint and even simultaneous preparation of text, etc.   1d

This capability permits the system to act as the medium for handling all the paperwork of an organization. Rather than the traditional writing or dictatiing, typing, reviewing, typing, mailing or hand carrying, and repeating the process to incorporate the changes of reviewing personnel, the whole process, no matter how many revisions, may be done through AHI. The paperwork would be prepared at the terminal, entered into the system which would transmit it to the specified person(s). Their changes, recommendations, or approval would then be entered at their terminal, and then be made available to the next appropriate person. The system has a means of alerting a user when he has a message (some new paperwork to act on). In specific cases SOPs (standard operating procedures) would be devised to guide the process.   1d1

There are numerous specialized packages within AHI including tabulation methods, management tools, computation devices, distribution systems, etc. For the details see the user manuals for DNLS and TNLS.   1d2

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Perhaps what is necessary for those who are interested is to come to grips with the concept of a system that does almost anything computer technology can do with typewritten English language information. Consequently, in any particular environment a person or group of persons can sit down and do the written portion of their jobs using this sophisticated computer rather than pencil, paper, typist, more paper, pencil, ...   1e

The Evaluation Plan   2

PURPOSE: The purpose of this plan is to propose a methodology for evaluating the utility of the tools and procedures that are part of the AHI technology for potential Air Force users.   2a

DISCUSSION: The investigation will be divided into two phases based on the two major areas of concern, (Phase I) the individual's use of the system and (Phase II) an organization's use of the system.   2b

THE INDIVIDUAL: This phase entails finding out what improvement occurs in the individual's performance when he uses the AHI system to accomplish his daily activities. This will include the effect of having other's work available on-line (eg. plans, meeting notes, documents, etc.) but will not involve specific attempts to compare management structures. Management will be involved through the receipt of communications via the system and the use of the system to repond to these communications. (Details will be presented below.) The evaluation will be based on a comparison between groups of individuals that are as similar as possible. 2b1

THE ORGANIZATION: This part of the effort will be concerned with how an organization such as a branch performs when augmented by the individual's use of the system and procedures and techniques that have implications for how individuals work together and with a management hierarchy. This investigation will follow that of the individual primarily because of the increased disruption of normal working routines and the much larger population required. The effects of this kind of study warrant a great deal of caution and preparation due to the massive changes and the concommitant psychological reactions.   2b2

Implications for Organizational Augmentation: There are two areas of concern, the changes in group processes and the changes in management techniques.   2b3

Implications for Group Process: Currently there is little
planned interaction amoung individuals beyond meetings and some
distribution of meeting notes. AHI technology includes specific
methods for increasing this interaction resulting in more of a
team effort. It promotes communication among persons working on
the same or similar efforts and opens channels of communication
where ever this would facilitate the accomplishment of the
jobs. In order for this to work, groups must be more than some
individuals working on different aspects of the same thing.
They must have a group indentity to which they are willing to
relinquish some of their personal needs and goals for the
betterment of the group. The goal of the team is more important
in a given task context than the goals of the individual. In a
team, all aspects of a task are shared and all members must
contribute positive and negative feedback and ideas.
("Brainstorming" should be a common activity.) Unless this
happens a team effort is much less likely to evolve. Where this
does not evolve naturally, training (group dynamics laboratory,
human relations training) is available to promote group
process.   2b3a

Changes in Management Techniques: 2b3b

    Vertical communication within the branch organizational unit
    would be increased. Decisions would be made at the branch
    level with much more consultation with concerned workers,
    and most of the planning information, guidelines, and goals
    that managers use would be available to workers. Although
    this is not the modis operandi in many management
    structures, this is the case at the ARC (SRI). Recent
    research shows that improved morale, devotion to job,
    commitment, productivity of individuals, etc., results from
    these changes in the conduct of business.   2b3b1

    The tradeoff from these increases in communication has
    historically been a loss of efficency. However, a very
    important product of AHI has been the implementation of
    modern, "open" management techniques without loss of overall
    efficiency.   2b3b2

Some of the specific effects in a branch are that
decisions are made at the branch and section level with
more inputs from all branch workers. All guidelines,
policies, rationales, political expedients, etc., are
made available to the workers who then have the
opportunity to question for increased understanding and
to provide relevant feedback to the managers. The worker
follows his work through all levels of approval and has
the opportunity to defend his position if need be.
Managers become more facilitators than in the past and
are responsible to see that all personnel understand
current activities. They are pushers in the sense that
they coordinate and inquire about developments.   2b3b2a

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PHASE I: INDIVIDUAL USAGE OF AHI   3

In order to assure meaningful results, all available techniques for
gathering evaluative data are being used. Phases one and two will use
the 2 generic kinds of measures available, psychometric and
performance. There are five psychometric techniques, (1) an
experimentally controlled attitude questionnaire, (2) a content
questionnaire, (3) interviews for job profiles, (4) supervisor
interviews for comparative job quality, and (5) comments. Performance
will be measured using time records and by comparing two groups
using a standardized test job in an experimental format. The results
in each case will be collated, analyzed statistically, and
intercorrelated.   3a

(Tech1) Experimental Design for the administration of the "T"
Questionnaire: 3b

   This is a standardized attitude questionnaire which is designed to
   measure subjects general attitude toward the AHI concept BEFORE
   actually contacting the system and then after full use of it. A
   four position scale is used. (See appendix).   3b1

   Hypothesis: AHI can be shown to be effective by measuring user
   attitudes toward the general concept of job automation aids.   3b2

   Independent Variable: Use of the equipment (Treatment)   3b3

   Dependent Variables: 3b4

      Time necessary to complete job tasks   3b4a
      The attitude toward computer technology in general, text
      editing, file storing and sharing, file presentation, and
      systemized team activity.

                                                                          3b4b
   Independent Variables held constant: 3b5
      Job Task Type (see Population)   3b5a
      Personnel characteristics and type of positon   3b5b
      Training time and instructions   3b5c
      Terminal availability and type.   3b5d

   Design format for the "T" Questionnaire: 3b6

      The "T" questionnaire will be given to 1 group of users before
      use and 1 group of non-users as a control. This will constitute
      a pretest, and will provide the basis for comparison with the
      results of the same questionnaire after full usage of system.
      The split group pretest is a control for test effects.   3b6a

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Groups: (1) users with pretest (T(1)), (2) users without
pretest, (3) non-users with pretest, (4) non-users without
pretest. All groups will receive the posttest (T(2)).   3b6b

	PRETEST	TREATMENT	POSTTEST
USERS	1 T(1)	X	T(2) Q
	2	X	T(2) Q
NON-USERS	1 T(1)		T(2)
	2		T(2)

3b6c

TIME FRAME
```
     [ training   ][ <-- use------> ]
       1   2   3   4   5   6   7   8   9   10
```
months   3b6d

This is a nonrandomized Solomon four-group design with a small
N. The N of approximately 36 (4 groups of 9 each) necessitated
the nonrandom selection of subjects for the groups. See the
section on population.   3b6e

Population (as large as possible) (36).   3b7

Subjects will be assigned to groups based on de facto use or
non-use of the system and the following criteria: age, length
of service time, rank, job task type profile, and type of
position (manager, engineer, administrator, clerical, and
experience with computers).   3b7a

Subjects:
User group 1   User group 2   Non-users 1   Non-users 2
[See listing of groups and data below (3d2:m)]   3b7b

Training: 3b8

Training should be controlled, that is as nearly the same for
each subject as possible. A list of the commands to be
presented in a predetermined order will be constructed along
with practice exercises for each. The time spent on the initial
presentation of commands should be standardized. See file on
training effort: (Lawrence,TRAEFT,:m) .   3b8a

7

Learning curves are based on a straight forward record of time
spent in the learning situation. The learning situation is
defined as any usage off the system prior to the point at which
no significant increase in skill is observable, ie. when the
learning curve levels off. The skill level that is being
plotted against time will be acsertained through a combination
of direct and unobtrusive tests.   3b8b

The interview technique is being used to record the amount of
time each subject spends in the learning situation, rounded off
to the half hour. These records will be maintained through
Phase II, about a year and a half. Whenever possible, the
records will be maintained from the first training/experience
with the system.   3b8c

Data Collection Devices for technique 1:   3b9

Test Questionnaire ("T"): see file quest (QUEST,:m)   3b9a

(Tech2) Reaction questionnaire ("Q"):   3c

"Q" will be be administered only at the end of the experiment to
determine specific reactions to use of AHI. Two types of questions
will be used: 3c1

    Attitude scale questions dealing specifically with AHI.   3c1a
      In particular the: 3c1a1
        1. equipment itself   3c1a1a
        2. required use of equipment   3c1a1b
        3. change in job habits   3c1a1c
        4. service provided   3c1a1d
        5. paperwork with AHI as opposed to before augmentation
                                                           3c1a1e
        6. language and syntax.   3c1a1f

Multiple choice questions and open ended questions to gather
information about system availability, terminal
characteristics, service quality, language, problems not
addressed in the daily log, etc.   3c1b

(Tech3) Interview to determine jobs of the population:

3d1 Subject Profile by Job Task Type:

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3d1a A semi-structured interview has been accomplished by a
Utica College contractor. The subjects were asked to determine
the percent of time spent in each job task type. The list of
task types has been established by the experimenter
intuitively, and is presented below.   Information such as
qualifications on the task selection was recorded as open ended
data.   The resultant data for each individual has been used to
assign him to the appropriate group. This facilitates group
similarity based on job type (see listing below).

3d1b A group profile will be compiled from the job task type
data. This will take the form of a graph showing the respective
job types for the each group. A correlation will be computed
between the user group and the control group based on the mean
percentages in the job task types for each group. This will be
an indicator of any differences between groups which would act
as a spurious variable.

3d1c Job task types (general catagories of job activities):
3d1d 1. Programming
3d1e 2. Project engineering , including:
   3d1e1 Contract paperwork (forms memos, etc.)
   3d1e2 reviewing proposals and reports
3d1f 3. Writing plans and/or reports
3d1g 4. Software operation (incl. evaluation, debugging of
software packages)
3d1h 5. Briefings
3d1i 6. Demonstrations
3d1j 7. Managing other personnel
3d1k 8. Administrative paperwork
3d1l 9. Study, review of the state-of-the-art, reading,
literature search, etc.
3d1m 10. Secretarial work.

3d2 Groups and Data

3d2a   Job Task Type Population Profile Data

JOB TASKS*:	1	2	3	4	5	6	7	8	9	10
SUBJECTS:										
USERS 1										
3d2a1 McNamera	0	10	0	0	10	5	55	10	10	0
3d2a2 Lawrence	0	50	20	0	5	0	0	5	20	0
3d2a3 Bucerrio	0	0	0	0	20	0	30	50	0	0
3d2a4 Iuorno	5	15	20	0	15	5	25	0	15	0
3d2a5 Rzepka	20	5	20	5	10	5	5	5	20	5
3d2a6 Sliwa	0	45	12	5	10	2	0	1	25	0
3d2a7 Bergstrom	10	70	5	0	5	5	0	0	5	0
3d2a8 Daughtry	50	5	10	0	5	5	0	5	20	0
3d2a9 Petell	0	0	0	20	0	0	0	30	0	50
3d2b USERS 2										
3d2b1 Panera	0	10	65	5	3	5	0	0	12	0
3d2b2 Bair	0	15	25	20	3	2	5	15	10	5
3d2b3 VanAlstine	60	20	0	0	0	5	0	5	10	0
3d2b4 Luizzi	25	25	10	10	10	5	0	5	10	0
3d2b5 Cavano	15	45	5	15	5	5	0	5	5	0
3d2b6 Stone	0	20	40	0	10	5	5	5	10	5
3d2b7 Tomaini	5	5	10	0	20	4	35	1	20	0
3d2b8 Calicchia	50	10	10	10	5	5	0	0	10	0
3d2b9 Lamonica	10	2	2	10	1	1	0	1	72	1
3d2c NON-USERS 1										
3d2c1 Vito	29	15	15	3	2	0	5	6	25	0
3d2c2 Dinitto	10	40	10	0	5	0	5	10	20	0
3d2c3 Trad	29	5	15	5	5	5	20	1	15	0
3d2c4 Nelson	1	20	5	5	8	1	40	15	5	0
3d2c5 Patterson	25	4	1	25	0	0	0	5	40	0
3d2c6 Williams	50	5	5	10	0	5	5	10	5	5
3d2c7 R Stillman	5	25	25	0	15	0	0	5	25	0
3d2c8 Robinson	10	20	10	30	5	0	5	10	5	5
3d2c9 Deflore	4	4	15	4	4	3	0	5	59	2
3d2d NON-USERS 2										
3d2d1 Normand	20	15	10	40	5	1	0	2	5	2
3d2d2 N Stillman	15	5	20	20	5	5	0	5	15	10
3d2d3 Klayton	10	35	0	10	5	0	0	40	0	0
3d2d4 Cellini	20	10	10	20	0	0	10	10	20	0
3d2d5 Previte	13	2	20	0	15	0	20	5	25	0
3d2d6 Bauer	50	0	0	15	0	0	0	15	20	0
3d2d7 Reimann	0	40	15	5	10	5	0	0	20	5
3d2d8 Landes	10	20	25	0	5	0	0	5	30	5
3d2d9 Marcoccia	0	0	0	5	15	0	0	20	0	60

3d3   The task types will be rated by a team of judges as to the
intellectuality, ie. the amount of thought required.

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3d3a Scale to rate the intellectual nature of the tasks:

    3d3a1 Scale:
    1....2....3....4....5....6....7....8....9....10
    least intellectual   most intellectual

    3d3a2 eg. routine paperwork (a form) = least intellectual,
    creating a plan or report = most intellectual.

3e (Tech4) Interview of supervisors:

3e1 In a semistructured interview, supervisors of the user groups
will be asked to estimate change in quality of work due to use of
AHI (compared to without AHI).

3f (Tech5) Comments:

3f1 Each user will be asked to establish a file called "comments"
in his directory where he can place reactions or problems when
they occur during usage. To help determine the causes of
problems, he should retain the hardcopy of the difficulty (TNLS)
and prefix the date and time to each comment.

3g Performance Measurements:

3g1 Performance Experiments: In order to obtain more objective
data for Phase I and to pilot the experiments in Phase II,
performance tests will be run.

    3g1a The relative effectiveness of AHI compared to conventional
    methods and Text editors will be measured more directly by
    determining the respective performance parameters such as
    throughput time (total time necessary to complete a specific
    task) and manhours required.

    3g1b A primary concern will be to control for experience with
    computers, and to measure the effect of the system on group or
    "team" performance. The first samples will be at the group
    level of organization (N= approximately 5), the lowest level of
    management. This coincides with the number of persons trained
    at the time and the number of terminals. When a section (or a
    branch) is trained and equipped the evaluation will be based
    on the section's (or a branch's) performance .

3g2 Method:

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3g2a The section comparison will include program call which will be judged on overall quality and timeliness. Identical requests will be made of the sections with a short response time and the ability of the sections to respond within the specified period will be judged on timeliness and quality by the division and branch chiefs. Interruptions, personnel present, and other spurious variables will not be directly controlled or compensated for. These variables will be considered experimental conditions in order to realize the effect of normal everyday working conditions on respective performance. Compensation should be facilitated through the repetition of specific requests throughout the experimental period. This should equalize the effect of spurious variables between groups.

3g2b Measurements:

3g2b1 Manhours required to complete a task must be recorded in order to acquire meaningful data. Subjects will be given simple forms to record the clock time spent on the task being measured. Each time the subject sits down to work on the particular task (test task) he will log the time, and when he leaves the test task to do anything else he will log that time. (Note: this procedure is the least disruptive of timing methods but will require management support to obtain accurate records consistantly.) The experimenter will then calculate the manhours from these logs.

3g2b1a Sample Time Log:

3g2b1a1 Name:... Date:...
Enter time from clock that you begin and end work on the test task each time you work or are interupted for more than five minutes.
Time begin column: Time stop column:
(Elapsed time, will be calculated for you.)

3g2b2 Throughput or total time will also be recorded. This is simply the time in days and hours, including delays and inactive periods, from the beginning of a job to its completion.

3g3 Spurious variables: See statement above, .3g2a .

3h The Chronicle-- Serendipity Inputs:

3h1 Valuable data other than that obtained through the above methods will be available.   The end result will be a Chronicle or diary of experiences with the system.

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3h2 The two groups, users and non-users, will be aligned so that the same management structure will be responsible to them. The same section chief (ISIM) and branch chief (ISI) will handle paperwork from these groups, in the case of the users this will be through AHI. The managers will be trained as system users and consequently will act on the work of their subordinates through AHI. This can provide valuable insights to operation with AHI compared to traditional procedures.

3h3 The managers will access the users work through their own terminals, make comments and suggestions, approve or disapprove, and return or send forward as the case may be.

3h4 This will not be a controlled investigation. Interviews will be used throughout phase I to record the reactions of the users. These comments will be valuable as a preliminary insight to the Phase II problem of augmenting a branch organizational entity. The managers must keep a log of their experiences with users vs. non-users, and hopefully will do so using the system. Note that each manager will act as both a user and a non-user. (For the controlled portion of this phase, they will be considered users.)

3i System Usage:

3i1 Terminal usage: The time indivduals spend at respective terminals as a confounding variable will be correlated with attitude and other measures of that individual's usage of the system. Additional explanation of this recording process was covered in the section above on Training and learning curves; the same data will be used. It will be possible to have AHI record some of this data automatically.

3i2 AHI records use for each user by CPU console time, and file storage 24 hours a day. There is a TENEX set of accounting summary commands which have not been made operational yet (May, 1972).

3j Text Editor vs. AHI:

3j1 A significant capability of AHI is powerful text editing. There are many text editing packages available on the commercial market at less cost. In order to determine the advantages of AHI a direct comparison to a commercially available package is necessary. The in-the-house computing facility here at RADC includes the GECOS Text Editor and Runoff subsystems on the Honeywell 635 TSS, which are representative of commercial packages.

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3j2 The comparison will involve 2 parts: a comparative listing of the features of each system, that is what can be done on each, and a comparison of the performance of groups using the respective systems.

3j2a In addition to the planned use of AHI, a section unit will exploit Text Editor to its full capacity. The clock time and total time necessary to complete various routine tasks will tabulated and compared to that recorded for AHI; for example, the times necessary to send a finished report of 15 pages forward from the Division. This includes the reviewing managers inputs that routinely must be included before anything leaves the Division hierarchy. (Note: ISIS is already using Text Editor on a section level.) This does not include training managers other than the section chief. Managers will act on hardcopy drafts of paperwork sent forward.

3j2b The difficulties encountered using Text Editor are numerous and substantial as shown in an in-the-house study of March, 1971, by Bair. These seem to center around GECOS Executive software and are due in part to an overload on the 635-45 processors. Poor response time, errors, lost files, and system unavailability are a few of the problems. These may be corrected by the using section, but whatever the case, they will be considered an integral part of Text Editor and NO compensation will be made for them.

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4 PHASE II: ORGANIZATIONAL USAGE OF AHI. (For milestone chart, see file (EFFORT,6:m).

 4a PURPOSE

   4a1 The purpose of the second phase of the Evaluation of AHI is to determine system effectiveness when used to augment an organizational entity, in this case a branch (ISI), and compare its performance to that of another branch.

 4b METHODOLOGY:

   4b1 There are two general ways in which system effectiveness can be measured: (1) sociometric techniques that will provide significant data about the effect the systen has on the individuals within a team environment, (2) performance measurements that will show the comparative amount of time necessary to complete jobs with and without the system.

   4b2 Sociometric techniques:

     4b2a The "T" QUESTIONNAIRE developed in Phase I will be administered to half of both branches to determine attitude toward computer technology in general. The non-test groups will act as a control for testing effects and time lapse. The same design used in Phase I will be expanded to the branch populations.

     4b2b The "Q" QUESTIONNAIRE will answer specific questions about AHI at the end of the evaluation period (approximately 1 yr.). This test developed in Phase I will not be givin a second time to those who participated in Phase I.

     4b2c The ORGANIZATIONAL CLIMATE INDEX (OCI) (Stern, Syracuse Univ.) will be employed to measure the way personnel function in this working environment and to determine the causal factors statistically. This commercially available questionnaire will be administered in a controlled format with the non-using branch acting as a control. Both branches will receive pretest and posttest of the same questionnaire to determine the effect AHI has on a team structure, while controlling for the effects of testing and time lapse between tests. (See appendix.)

4b2d The ACTIVITIES INDEX (AI) (Stern) is a commercially available questionnaire integrated with the OCI that measures generalized personality characteristics. This will be administered to both branches to determine what significant differences in personnel exist between groups. This will permit control of personality differences, the significant spurious variable. The results of the AI are a score for each individual based on what activities he prefers (selected from a representive list of 300 generalized activities).

4b2e Phase II Design Format :

	PRETEST	TREATMENT	POSTTEST
USER	(1) T, AI	X	T, Q, OCI
BRANCH	(2) OCI, AI	X	T, Q, OCI
NON-USER	(1) T, AI		T
BRANCH	(2) OCI, AI		T, OCI

4b2f The above design is constructed to control for test effects and to provide as similiar an experience as possible for the control group during the experimental period. Since the AI is being used to control for personality differences between the test branch and the control branch, it will be administered only as a pretest. Since we cannot change the group S membership due to a fixed organizational structure, any significant personality differences will be used in the final analysis to correctly interpret the results of the OCI.

4b2g The difference between the pretest OCI and posttest OCI is the key measure of difference due to the treatment. However, the nature of the OCI may cause strong test effects after the pretest thus confounding the postest. Consequently, each group will be subdivided to control for this variable. Differences between posttest OCI for subgroups (1) and (2) can be attributed to pretest OCI effect since the subgroups will be matched on all other known variables. The key test effect is predicted to be an increased awareness of the subjects environment and a perceptual cuing to organizational and interpersonal activities. The same rational applies to the non-user OCI. The consistant administration of the AI should compensate for AI test effects.

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4b2h The statistical analysis of the data collected with the OCI and the AI will be done by the Syracuse University Psychological Research Center using preprogrammed computer routines. These are described in the reference (Richman, 1969).

4b2i The "T" questionnaire will be administered as in Phase I to control for test effects.

4b3 Phase II Performance Testing: Approx. dates: Mar. 73-dec. 73.

4b3a Time Records:

4b3a1 Theoretically, if each subject recorded the amount of time necessary to complete routine jobs, we could compare the times to complete comparable jobs done with and without AHI. We are attempting to do this with the WPS (Word Processing System). At this point the problem is twofold, engineers are not keeping accurate records, if any, while they work, and we have not yet devised a way to determine what jobs are comparable. A comprimise method of logging time for particular tasks is described below (4b3b1:).

4b3a2 The reasons for difficulty in obtaining records are empirically obvious. It is a tremendous nuisance and interrupts the engineer's train of thought. Other approaches must be employed.

4b3a3 Time keepers could be hired to observe and record times, although this does not appear to be feasiable at present. As an alternative SRI will be asked to devise a program to monitor system usage.

4b3b Performance Measurements:

4b3b1 The relative effectiveness of AHI compared to conventional methods and Text editors will be measured more directly by determining the respective performance parameters such as throughput time (total time necessary to complete a specific task) and manhours required, as in Phase I.

4b3b2 A primary concern will be to control for experience with computers, and to measure the effect of the system on organization performance. This requires that a branch be trained at the time and that over 30 of terminals be available. When the branch is trained and equipped the evaluation will be based on the branch performance as a single entity.

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4b3b3 Method:

4b3b3a The branch comparison will include program call which will be judged on overall quality and timeliness. Identical requests will be made of the branches with a short response time and the ability of the branches to respond within the specified period will be judged on timeliness and quality by the division chiefs. Interruptions, personnel absent, and other spurious variables will not be directly controlled or compensated for. These variables will be considered experimental conditions in order to realize the effect of normal everyday working conditions on respective performance. Compensation should be facilitated through the repitition of specific requests throughout the experimental period. This should equalize the effect of spurious variables between groups.

4b3b3b Measurements:

4b3b3b1 Manhours required to complete a task must be recorded in order to acquire meaningful data as opposed to system usage time. Subjects will be given simple forms to record the clock time spent on the task being measured. Each time the subject sits down to work on the particular task (test task) he will log the time, and when he leaves the test task to do anything else he will log that time. (Note: this procedure is the least disruptive of timing methods but will require management support to obtain accurate records consistantly.) The experimenter will then calculate the manhours from these logs as in Phase I.

4b3b3b1a NOTE: The division chiefs must identify the test tasks to the experimenter with enough lead time to ensure that all measurements can be made.

4b3b3b2 Throughput or total time will also be recorded. This is simply the time in days and hours, including delays and inactive periods, from the beginning of a job to its completion.

4b4 Communications Analysis: (To begin in Phase I).

4b4a One of the most important effects of implementing AHI in any environment is on the interpersonsonal communications amoung those who are "on" the system. It is hypothesisized that a significant increase in the level of interaction will occur and this will facilitate improved team performance.

4b4b To determine the actual changes in communication and evaluate them, it is necessary to establish current activities and then use the same measures to acsertain changes after the AHI system has been operational for a significant period of time. For this analysis we turn to the techniques available in the areas of interpersonal communication and group dynamics.

4b4c Analytical Instruments:

4b4c1 Communication Network Analysis:

4b4c1a Networks are the quantitative representation of interaction. A model will be created showing the individuals involved in interaction which are the nodes of the net. The nodes are linked by lines or "channels" where comunication exists. The channels are quantified by number and duration of interactions. Duration is noted by a nominal scale where long represents the maximum length and short the minimum length interaction with not more than 5 categories between these end points. Of particular interest will be what communications are mediated by the system v. traditional channels (face to face, meetings, letters, memos, etc.). Thus, the net will have two channels between each node. The system channel will be divided into messages, Journal documents, and file sharing, to account forthe different subsystems available

**(note the Document Control System). The detail to which data is collected will depend upon a number of logistics factors, but we will at least attempt to analyze a representative sample time period.

4b4c2 Content Analysis:

4b4c2a Also of importance is the nature of the interactions of those in the net. Content anaysis techniques can be employed here to get at this elusive variable. A simple examination of written communications will reveal what kinds of information are being communicated in this way (eg. task oriented, proceedure oriented, process maintenance, etc.). However, it is much more difficult to examine the content of oral messages or system messages (dialogue linking) neither of which are permanently recorded.

4b5 The combination of psyhometric and performance techniques should overcome the deficiencies and difficulties encountered and provide enough rigor for an accurate evaluation. Cost and other factors make it imperative that a sizable significant improvement be realized with AHI. This plan is surely sensitive enough for that. The results of Phase I will be vital to Phase II methodology. We anticipate learning a great deal that will probably result in modification of the Phase II plan. The success of the psychometric techniques and the validity of the performance experiments, including the logistics of running such experiments in a non-labortory environment, will be particularly enlightening.

4b6 REFERENCES:

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4b6d Selltiz, Jahoda, Deutsch, Cook, RESEARCH METHODS IN THE SOCIAL RELATIONS, N.Y.: Holt, Rinehart,& Winston, 1965.

4b6e Stern, G.G., PEOPLE IN CONTEXT: Measuring Person-Environment Cogruence in Education and Industry, N.Y.: Wiley & Sons, 1970.

4b6f Williams, F., REASONING WITH STATISTICS, N.Y.: Holt, Rinehart, and Winston, 1968.

5 APPENDIX :   The ORGANIZATIONAL CLIMATE INDEX (OCI)

5a The OCI indirectly measures the needs of the subject as expressed in terms of his working environment. "Needs refer to organizational tendencies which appear to give unity and direction to person's behavior." (page 8) Needs may be classified in a taxonomy where the clasification criterion is "... the tendency to actions of a certain kind." (8) In order to indentify these tendencies the concept of PRESS is established. "...press may be defined (like needs) as a taxonomic classification of characteristic behaviors manifested by aggregates of individuals in their mutual interpersonal transactions." (8)

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5b This model of needs being manifested in characteristic behaviors identified as press is well substantiated by experimentation. "The model can be used to predict, amoung other things, the effects of selection and of organizational change on morale and output (grades or production)." (9) This includes the effect of installing equipment and/or new procedures in the working environment.

5c Ideally, to determine the effect of any change in a working environment we would make direct observations of the subject's on-the-job performance. This is at best costly and disrupts the modis operandi thus negativily affecting the validity of the observations. Although men are often best judged by their deeds, they are better understood by their desires.... To understand the effect of a given change is to understand the subject's reaction to it, since deeds are the results of a person's intentions and perceived activities. It would be misleading to rely solely on intentions because these usually include a significant amount of fantasy.

5d The remaining alternative, which is quite adequate, is to be concerned with the preferences that the individual himself expresses in response to verbal descriptions of various possible activities in his environement. The OCI, then, elicits choices associated with a suggested working situation. The choices themselves are equally acceptable and focus on behavior rather than motive, ie. the activity in the environment. (10) If the activity is real, then the perception of it must be real. (11) To wit, if a subject perceives an activity as real , then it is real to him and will affect his behavior accordingly, whether or not this perception is precise.

5e The OCI presents 300 brief descriptions of activities in a generalized working environment. These are correlated with degrees of performance from previous experiments where quantitative data was readily obtainable, such as in a factory. The large number of items compensates for the inappropriateness of a few. The items are clustered into factors on which an individual is given a score. The factors represent two generic kinds of results, those associated with performance quality and those with the nature of the performance. These are intercorrelated to measure the level of performance relative to other previous experiments and/or previous administrations of the OCI to the same population.

5f A significantly large population combines the responses of enough persons (N= >30) to compensate for individual differences and assure validity.

5g Footnote: Stern, G.G., PEOPLE IN CONTEXT: Measuring Person-Environment Cogruence in Education and Industry, N.Y.: Wiley & Sons, 1970.

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6 APPENDIX: MILESTONES,   PHASE I:

6a   DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
  subtasks

6b JOB TASK TYPE--->↑

6c USER PROFILE--->↑

6d POP ASSN------>↑

6e wps---------------------------->↑

6f T QUEST--->↑

6g terminal del------------>↑

6h TERMINAL USE--->↑

6i training   ↑<------------>↑

6j GROUP TEST JOB EXP.   ↑<--->↑

6k TIME REC.-------------------↑<------------------------->↑

6l TEXT EDIT COMP.   ↑<------------>↑

6m QUAL INTER.   ↑<------>↑

6n Q QUEST..↑<--->↑

6o TOOLS-SOP-->↑

6p PHASE II   ↑-->

     6p1 Lower case tasks above indicate that they are not part of this
     effort, but this effort is dependent upon their completion.

6q Phase ii milestones cannot be proposed until some firm estimate of
terminal delivery is available. Hopefully, it would begin in the fall
of CY72.

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EVALUATION PLAN FOR AHI

(J10872)   28-JUN-72 7:22;   Title: Author(s): James H. Bair/JHB;
Distribution: Duane L. Stone, James H. Bair, Thomas F. Lawrence, James
C. Norton, Paul Rech, Dirk H. van Nouhuys, Douglas C. Engelbart, John L.
McNamara/RBMS DCE JLM; Sub-Collections: RADC RBMS; Clerk: JHB;
Origin: <BAIR>REVPLAN.NLS;3, 27-JUN-72 12:09 JHB ;

DRAFT OF NOTES FROM IMLAC MEETING HELD 26-JAN-72, TRANSCRIBED
7-MAR-72   1

Bill Duvol started the discussion of IMLAC background.   2

This is the communication setup from the TENEX half up to the TI
terminals and the IMLAC as a unit. This is basically what it
looks like. From SRI we have a phone line that goes down to San
Jose and by Microwave it goes to Oakland and is relayed from
Oakland to Santa Rosa and from Santa Rosa we have two lines one
of them going out to Oxidental and one of them going to Braden.
Now, this is a two pair line and the easiest way to think of that
is two simplex lines, one of them going from SRI up this way and
the other one going from this way down to SRI. We use each line
quite a bit differently so I thought I'd go over the use of each
one.   3

To SRI: 4

Question: Wait a minute. Are there two lines? Part of the
distance there are two lines and part of the distance there are
four lines right?   5

From STS out to IMLAC there are two and out to Oxidental there
are two and the rest of the length is two.   6

Does the phone company regularly have microwave setups like that?   7

Yes, that's standard equipment. It's microwave from Santa Rosa to
Oakland and its relayed from Oakland to San Jose and then it goes
from San Jose to Palo Alto and comes to SRI.   8

(KEV) What does STS stand for?   9

Answer: Santa Rosa. That's the name of the Aiport.   10

Where is the switching box that decides whether you're talking to
Oxidental or ----?   11

You're talking to both at all times. At SRI at Graten and at
Oxidental there are two data sets that are called rixons. These
are both 300 baud data sets and each one has a different
frequency. One runs at about 1200 cycles and the other one runs
at about 2200 cycles. The signals going this direction get mixed
in Santa Rosa under the same lines so if you go out and if you
listen to the audio on the lines you actually hear two tones, one
high and one low from this point. Then they all come down
through this mess and into SRI where we have two corresponding

rixons, each of them getting the whole signal and it just goes
out to the one who is interested in it.   12

Did we build this?   13

No, we bought them.   14

Are they commercially available?   15

No, they aren't any more. They were at that time. The reason
they stopped building them was that there just wasn't any
advantage for them.   16

It was just a two-way multiplex thing, you can't send an
arbitrary number of frequencies and put an arbitrary number of
rixons on there that will each pick them up?   17

Sure, you can, I'm not sure what the limit is. There is no
relationship between this rixon and this rixon. You could draw a
circle around each of them and call them multiplex .   18

Duvall continues: And then at SRI we have two corresponding
rixons, both of which get both signals and they get the
respective one and handle those from there ------- and from there
the TENEX.   19

From SRI we have a series of cluges, the first of which is a
high-speed data set which is hooked up to excore and this is
essentially our own device that operates at 2000 baud and will
take a buffer out of excore and send it out on line.   20

In back of that we have a bell telephone 2018 data set, that
converts that into tone and sends it out on line and that's the
place we use the standard Ma Bell equipment.   21

At this end each guy has a 2018 data set and again operating at
2000 baud and the TI down here has in addition a black box. The
signal coming out of tenex is either a multiplex or nonmultiplex
buffer.   22

In a non-multiplex buffer, you essentially have a header and a
string of characters that are designed for IMLAC or destined to
be IMLAC.   23

In a multiplex buffer you have a header followed by a multiplex
IMLAC string of characters or TI characters followed by 6 IMLAC
characters followed by another TI character and so on and so
forth.   24

Draft of Notes from IMLAC Seminar 26-JAN-72, transcribed 7-MAR-72

The IMLAC --- by software reads the whole thing in and says those
are mine and those are his and Don's black box does it by
hardware.   25

The hardware can tell the difference between those two headers
and throw the whole message away if it wants to?   26

That's right.   27

6 characters at a time? It just does it 6 characters at at time?   28

No, at hardware, there are two escape characters, 367 and on this
one it just accepts it like a count and it ignores that many
characters, and on this one it just accepts this plus a count and
it runs every 6th character. There is one character count so you
have a maximum of 265 characters in buffer.   29

Why don't we have two more devices?   30

IMLAC doesn't need one.   31

Because you can go into software?   32

Sure. In fact, the way that this really should have been set up
if we were doing it again is to just get rid of this black box
entirely, and make a line coming from the IMLAC to the terminal.   33

NOW I WILL TALK A LITTLE BIT ABOUT WHAT OUR AVERAGE MESSAGE SIZE
IS.   34

Generally speaking its a maximum 24 characters in a message and I
would guess that a normal message size is either one character or
full buffer, which is 24 characters.   35

You're saying that's average length of the 250 max, average is
24?   36

No, that's maximum control buffer size that they use. 24
characters.   37

The reason is that essentially you want to make it so you send up
a message buffer about once a week so when you do a systat you
get a smooth printout, otherwise what you get is a drifty
message.   38

Do you mean that your buffer lengths are not variable?   39

They are variable, but theres a maximum which is about 24   40

3

But that's an artificially imposed maximum?   41

Yes.   42

Question: the software that makes up these buffers, I guess for
the HSDS (High speed data set), if its got just one character
around for the TI and its got a bunch of characters for the
IMLAC,   43

It will send out nulls through the TI. It will send out the one
character through the TI and then it will send out 600 null for
the TI and 600 nulls through the TI.. And conversely, if there
are two characters for the TI and none for the IMLAC it will send
out TI characters ---. The only cluges is, well, there is a
cluge in there that has the active terminater for these 600 - 400
watt characters, because otherwise what happens it only looks at
the character every 6th charater at a time -- there are a few
funny things.   44

OTIM stands for output to M watt   45

The way it essentially works is the following. There are two
teletype lines within TENEX, one and two that TENEX assumes
always belongs to the IMLAC and to TI terminal character. OTIM
there are some special JCs within TENEX to allow OTIM to do this
and what it does is in its idle stage it sits there and says have
I got a character on either of these two lines?   46

If it does then it activates itself and it goes into a loop
whereby it tests line one and actually tests the terminet
character. If I do, then this will become a terminet buffer.   47

question: When there is output for line one or two TENEX just
puts it in the normal output buffers for one and two. It does
nothing special?   48

answer: The only thing special it does is normally things go
into output buffers and then the teletype gets activated and
these lines never get activated, they go into output buffer and
the lines never get activated. First thing it tests is to see if
the TI terminal has a character. If it does then it says this is
going to be a multiplex buffer, if it doesn't it says its going
to be an unmultiplex buffer. So that even that it may be latter
on the call is going to be a buffer, characters may arise from TI
terminal, it'll get sent on the next buffer, not this one. Then
it just goes through and it will try to read one character for
the TI followed by 6 for the IMLAC if its just and arbitrary from
the IMLAC. It will continue doing that till its reached its
maximum count or its run out of characters. When it gets to that

4

point it fills up a buffer and tells the Jsystem which causes it
to go out and it does a sweep until it gets the interit back from
IPdata sets.   49

question: And only then it'll send the next one?   50

Only then it will send the next one.   51

question: The program can get interrupts like that?   52

Special Jsense. Jsets doesnt need its mess on a commission. it
is set on and interim.   53

There are three or five ----- .   54

Do you have any provisions for retransmission? Have you ever
needed that?   55

No, the thing is that the human being at the other end you can
sort of say "ah, there's an error in in the character" and it
seems like a totally redundant thing. The retransmission would
probably mess you up more than saying "ah, bad character".   56

Ok, once its got its interrupt, then it goes through the whole
cycle.   57

By the same process, where you don't do any parity checking?   58

we do use a parity bit and what we use the parity bit is--- no,
we don't use a parity bit, we use to use the parity bit.   59

To flag the TI character?   60

Did you stop using that because it was unstable?   61

No, essntially the only time that that was useful was the
situation where the TI terminal was inactive, in which case you
get about a 10% increase.   62

At one time the IMLAC, well, the whole thing got operated ---
whereby the TI terminal wouldn't be recognized until it got its
first character sent out. The reason for doing that is that you
can get rid of those control characters in case of that you can
operate the IMLAC at a slightly higher speed. That was useful in
940 it turned out not to be useful on TENEX because the first
thing TENEX does is send out TENEX restart and wait, TENEX in
operation and that hangs in your buffer until it gets read out.
So every time it came up, you know, there it was.u   63

The reason for limiting the buffer size like this is basically
that we want to make the transmission seem as smooth as possible
and when you begin lengthening your buffer size then you have a
longer wait .   64

The type of situation you can get into where the IMLAC has 300
characters go out to it. So that means he's not going to get any
respone in 2 and one half seconds. On the 940 I fooled around
And I tryed different buffer sizes and I came to the conclusion
that 20 was about right.   40 was too much.   Its pretty arbitrary.   65

question: Have you considered since you build the whole buffer
before you send it, checking the TI before you actually send the
message so that if there are TI characters you could then put
them in?   66

Well, you can always send the multiplex message and just as you
pick up with the TI character put it in the proper place on the
multiplex buffer.   67

well thats the problems but you have 16% degredation in the
character from the IMLAC if you do that.   68

How long does it take to transmit 24 characters?   69

about 100 miliseconds?   70

What is the mechanism for when your program looks on the buffers
to see whether there are any characters to go out?   71

Do you issue a JSYS and somebody wakes you up when they put
charactees in so yyou're not constantly being woken up every x
miliseconds to look in the buffer, you only get awakened when
there are characters there to do something with?   72

Yes   73

Is there a good reason for not doing this under process -----?   74

What will you know how to do when you know how to do that?   75

I think that is probably the answer because I don't know what it
means to doing process -----.   76

The way the IMP people work , I mean they do analogus things and
they're run by the scheduling, they have a time process that is
activated so that it could be done in much smaller chunks with
much less overhead. If yyou have all the information.   77

The history behind this: in the 940, I was lucky to get it done
any way I could, and when it came onto the ten I kept pushing Ken
about it and it was one of the first things I wanted to get done
so it got done the way that Ken did it.   78

Do we have any feeling for what it costs to run that?   79

About 3%.   80

That's pretty high.   81

That is pretty high.   82

Will this scheme support DNLS?   83

Yes.   84

Like one of the things I do now, is I load the IMLAC which is
about a 5000 character string and that goes pretty quickly.   If
the system is really loaded you can see breakes but if its normal
it takes 10-15-20 seconds.   It's pretty fast.   85

How does he blue streak work?   the thing to xerox, is that just a
dedicated line on the   data line scan?   86

Yes.   87

and what is it? 1800 baud?   88

yes.   89

how does stuff go out to it?   90

10 characters a second coming in and 1800 baud going out.   91

Like a super-fast teletype and TENEX doesn't know the difference. 92

We ought to talk about it because EM does quite a bit of other
stuff too.   Loading is very special and we don't have time for
that stuff, we'll have to leave that till later.   93

is it reasonable to have another process for loading?   94

no.   95

Are you talking about loading the program?   96

No -- loading the IMLAC   97

Let's put it this way, If we did have to change the loading
scheme rather radically and I was going to talk about that a
little later. There's probably a way around it.   98

Are we talking about running a lot of other IMLACS this way.
Because if we are talking about a dozen IMLACS then it is more
crucial. A lot of IMLACS are going to be over the network so
they wouldn't be like this at all. Is there really that much of
and actual problem?   99

We are going to keep one here. We are ordering three or four now
for RADC.   100

We are going to keep one of them here for some period of time — 4
months or something.   101

If the teletype mechanism down there can handle 1800 baud then
we'll probably just run it at that speed.   102

If you could drop it from 3% to 1% by putting one of them in,
yes, that's one more net kind of user to support. If you can't
get a factor of 2 by working at it then you've really done an
exceptionally good job.   103

To recapitulate; The communication protheses are you go from
TENEX, the lines going OTIM then OTIM sends them out to excore
which in turn sends them out to the high-speed data set which
goes out to the 2018 over this mess from down there and goes
directly to the 2018 directly into the IMLAC or into the black
box and into the TI and going either way the character is going
into the two rixons.   104

How often are you getting bad characters?   105

Once I looked at it and it was one out of 1000 or maybe 1 out of
5000, it's not awful bad, actually its better than that.   106

at this point there was a discussion about bad characters.
Duvall said that he had tried to find the bug but he now suspects
the hardware, maybe the black box.   107

Is there any thing that allows you both to share the phone line
on the way in?   108

Yes, that's where we have the two different frequencies.   109

Why couldn't do the multifrequency going out just the same way
you do coming in?   110

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I think because of the speed.   111

You have the line split into a low speed and high speed?   112

Yes, two different lines, two simplex lines. They sell it as
one line and its 10% more than regular.   113

So going out you're going at like 2000 baud and coming in you're
coming in at about 110 or something like that?   114

Yes. It seems like with a 300 baud device on an IMLAC you could
have split it enough so that that would work.   115

Part of the problem is that we were trying get one of those
available in the communications equipment, and like if we were
doing it today we would do this whole shmerr differently, because
the communication equipment has just improved radically.   116

Does the IMLAC give an interrupt to every character?   117

Yes, it has to give interrupt to every character. The problem is
that the way you might use characters is in a one bit at a time.   118

And can you buy standard 201A that will give you an interrupt at
2000 baud?   119

No, There is a start character and a start bit then the start
shifter in the start bit. When it shifts 8 times there is an
interrupt   120

As it turns out, you can't run IMLAC at that high speed and do
anything without the interrupt.   121

IMLAC software: 122

Question before you start on this, what type terminal are you
using? Are you using a TI with IMLAC?   123

No the IMLAC is a combination terminal.   124

A brief description of what the IMLAC is. It's a low processor,
somewhat more powerful than the PDPA I guess, and its got 16-bit
word and its got hooked up to it a display processor. The
display ------. The display processor and the general processor
run separately. I'll get into the display processor a little
later.   125

When we first had the IMLAC up there what we had in the way of
software was a teletype text editor simulator that IMLAC had

9

written and we had patched it so it could be used as a high-speed
data set. We tried using that and that didn't work. The main
reason it was unsatisfactory was that there is no reasonable way
of getting special characters, control shift "K" was an "AT" sign
and things like this and it was just intolerable. We were on the
940 at that time and there was really a great need for a mode
wherby it looked like a 33 and a shift could get you special
characters and when you typed things normally it would translate
to upper case and so on and so forth.   126

The other thing was I don't think IMLAC people knew too much
about the software because the way they scrolled was they had a
big long buffer and when the screen got full they would take off
and move it up.   127

And so they were doing these 1000 word moves every time the
screen got full and there was just no way that we can keep up
with the input streem. You could drop like 10 characters when
you hit a scroll.   128

At that time Bill and John Melvin had written an IMOL that ran on
the 940 and so using that he wrote a sort of TTY simulation thing
that had 2000 rixons on it.   129

First of all the scroll drive was a great advantage, secondly a
big character translation so the keyboard looked just like the
keyboards we have out here with a few exceptions, but basically
they looked just the same.   130

It did backspace characters and backspace words just like they do
on the display out here.   131

At that time when you did backspace on TNLS it echoed back
whatever you wanted to echo back and so I just have echo back
control A in which case it would erase the last character and the
same thing with backspace word which is control w.   132

I set it up so that in and effort to get a very cheap DNLS type
facility or partial DNLS type facility I divided the display into
two windows . In the normal stage when you're just talking out
into the exec then this one window is just that size and the
other window ...   133

When you went into TNLS it would make this window disbarge and
this window here was used for the command feedback in general
exec type stuff and this window up here was used for when you do
a print branch or whatever.   134

Connected with each line up here was the table that had at what

10

at that time was a PSID of each statement or the corresponding
line in the window and so you could use the mouse and keyset for
statement specification or address specification so it had
essetially bugs but I couldn't the delete text.   135

That was all right, it wasn't great.   136

How did it know to recreate?   137

Like you do a print branch. It was just like TNLS except the
first thing print branch would do is send out a control character
set in that window. The last thing it would do is send out one
that would say "OK". So it it would just stay up there and you
would do all of your work down here. It was all right.   138

The problems in getting that thing running were mainly, debugging
because at that time you just had nothing in the IMLAC and it was
like sort of pressing a button down and nothing was there and
that's a painful process to correct. Especially when you start
trying to debug a demultiplex routine or subdemultiplex routine
and try to figure out where its dropping characters. It's damn
near impossible. You've just got to use manipulation. The other
thing that was kind of fun was the display stuff. The way the
IMLAC display works, is essentially a stroke display and given a
box, in the center of the box you have 16 --- you can drop in
various directions sort of like that. This is an over
simplification but it's easier to explain that way. The way you
used these was to form characters. An "E" might look sort of
like that. There's a subrouting jumping mechanism in which you
can jump one level . So, essentially, for each character you
have a subroutine. Then there is of course a branch.Those are
the main features of the display.   139

Question: There was no hardware character generation?   140

No there was just stroke.   141

Why are IMLACs so great?   142

There was nothing else. ??? You could probably buy an 11 with
some kind of reasonable display?   143

Not for that price. They've got mini's now but then you have to
interface them so it goes out of the same core and all that.   144

You could probably treat the display, if it had its own memory as
an external device. It needn't run out of the same memory.   145

Duvall continues. At the state we were on in way back when, when

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all the stuff was being done on the 940, all we had in terms of a
character set were a bunch of subroutines that were in this
original text setter and it's a hell of a lot of work to go
through and make a character set. So, consequently, I decided to
use theirs. We had binary-----, and so we had essentially a
bunch of non-relocatable character subroutines so the obvious
solution was to build the program around it.   146

Laugh Laugh.   147

And so we had a great core layout. At the top simulator, then we
had debuff two, then some character subroutines, then sort of and
area of slop, because I wasn't exactly sure where they began,
then we had debuff one and then we had a little thing that they
had that was a display start that did all the stuff necessary
except to pick this stuff up, and then we had a little more slop
and then way down below that we had the interrupt routine. that
did the demultiplex.   148

How much core do you have?   149

8k. So, that's what we ended up with.   150

So how big are those two display buffer areas?   151

1000 words apiece   152

And that's good for how many characters?   153

1000 characters. I'll show you what your display. You've got a
little display start routine. What the display routine does is
it sets on high voltage and positions the beam at the top of the
left corner on wherever you want to position and so on and so
forth. The last thing in that is a jump to your display buffer
---- in the display buffer is just a subroutine jump. and then
the last thing is a branch to a display stop routine. which goes
around and sets the beam in the place they'd like to have it set
because if you set it other places, it ruins the deflection
amplifiers and things like that. It's a very carefully
engineered piece of hardware. There is quite a bit of black magic
in it.   154

Then we transferred onto the 10. That sort of made things a
little cramped because all I had was some binary ----- In fact
somehow I lost some binary with the interrupt stuff.   155

How?   156

I don't know, probably got clobbered and I thought there was some

diversion and there wasn't. And so, here we were on the 10 and
the 940 was gone and there was no getting it back ------ so our
sources weren't any good, but I did have the binary for most of
it. and so that one down there, I just wrote a new thing in
optical with a little program that went to teletype to file then
there was a little thing that just shipped out of binary files.
What I did was I just killed OTIM and had a mode in it which
would just take binary files, stick them on the line and shove
them out. And then I had written a very simple optical loader for
IMLAC to check for anything that would just come up. I used it
for quite a while.   157

Then Peter came along and wrote an IMOL. That's sort of the
start of the second wave in software for the IMLAC. The Imode
that Peter wrote uses DDT as a loader and just drops binary that
could by 10 binarys ---- and then you just load it in the DDT and
you can get away with that because the 10 has an 18 bit address
field.   158

The IMLAC only has 16 bit words so you can drop out IMLAC
instruction in the IMLAC field and generally speaking you load it
in the second half of your address space so that when you print
it out it just drops off that top.   159

When you want to actually print a IMLAC binary from that you have
and IMOL procedure that your regular PDP10 procedures that you
load with it and you run that and it traps all the ---- field
indirect from the right place .----.   160

Then how do you get that file to the IMLAC?   161

Loading is kind of interesting. It is made especially
interesting by the fact that , well, for one time I just loaded
by stopping Don and Don would call me up and say "what's
happening?" and I would say "Oh, sorry" and go ahead and load. I
got tired of that so I decided to make a load so it did demuxing.
That turned out to be nontrue, because the way you really want to
have your loader started is you want to to have to start on the
wrong You have a small 40 word memory.   162

In forty words its pretty hard to write a loader that will
demultiplex the kind of stuff we had to demultiplex. So the way
you get around that is we've got a little bootstrapping from (he
was interrupted here)   163

You got that from the IMLAC people?   164

No, it isn't in the wrong yet.   165

13

How often do you have to reload the ------ typically?   166

Well, that gets into another area, you see, there's a problem in
the IMLAC.   167

Assumming that OTIM does an ironing thing.   168

Oh, it isn't OTIM. The problem is that there is an instruction in
IMLAC that doesn't work all the time. I got around that for most
of the thing, but running (at this point there was much laughter)
What do you do? Cybernex can't fix it, and you know, what the
hell, someone pulls it out and patches it. That was the easiest
solution I could think of. You know, what do you do?   169

Is that everybody's IMLAC or just yours?   170

Just mine, just mine. Or just ours, anyway, so it's like, well,
when I found that out, things got measurably better. Before that
it would run maybe four hours before I had to do that, you know,
it would depend, if it had been running for a long time, -- it
all depends on how long it had been running. But when we first
started it up you couldn't use it for the first half hour and you
would come back and sort of hope, but since that's gone out of
the way it's been pretty damn good. It's like it crashes oh,
well, it crashes so that I really have to reload it maybe once a
week. Sometimes two weeks. I reload a lot more than that when I'm
fooling around at first.   171

Reloading, believe it or not, and you won't believe it when I get
to explaining it to you, reloading is very reliable. The thing I
wanted to do is be able to reload the IMLC without interrupting
Don and without interrupting the normal flow of work and it ah, I
won't say its the practical way, but the only way I could think
of for effectively doing that or at least the easiest way I could
think of doing that, to begin with we had our own bootstrap, and
it starts out in a certain location, first thing it does is send
out a control C and halt. And what that does is sends out a
Control C to any guy that we had runing down here to get him back
into EXEC Then you hit a continue.   172

You mean it sends a continue down the line?   173

No, no, you hit a continue on the operator's console then it
sends out two characters which are arbitrarily sitting right out
there, and OTIM is looking for that string of 2 characters. When
OTIM sees that string of characters, it says "Ah hah, IMLAC wants
to get reloaded". So it opens a file called SRI boot.   174

What it sends out is it has to be in one buffer and it turns you

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off from this buffer. It's totally IMLAC buffer because this guy
can't demode at all and what that sends out is a bootstrap loader
that is read in by the wrong, he uses it, well for various
reasons he has to read into location 100 because there's enough
room for a branch in this mode enough room for a branch --- and
that's the next thing, so he reads it in and when he gets done,
he transfers control to that.   175

You mean the wrong just falls into that?   176

That's right. (laugh (laugh). Well, anyway, can you imagine the
poor programmers some years from now?   177

I will have to get another instruction to change that but that's
the way it is now. So it reads the bootstrap in and then the
bootstrap, the first thing it does is goes through and checks on
itself to make sure it was right, once it has done that, then it
reads in a relocatable loader to see where it wants to transfer
control to that guy. That loader can then proceed to begin a
series of block binaries.   178

everything after the bootstrap is sent out as regular interleaved
characters and multiplex characters.   179

How big is the boot?   180

Well, the maximum is 255. I think it's about 240 now, something
like that.   181

How do you map characters into IMLAC machine code?   182

If there were more room in here, then what I could do is I'd have
to do something like break breaking up the four bits, take two
four-bit characters and assemble them, and if I did that then I
wouldn't have this OTIM node. Even so, it would still be pretty
messy because you'd have to start up and throw that crap out.   183

Does the SRI boot program interact with the user to get the name
of the file of the loader?   184

No, it grabs a folicle of the SRI load. OTIM does that. It grabs
SRI boot, sends that out, closes that and opens SRI load, user
load of IMLAC and sends that out, and so SRI load is essentially
just a bunch of pack, you know, one binary after another.   185

How hard would it be to convert all that so you can do bouts on
that line and have that line handled carefully so that it ends up
sending what you need to the IMLAC?   186

Well, the only problem I guess I could see on that, you've got to
have some way of going from an internal status.   187

ok, suppose you get a character on the input line that recognizes
that fact.   188

(Duvoll) I don't understans. You still have to have a job doing
this stuff.   189

When the IMLAC is down you've got to be able to start up a job
somehow. There's got to be a better way, there's no question
about that. Well if you could reduce the job of something like
OTIM simply to doing the load and have a way of waking the job up
when you wanted to rload?   190

You could have the process clocked up to the pounds store and
when create job eventually works, have that that sees that
actually sort out that Job store. You wouldn't have to have the
job running all the time.   191

If you could do the transfers to that line and bouts, then you
could have a lot of the ugliness gone away, if you could make it
work out that way.   192

Well, except for the main thing, you've got to be able to
stipulate that it all goes in one bank in bootstrap. Oh, the
other thing is that, yeah, you're pretty much protected. Once
that does that it also waits for simple characters. That's the
first thing that the wrong does is wait for simple characters
before it goes any further.   193

Waits for waat?   194

Two sync characters, two syncrization characters so it doesn't
get garbage, in other words, it may be throwing out garbage at
you like if I load it and I'm not loged in, the first thing that
comes up when it gets the control C is it starts typing at ARC in
tenex. And so what it does is it waits for two zeros of the same
characters.   195

Could you do something like, he sends out a control C an then
these two characters. Now control C gets you taling to the exec
no matter what. What about if you put a comman in the exec.
you've got two special characters ad that started up the job that
did the loading.?   196

No that's worse than this.   197

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Draft of Notes from IMLAC Seminar 26-JAN-72, transcribed 7-MAR-72

When you're at a terminal and you hit those two characters by
mistake, you'd sure wonder what's going to happen.   198

Do you understand how Peter's loader works?   199

Yeah, I've run through it. It doesn't have the same problems that
we did because it doesn't have to demode. Multiplex you just have
to , it's a bitch, because the thing is, the multiplex ------/.   200

How long have you been running the multiplex?   201

It's been almost a year.   202

Why don't you want a black box that does the ---?   203

First of all because I'd rather do it in software an also it's
---.   204

But if you had a black box, that did the demoxing you wouldn't
have to worry about it. It looks like it might be a good idea as
far as the loading goes.   205

Then I'd have to put up with a black box.   206

You're putting up with a lot from IMLAC now.   207

Have you ever opened up your black box?   208

Heavens no.   209

Don't. You look inside it and there are things inside it like
heres a traasistor, up here down here, touch the whole hhng and
it moves. When I first took it up there it was sitting upside
down. I brought it down here to get it fixed and i was talking to
the guy an I had set it up there right side up an it seemed to be
working and I asked him about it being upside down. He said,
"Well, that seemed to be its natural state. I haven't touched it.   210

Who built the model?   211

He works for Cybernex?   212

He's a student. He was really a good guy. Very sharp guy, I think
he wasn't very operational. He's learning. He could design. Yeah,
ok. The other part of the loading process that's kind of fun is
that Peter's stuff puts out is a standard IMLAC binary, which is
a bunch of bites and that has to get coverted to another thing.
Before the Imlac will accept it. And so there's a bunch of
conversion programs you have to go through OTIM.   213

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What's that?   214

Peter adheres to the standard IMLAC loading,   215

Yeah, which is right.   216

And you're saying you have to go through another level of
translation to get it to your loader?   217

That's right.   218

Why can't you read in a standard, after your SRI boot, can't you
read in a standard loader that will read this program?   219

No, the problem is, it doesn't have anything to do with IMLAC,
the problem has to do with OTIM and it's just that there's just a
bunch of code written --- binary, see when it first started,
Peter thought it --- binary, and I said, well, forget it, that's
binary --- converted, you might as well have a binary that's
convenient to use, so I used my own binary and then we both
decided that we could use a standard binary. By that time I had
all this stuff written.   220

Okay, we'll go back to the other stuff, I guess. More on the
IMLAC software. Imminently, infact, extraordinarily emminently,
we'd love to have dnls that Peter has written up on IMLAC.   221

Does that mean the journal --- display?   222

Ah, I don't know, that should, well, I was going to try to do
that last Sunday, I'm very interested in seeing your reaction,
whether you preferred the nls or tnls changed.   223 .

I'm interested too, my guess is the DNLS will have to undergo one
of its evolutions programs suitable for --- and I can see the
evolution going in one of two directions. One of them is doing
--- perhaps more longer range type of thing and I think a more
satisfactory type of thing, and I think the other is
bootstrapping.   224

What's that mean?   225

Well, you know, like it does delete text when you do that little
thing, you know, and send something back to the NLS that says
delete text, which, you know, the IMLAC is infinitely capable of
doing. There's no problem at all doing that. After you load
Peter's program you still got 4K total ----. 4Koct.   226

The other direction I can see it going is that I'm going to want

to have better ways of suppressing --- display than you have now.
I think we can probably get out of doing recreate display more
often and maybe get into tricks like keeping a record of what the
guy has on his screen and when you say entirely recreate display
have an outputter sending the STID or application or whatever, so
he can move things around an have new commands as opposed
complete -----.   227

That's all on the IMLAC stuff and we'd want to do that?   228

Yeah.   229

Why would you prefer TNLS to Dnls, is it easy application to
recreate displays type of thing?   230

Yeah.   231

It's not the close operable differences between TNLS an DNLS.   232

No, its operable difference is far superior. Ok, the question is
how much can you get done. And you know, if you have to wait ten
seconds to recrate display everytime, where you know with TNLS
you just go.   233

Yeah, well, we're running TNLS at MIT (it's supposed to be a
54-bit type thing, it was almost like sitting there at DNLS, I
mean you would have to type addresses and you couldn't point but
as far as convenience like seeing things come at you,   234

I'm pretty sure that an IMLAC over the network will run just as
well as we have here.   235

It is comparable. I use that back East. very comparable.   236

Yeah, its really neat because it is just like "AH, HOME".   237

Also IMLAC has a much better keyboard than we had down there at
------. Those things, written a ddt for the IMLAC there's sort of
an interesting thing about that. Initially I--- said, okay, I was
going to write a ddt and started out writing a ddt, then came the
problem with character set because with ddt we wanted to have a
selfcontaned character set and everything else. And we came back
to the simple problem of character set which ---- that we had
before.   238

You wanted it to be ---- because you couldn't afford the space
or what?   239

Yeah, that's right. So that's the way it started, that was

initially. Then the main problem we ran into was the character
set thing. The other thing is Peter's character set initially ,
but it turns out that his IMLAC has long-bit hardware ad ours
doesn't and that makes it the character size that you could get
in his charcter set is about like that, you know three ---- there
and his was just impossible to read.   240

That's not true of his new IMLAC .   241

He has two character sets, one for long   hardware an one for
short. The IMLAC he's using now doesn't have long --- hardware.   242

Well, it must have been the right one because it worked. The
characters were very small and the thing was, the characters were
very small and you used the same character same display space as
the other one. So, anyway, in order to implement it, Peter put a
thing in his imol that would drop out essentially character
subroutines. So the obviouse thing to do is write a decompiler
that goes through the binary character set that I had stolen from
the text editor and produces IMOL sources which I can then turn
and put into the source code for the DDT to compile. So, more
upon more upon more upon more.   243

Then we got the DDT running and about that time John Melvin came
up with the stuff in the TENEX DDT for the NLS debugger and it
turns out that also given the fact that you load your mol program
in DDT, you're able to make it so that the imlac ddt was
essentially a symbolic DDT.   244

Essentially the way that that works is, from the 10 you have a
little program which is called TIMDDT --- IMLAC DDT. It
essentially accepts two types of inputs. One accepts pound signs
followed by page number followed by 6 octal digits and carriage
return. What it does, is it takes that and using the page number
it computes an address and sticks that into, well, it calls
John's thing in DDT that says give me the symbol for that and
then it takes that symbol an and types it out enclosed by
brackets.   245

It strips off any of the block stuff. Then the other thing is
that it accepts the symbol and it sends out a number value.   246

The imlac on the other end is sitting there and when you do a
flag, it takes the contents, or the address, leaves the contents
out from the addess it completes the page number, sends that down
then sends the word down, just like regular input characters. ---
left bracket, or left brocket and then just copies that string
out.   247

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What about doing it the other way, sort of the other way around.
You could have had the DDT essentially running on the 10 and
simply have the ability for it to interrogate cells in the IMLAC.
Would that have been reasonable?   248

Well, that adds a number of complexities. Because then you're
going through the IMLAC to the 10 back to the IMLAC back to the
10 back to the IMLAC back to you and in this case you're just
going from you to the IMLAC to the 10 back to the IMLAC back to
you.   249

Yeah, the only value would be if you're not constraining to the
IMLAC for the bulk of your DDT.   250

The DDT doesn't have to sit, while its running your IMLAC its not
codes to be able to send back the contents of a cell recognize
the request for and send back the contents?   251

Well, I guess that's true, except that probably 80% of the IMLAC
code is the stuff you're driving displays and the actual parcer
in the DDT code is in tapes. Everything else is just all the crap
that is necessary for the display and scrolls and all that stuff.
In fact, the DDT has a transparent mode.   252

you're talking and its working like a regular imp talk ----
you're taling to the TENEX and that's usually what you use to
start up the 10? DDT, Control C????? you call it out. I don't
know, I was originally ----- on the 940. And I guess I really saw
the light this way and I really didn't think about that.   253

The advantage of having a DDT running on the 10 is when we get an
NLS debugger you could use it to interrogate the IMLAC? In
essence you could run a much bigger and more powerful DDT?   254

It's all according to how that would workCharles, because you're
using the same line for two things. You've got to have all sorts
of.   255

Yeah, it would be a problem. You've got another multiplex problem
too.   256

That's right.   257

But when you're taling to the IMLAC in the display mode, you
sending formatted messages anyway, so you could find a message to
say give me the contents of the cell, you know,   258

(Duvol)now wait a minute, I guess the thing that I'm assuming,
you know when yo use the DDT for TENEX program of course you use

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the 10 unit, you use the simulation model. to use the DDT for the
IMLAC program, it's not clear to me you've got to have a parcer
one way or the other. You know this DDT has break points in it
too.   259

(Irby) Yeah, but all that could be done from a program running on
the 10 that had the ability to raid and set.   260

Is the IMLAC easier to program or the 10?   261

The answer is they are both the same because you've got to have
an IMOL. In fact, I wrote the DDT first in L10 and then I
translated it to iMOL. I don't know, I suppose, I guess I'd to
have to think about it more. I guess one reason would be is you
could if you had a break in communications with the 10 you'd go
out and use the octal DDT on the IMLAC. To find out why the break
occurred.The other thing, is when you set a break point the only
reason you set a break point in IMLAC is --- because it only has
2K addressing.   262

Breaks are really nasty because, its got a patch instruction and
the 10 doesn't which is worth it right there. Breaks are really
nasty because you only have 2K address space.   263

So what are we going to do with all these IMLACS that are
arriving?   264

(Mimi) send them back?   265

(Irby) do you think it would be worth it to put together another
process display termina?   266

No, definitely not.   267

What was the question?   268

(Irby) I asked if Bill thought it was worth while trying to find
a replacement for the IMLAC.   269

No, the IMLAC's not bad. You can do everything you need to do. A
lot of this is floundering, because first of all, I've never
officially been able to do anything on the IMLAC. That's never
been designated as any sort of a project, I've just sort of been
bootlegging it and the other is that is that, well, you know,
it's sort of because that all of this has been very evolutionary
and its sort of like, you know, I get an evening and I get an
idea and I say well I'm going to do it and you know, I do it.
That's not the best way to do anything.   270

Draft of Notes from IMLAC Seminar 26-JAN-72, transcribed 7-MAR-72

My concern wasn't with the IMLAC persay with the having them
across the country with people back there that were not going to
relay on or be able to be as ingenious as Bill.   271

(Bill) I think that the way we would approach that is we would
devise an IMLAC software system which we could probably fairly
well and it wouldn't be like this. This demonstrates most of the
mistakes ad most of the things you do to get around the mistakes.
But I think that with using that knowledge but I think with using
that knowledge we could probably go in and devise a fairly
reasonable system that we could say, here it is and as long as
you use our wrong you know, the little --- load from us and we do
all our stuff and you start printing with the wrong you start
doing everything on your own.   272

Wouldn't there be something like that already around, like at MIT
or someplace where they've got --- IMLAC? They must have.   273

No, MIT's IMLACs are worse then ours. They have a direct ---cork
and they don't even use formal IMLACS. the 10 drops things
directly into core through cables.   274

How about at UCLA?   275

They haven't been very sophisticated.   276

Does UTAH have any IMLACS?   277

It sounds like this thing doesn't have to be modified very much
to work over the network.   278

(Bill) No, I think it's all workable. It's not glamorus by any
means but its all workable an I think if we were willing to put a
little effort into it we could make it.   279

Are these IMLACS back there going to be ---- off the TIP?   280

I think so.   281

(Bill) Peter loads his over the phone line. conceptionally theres
no difference.   282

The tip conceptionally was just a transparent thing ---
characters come right off the---   283

Yeah, you could use Peter's loader you know get the multiplex
thing out of the way you get about 90% .   284

Well the TIP gets rid of the multiplex.   285

23

Peter's loader is not at all --- you know it's straight forward.   286

Well, it's not straight forward, It's conceptionally straight
forward as you could imagine loading one computer from another.   287

(Bill) No not at all, as unstraight forward as you could imagine
loading one--- As straight forward as you could imagine having an
entire load of those check signs on 40 octal words. It's not at
all straaght forward.   288

So they've been running their IMLAC just like a TI or something?
So I see Mitchell in the TNLS, that's where he's coming from?   289

I guess the last thing I was going to talk about a little bit was
some of the where I'm concerned not necessarily deep but
significant problems that you run into on this whole thing   290

One of them that I've already mentioned is the maintenance
problem and the only way you caa do it, you've got to have
somebody that knows about IMLAC to maintain them that's willing
to take a day or whatever with IMLAC. We fixed it once by I was
talking to Bob Simmons of Cybernex on the phone and that was
pretty successful because he could tell me where to go and where
to look and what to check. That worked out all right.   291

Do you have a scope up there?   292

No, I have a volt meter. And you know, that's the thing, volt
meters are adequate for an awful lot of stuff. Then when it got
more serious, if you had someone that you could call on and say
fix it,-- it doesn't go down that much. The only other problem
that I had is when that damn power spot --- fixed like that and
that IFC instruction doesn't work.   293

Another thing that's sort of nasty, and this we might think of in
this respect, too, you guys that have your own, is what do you do
when it goes down? And I've got a list here that's one, two,
three, four, five, six, seven, eight, nine, ten, eleven, twelve.
and each one of those not only could but has at one time been a
problem. I'll go through them.   294

I take that back, the first one never has been a problem. We've
never had any problem with the rixon.   295

The phone line. The phone line is either very good or very bad.
Sometimes its sort of inbetween. It use to be at one time we
won't have any problem, then we'll have one week or two where
we'll call up the company and they'll say, well, the phone lines
down or we've got noise on it, and that's a big hassle because

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you know, the telephone company is , well, it's like you call
them up and say, "There's a problem on this line," and they'll
say, Ah, What's that, then they'll plug into it and you'll get a
loud tone and you ssrt of say, oh, that's data, that's okay,
that's the right stuff, but there's noise on it, and they say
What does it sound like, and you say, what do you mean, what does
it sound like,? (laugh) (Laugh). You know, it could take one bit
an it sets things off and you get a rub out coming through and
you know, you have to hassle it for two or three days before you
get them to believe there's really something wrong, and you sort
of filter up through the ranks as you're doing this and you
finally find someone who knows whats happening, and then they do
something like they put a pulse counting meter on it and they
count it for an hour and during that hour things just happen to
get better and you know, this is really ugly stuff. It's hard to
fight, you just have to keep calling back and say this doesn't
work ad they'll say all right, an they will taa the line for you
know, three hours, an about the only think I can say is I have
really learned a lot about internal structue of the telephone
company. (laagh) Finally I thnk this week we've hit a very high
point because lease has the same sort of problem, you know
extension has the same sort of problem. And finally this guy came
out, you know obviously he was the big shit, you know, because he
had a flunky with him, and he gave me his card an all this stuff
and the you know, the foreman of repair. and so, it went down
again yesterday, and I called him up and maybe this is the end
of---   296

You got his card huh?   297

Yah, I got his card. That's been a real big hassle.   298

Other things that have gone down, one day the SRI rixon got
unplugged. TTI patch panel we haven't had any trouble on the 10s
on the 940s people used to remove the plug. OTIM occasionally
hangs up, because of some glitch that Ken knows about or
sometimes somebody will attach to it or sometimes it just won't
get started or somebody hits Control C on the teletype line and
thinks we're starting it. Sometimes when we work on the line
printer they turn off the external devices baud and thaat's the
same baud that runs the high-speed data set. So it stops running
then.   299

201a has gone down once and has been unplugged once down here.
two times its gone down because of a bad cable between the 201a
and the IMLAC interface. Then there's another glitch in the IMLAC
sometimes the level gets stuck and you don't get the character
interrupt . But all these things sort of make it interesting when
it goes down. You don't know where to start, this is why I call

somebody down here like Ken or Don and say Hey, you know, what's
happening, is because I really don't want to go into all ths
hassle until I know what the problem is.   300

The one thing that we have done that has really helped a lot is
Martin's little box. It sort of has four inputs to it. It's an
amplifier with a speak, its got four inputs, one of them is   t
the voice line for both the input an output lines. And the other
one is on the other side of the data sends to both lines. So I
can flick it on and hear the carriers and I can hear if data is
coming across and I can hear it the other way hear data coming
out of the data center or going into th data center. And that's
help a great deal . You can say that OTIM is down or IMLAC is
down. That's sort of nasty .   301

Draft of Notes from IMLAC Seminar 26-JAN-72, transcribed 7-MAR-72

(J10873)   28-JUN-72 8:22;   Title: Author(s): Linda L. Lane/LLL;
Distribution: Linda L. Lane/LLL; Sub-Collections: SRI-ARC; Clerk: LLL;
Origin: <LANE>IMLAC.NLS;44, 28-JUN-72 8:18 LLL ;   .LBS.=2; ; -

Language Interest Group: Suggested Readings for Third Meeting

The third meeting of the language interest group will be on
Thursday, July 13 at 4 o'clock.   1

To have common knowledge for discussion we should all read the
following articles, each to be found in "Language, Thought and
Reality, selected writing of Benjamin Lee Whorf," edited by John
B. Carroll, M.I.T. Press, 1956:   2

    Forward   2a

    On the Connection of Ideas   2b

    The Relation of Habitual Thought and Behavior to Language   2c

    Languages and Logic   2d

    Language, Mind, and Reality   2e

The biographical introduction of the Whorf volume has food for
thought as well.   3

At the moment I possess Walter's copy of the Whorf volume. I
will return it to Mil shortly.   4

    Various anti-Whorf positions are bundled together in a
    collection called, "Language in Culture" edited by Harry
    Hoijer, University of Chicago Press, 1954.   4a

I have not gotten a hold of a copy of "Language in Culture", nor
does the Stanford Library have one, but I will try to find one
somewhere else.   5

Current ideas about the innate structure of language, much
influenced by computer operation, appear in "Chomsky's Revolution
in Linguistics" by John Searle which appears in The New York
Review of Books, Vol. XVIII, No. 12, 29 June 1972, pp.16-24.   6

    Mil has a copy of this article.   6a

1

Language Interest Group: Suggested Readings for Third Meeting

(J10874) 28-JUN-72 9:01;   Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Paul Rech, Jacques F. Vallee, Mil E. Jernigan, Beauregard
A. Hardeman, Don Limuti, William R. Ferguson, Richard W. Watson/PR JFV
MEJ BAH DL WRF RWW; Sub-Collections: PODAC; Clerk: BER;
Origin: <VANNOUHUYS>JLANG.NLS;4, 28-JUN-72 8:59 BER ;

Re: protocol notebook and ascii

It would have been better to have a document from the us
standards association   rather than a particular company for the
current network protocols notebook section on ascii.   1

Re: protocol notebook and ascii

(J10875) 28-JUN-72 11:58; Title: Author(s): Jonathan B. Postel/JBP;
Distribution: Jeanne B. North, Richard W. Watson, Cindy Page/JBN RWW
CXP; Sub-Collections: NIC; Clerk: JBP;

FILE LOCKED

you have the file "<ETAC>TIPFILE" locked, you can correct the
situation by logging in loading the file and "Updating" it
thenleave the system by "Execute Quit". Just breaking the
connection or getting out by means of control-c is not cool   1

FILE LOCKED

(J10876)   28-JUN-72 12:06;   Title: Author(s): Jonathan B. Postel/JBP;
Distribution: James H. Shiffrin/JHS2; Sub-Collections: NIC; Clerk: JBP;

A REMINDER

JON, HOW IS THE NEW TELLNET DOCUMENT COMING?
WE WOULD LIKE TO GET THE SPECS SOON SO WE CAN BEGIN SOME
EXPERIMENTS
ON OUR OWN TENEX.

1

A REMINDER

(J10877)   28-JUN-72 13:00;   Title: Author(s): John W. McConnell/JWM;
Distribution: Jonathan B. Postel/JBP; Sub-Collections: NIC; Clerk: JWM;

More on Net Status File

Dave,
Do you have a volunteer for the backup site? What seems
involved here would be necessary for that site to contact one of
our NLS people. Having a network file transfer protocol running
would seem usefull. We could start without backup.   1

More on Net Status File

(J10878) 28-JUN-72 13:54; Title: Author(s): Richard W. Watson/RWW;
Distribution: David H. Crocker/DHC; Sub-Collections: SRI-ARC; Clerk:
RWW;

Phone Log: Dave Liddle, Owens-Illinois, about their plasma
display consoles

They are offering a line of self-contained display terminals,
using their plasma displays, a keyboard, and a Nova mini-computer
(they are leaving room in the computer interface for later
insertion of special cards to interface with our mouse and
keyset).   1

   O-I claims that they aren't planning to go into the retail
   terminal-selling business, but that they are putting together
   these packages and offering them for sale so that people can
   more easily experiment with their displays -- to build up a
   market interest. Eventually, they hope to get many terminal
   manufacturers interested, and to sell display modules to them
   for incorporaaton into their different terminals.   1a

During a visit Dave made earlier in the Spring, I (with George
Eilers' consent) had agreed to buy one of their consoles to use
for experimenting in the mini-console project, and offered
further to buy a second if another order would help sgnificantly
to get their "trial-sales effort" moving. My call today was to
learn whether or not they needed the second order. He felt that
at this time it wouldn't be critical to their plans, so I told
him that we would wait until we experimented some with the first
model before we decided upon possibly ordering another (more).   2

Associated with ARC's interest in lower-cost DNLS terminals, and
stemming also from my intuitive feeling that mini-computers are
very likely to be important as support in local-terminal
configurations serviced over a network, I queried Dave some more
about the multiple-display per Nova possibilities of their
system: 3

   Basic cost of the current system, with an 8K Nova, is $10K.
   For perhaps $450 extra they can deliver the Nova with a "big
   chassis" which can accommodate up to 32K of core. From that
   point, it looked roughly as though about $4K per terminal
   would be the incremental cost for adding each other terminal
   to that same Nova. I gathered that one Nova could probably
   handle six to eight terminals without too much trouble, but we
   didn't discuss this explicitly.   3a

      This cost includes: $2500 for display, $150 for interface
      (with space for mouse/keyset cards), $120 for keybard, and
      like $1000 for 2K of core to hold the extra display's
      display list -- plus some as yet unknown amount for mouse,
      keyset, and their interface cards).   3a1

   Other useful information: 3b

Phone Log: Dave Liddle, Owens-Illinois, about their plasma
display consoles

They plan to keep making these units available, after the
first ordering, so that we could feel safe enough about
getting others later.   3b1

In fact, it looks as though their display-unit costs
will come down by next Spring.   3b1a

There will be some read-only core in each Nova, set up to
provide the basic Teletype-equivalent operation (using the
built-in hardware character generator). It will be
arranged so that the Nova comes up automaticaly in this
program when the system is turned on, leaving only a
minimal amount of startup procedure at the TTY level for
the operator to get himself tied to a bigger system.   3b2

Dave will have O-I send through a requisition form made
out for one terminal with the big-frame Nova -- since I
told him that we would quite possibily want to pay the
$450 extra so that our first system would be more flexible
for future expansion.   3b3

Phone Log: Dave Liddle, Owens-Illinois, about their plasma
display consoles

(J10879) 28-JUN-72 14:40;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: James C. Norton, Charles H. Irby, Michael
D. Kudlick, George J. Eilers, Ed K. Van De Riet/JCN CHI MDK GJE EKV;
Sub-Collections: SRI-ARC; Clerk: DCE;

Note asking JCN to follow up on (10879,) and modification to our
order for one Owens-Illinois plasma display console

Jim: Referring to (10879,), I recommend that we modify our order
to Owens-Illinois for one (1) plasma display console to include
the option for a "big-frame Nova," which would enable us to
expand the computer's core size up to 32K words. I think that it
would be well worth the price he mentions -- assuming that it has
a relatively high liklihood of becoming an experimenal tool for
us when Eilers is through experimenting for the mini-console
study. Would you check with George E., and perhaps others if you
wish, and if thee are no negative considerations, take care of
the new ordering. (Note that Liddle is asking his people to send
us amodifid form to use.) See me if there are any hitches.
Thanks, Doug.   1

Note asking JCN to follow up on (10879,) and modification to our
order for one Owens-Illinois plasma display console

(J10880)   28-JUN-72 14:47;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: James C. Norton, George J. Eilers/JCN GJE;
Sub-Collections: SRI-ARC; Clerk: DCE;

so sorry

well..... I didnt make it and i am taking some time off to go
backpacking soo.... it will be mid july when i get it done. so
sorry. but dont let thst hang you up go ahead with you
experiments , i would expect that davidsons memo would be more
critical to doing experimennts though.   1

so sorry

(J10881)   28-JUN-72 14:48;   Title: Author(s): Jonathan B. Postel/JBP;
Distribution: John W. McConnell/JWM; Sub-Collections: NIC; Clerk: JBP;

To Barb from Arnie

Barb,

    I goofed   The ID HVK should properly be HZK. Can you change it? I will modify the file to put his correct middle initial in. The suggested IDENTS are UICC for AFF-2 and NAL for AFF-3 respectively. Thanks for all of your help.

<div align="center">Arnie</div>

1

To Barb from Arnie

(J10883)   28-JUN-72 17:03;   Title: Author(s): Arnold M. Ostebee/AMO;
Distribution: Barbara E. Row, Stanley Cohen/BER SC; Sub-Collections:
NIC; Clerk: AMO;

Report From SDIS Planning Team

Please read "Report From SDIS Planning Team" in (JJOURNAL, 10806,
1:w). Distribution to "PERC" never made it to intended
recipients.   1

Report From SDIS Planning Team

(J10885)   28-JUN-72 17:19;   Title: Author(s): Michael D. Kudlick/MDK;
Distribution: William H. Paxton, James C. Norton, Richard W. Watson,
Michael D. Kudlick, Paul Rech, Douglas C. Engelbart, Charles H. Irby,
Walt Bass, Jacques F. Vallee, Jeanne B. North/WHP JCN RWW MDK PR DCE CHI
WLB JFV JBN; Sub-Collections: SRI-ARC; Clerk: MDK;

tip information

name of organization   1

    university of southern california   1a

regular host   2

    ibm 360-44   2a

local personell   3

    telephone   746-2240
    jim pepin
    bruce mayer
    dennis smith   3a

operator   4

    names - many and varied   4a

    hours of operator coverage-   8 a.m to 11:59 p.m.   4b

    telephone 746-2240 or 746 6130   4c

tip options :   none   5

ports   6

    dial up modems   6a

    746-5208 thru 5212   6b

tip information

(J10886) 28-JUN-72 17:26;   Title: Author(s): James M. Pepin/JMP;
Distribution: David H. Crocker/DHC; Sub-Collections: NIC; Clerk: JMP;
Origin: <USC>JMP.NLS;1, 25-JUN-72 11:03 JMP ;

Minutes of 28 June 1972 PERC Meeting

Attendees: WLB DCE CHI MDK JCN WHP PR RWW(Chairman)   1

Dick asked everyone to comment on the status of the plans which
they are preparing the drafts of for 30 June: 2

NIC (RWW) -- is working on 5 documents including   2a

A master matrix correllating NIC Service proposals with the
development features needed along with staging and priority
info.   2a1

JEW is doing something on software.   2a2

JBN is writing up PSO related plans.   2a3

Opns (JCN) -- is working on a paper describing the goals and
responsibilities of operations in 5 areas, with comments on
needed system features.   2b

RADC (JCN) -- is working with Duane Stone on purposes, goals,
and next steps for the RADC Project.   2c

SEAS (WHP) -- a little bit has been done.   2d

DPCS (WLB) -- so far there is an outline of a framework for
DPCS planning.   2e

SDHS and IPT (DCE) -- DCE "solemnly swears" to do something by
the deadline, and is thinking about how resources should be
dropped into the various dev. thrusts from IPT funds.   2f

RADC (PR) -- has a set of documents.   2g

BRS (PR) -- planning team hasn't met yet.   2h

SDIS (MDK) -- put a thing into the Journal last week.   2i

Dlvry (MDK) -- has been working on three action items (utility
proposal, disc studies and proposals, and an RFP for a black
box to interface mouse&keyset to a low cost alphanumeric only
display) -- has no long-range plans for delivery to put forth
at this time.   2j

DSS (CHI) -- plan is in reasonable shape for both short and
long term.   2k

XEROX (WHP) -- nothing (MPS is handled under SEAS).   2l

Status of Utility Proposal: 3

1

Minutes of 28 June 1972 PERC Meeting

Mike says tha the RFP draft is in the ARPA office being
reviewed.   3a

Doug asked that copies also be sent to Duane Stone (RADC) and
Bill English (XEROX) for review. Jim will do.   3b

Decision on discs: 4

   Mike will submit order to DEC for controller and RPO2s,
   contract to be co-terminus with our facility contract, will
   specify that we reserve right to cancel RPO2 order prior to
   delivery if we subsequently decide to get RPO3s instead.   4a

There was a lengthly discussion of the IDENT system covering
maintenance responsibilities, development plans, and several
other issues. The matter was relegated to JCN, RWW, and CHI for
resolution.   5

Charles renewed his standing objection to the number and
frequency of meetings at ARC. It was decided that   6

   PERC will try meeting for one hour per week instead of two.   6a

   Planning Team meetings will be individually scheduled rather
   than regular.   6b

   PERC reccommends to DCE that POD and PODCOM meetings should
   take only half the time they do now.   6c

The issue of recruiting was discussed at length. It was decided
that ARC should be more active and should set higher standards
for hiring people and should be more explicit in setting forth
job descriptions and conditions. EMC will be the body
responsible for following through on this.   7

Mike pointed out that he sent everyone on PERC a copy of an SDIS
memo last week. Nobody got it and he didn't know the number so
we'll all go a-hunting.   8

Walt expressed dissatisfaction in the way the Gus Matzorkis visit
had been handled -- i.e., that no one had been told what the
format of the visit was to be or what was hoped to be
accomplished.   9

   Doug said that he took responsibility for inviting Gus, and
   that PODCOM was responsible for handling the arrangements.   9a

   PERC decided that Gus should be asked to submit a written
   report to ARC summarizing his observations so that everyone

Minutes of 28 June 1972 PERC Meeting

would have something concrete to go on as a result of his
visit.   9b

Minutes of 28 June 1972 PERC Meeting

(J10887)   28-JUN-72 18:29;   Title: Author(s): Walt Bass/WLB;
Distribution: N. Dean Meyer, Joy A. Glenn, Kay F. Byrd, Ralph Prather,
James E. White, Augmentation Research Handbook, Jacques F. Vallee, Diane
S. Kaye, Paul Rech, Michael D. Kudlick, Don Limuti, William R. Ferguson,
Linda L. Lane, Marilyn F. Auerbach, Walt Bass, 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,
Cindy Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara
E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor,
Donald C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC;
Sub-Collections: PERC SRI-ARC; Clerk: WLB;
Origin: <BASS>PERC.NLS;1, 28-JUN-72 18:28 WLB ;

animals

Infra-class	1
Order Primata	1a
Sub-order Tiarsii	1a1
Tarsus (Tarser)	1a1a
superstatement	1b
Sub-order Prosimii	1c
Tupaia (Tree shrews)	1c1
Loris (Lores)	1c2
PerediOctucus (pottos)	1c3
statement	1c4
(name)rder Cetacea	1d
Sub-order Odontoceti	1d1
Physeter (Sperm whale)	1d1a
Dolphinis (Dolphins)	1d1b
Orcinus (Killer whale)	1d1c
Suborder Mysticeti	1d2
Balaeenneptera (Rorqual)	1d2a
Sibbaldus (Blue whale)	1d2b
Order Artiodactyla	1e
Suborder Suiformes	1e1
Sus (Pig)	1e1a
Hippotomus (Hippo)	1e1b
Suborder Tylopeda	1e2
Lama (Llama)	1e2a
Camelus (Camel)	1e2b

Suborder Ruminantia	1e3
Cervus (deer)	1e3a
Bison (Bison)	1e3b
Capra (Goat)	1e3c
Ovis (Sheep)	1e3d

animals

(J10888)   30-JUN-52 11:20;   Title: Author(s): June E. Shoup/JES;
Distribution: Richard W. Watson, Steve Wolfe/RWW SW(this is it);
Sub-Collections: NIC; Clerk: JES;

hi

Infra-
class Eutheria

hi

(J10889)   30-JUN-52 11:24;   Title: Author(s): Kay F. Byrd/KFB;
Distribution: Joy A. Glenn/JAG; Sub-Collections: SRI-ARC; Clerk: KFB;

(Journal) Journal documents (most recent first)   1

    DSK 27-JUN-72 14:22   10869
    Experimental NLS Bug-reporting Mechanism
    Location: (JJOURNAL, 10869, 1:w)

                                                                        1a

    WLB 27-JUN-72 12:28   10868
    Don't Use '*, '/, '+, or '- as Directive Right Delimiter in
    the Output Processor
    Message: Mike has uncovered a subtle bug in the directive
    recognition mechanism of the Output Processor: if you set the
    Directive Right Delimiter to '* (asterisk), some directives
    cease to be recognized. The "reason" for this is that if the
    directive takes a numerical value, the directive recognizer
    assumes that any '*, '-, '+, and '/ characters are part of an
    algebraic expression -- it then starts looking for the rest of
    the expression, and finding none, decides that the directive
    isincorrect.

    The jist of this is that you can not use '* (asterisk), '-
    (hyphen), '+ (plus sign), or '/ (slash) as DRDs. Sorry. As a
    freebie to compensate for this inconvenience, I hearby report
    that there is nothing which says that the DLD and DRD
    characters cannot be the same (as long as the character is
    legal for both DLD and DRD). Have fun -- Walt.

                                                                        1b

    DSK 27-JUN-72 9:49   10866
    Proposed DNLS Journal Submission Scheme
    Location: (JJOURNAL, 10866, 1:w)

                                                                        1c

    WLB 20-JUN-72 16:55   10802
    Update to 10762 - Invitation to Oak POD / EST Presentation
    Message: The Oak POD / EST Presentation has been rescheduled
    for Friday, June 23, 2-4 PM. Y'all come.

                                                                        1d

    DSK 20-JUN-72 14:06   10798
    Erhard Seminars Training* A Personal Evaluation
    Location: (JJOURNAL, 10798, 1:w)

                                                                        1e

    HGL 20-JUN-72 13:16   10797
    NEW NLS
    Message: There is a new NLS which fixes several bugs in the
    display version of the system. DEX also has a change in
    control characters which has been documented. Please let us

know of any problems.

RWW 19-JUN-72 15:55   10765
EMC Notes June 19 1972
Location: (JJOURNAL, 10765, 1:w)

&SRI-ARC 19-JUN-72 14:58   9934
DEX USER GUIDE
Location: (JJOURNAL, 9934, 1:w)

WLB 19-JUN-72 11:54   10761
Personal Evaluation of the EST Course
Location: (JJOURNAL, 10761, 1:w)

&SRI-ARC 19-JUN-72 10:47   10713
DNLS/EXEC
Location: (JJOURNAL, 10713, 1:w)

&SRI-ARC 19-JUN-72 10:46   10708
VIEW CONTROL OPERATIONS
Location: (JJOURNAL, 10708, 1:w)

&SRI-ARC 19-JUN-72 10:44   10707
EDITING AND COMPOSITION
Location: (JJOURNAL, 10707, 1:w)

&SRI-ARC 19-JUN-72 10:43   10706
ADDRESSING IN DNLS - JUMPING AND LINKS
Location: (JJOURNAL, 10706, 1:w)

&SRI-ARC 19-JUN-72 10:41   10705
FILES
Location: (JJOURNAL, 10705, 1:w)

&SRI-ARC 19-JUN-72 10:40   10704
DNLS ENVIRONMENT
Location: (JJOURNAL, 10704, 1:w)

&SRI-ARC 19-JUN-72 10:38   10703

DNLS Preliminary User Guide
Location: (JJOURNAL, 10703, 1:w)

1p

    Comments: This is the first volume of the functional
document "DNLS Preliminary User Guide". It represents an
attempt to document some of the basics of the DNLS command
vocabulary and is by no means inclusive. Eventually, we
hope to publish a comprehensive DNLS/TNLS user Guide which
covers the command sets of both.

1p1

HGL 16-JUN-72 15:24   10759
Change in Some DEX Control Characters
Location: (JJOURNAL, 10759, 1:w)

1q

RWW 15-JUN-72 15:06   10753
Request for Plans
Location: (JJOURNAL, 10753, 1:w)

1r

RWW 13-JUN-72 13:14   10740
PERC Notes 8 June 1972
Location: (JJOURNAL, 10740, 1:w)

1s

DIA 13-JUN-72 11:04   10738
update to program communication flags
Location: (JJOURNAL, 10738, 1:w)

1t

&SRI-ARC JCN 12-JUN-72 17:00   10718
ARC JOURNAL INDEX BY AUTHOR - to 8 June 72 -- PDP-10 Entries
Only)
Location: (JJOURNAL, 10718, 1:w)

1u

&SRI-ARC JCN 12-JUN-72 16:56   10717
ARC JOURNAL INDEX BY NUMBER - to 8 Jun 72   (PDP-10 Entries
Only)
Location: (JJOURNAL, 10717, 1:w)

1v

JBN 9-JUN-72 15:17   10725
INVITATION TO USE THE 3M READER-PRINTER
Location: (JJOURNAL, 10725, 1:w)

1w

DIA 9-JUN-72 14:54   10724

NEW superwatch commands: PRINT GRAPH and PRINT SCHEDULER
PARAMETERS
Location: (JJOURNAL, 10724, 1:w)

1x

WLB 8-JUN-72 17:40   10715
More Comments on
Message: Hurrah to both RWW (10712,) and LPD (10709,) for
their comments on "Programmable NLS". I have just spent
several months building a "Catalog Production Processor" which
functions in the manner they speak of re designing user
commands and subsystems -- i.e., almost all the "work" of the
CPP is done using basic NLS "commands" operating on normal NLS
files. Most of the work I had to do to build the CPP was
digging into NLS for the systems programs which do things like
Execute Assimilate, Jump to Link, Update File, Output Device
Printer, etc., etc. -- and diddling these system programs so
that they would function smoothely in an off-line environment
(particularly how error messages and conditions are handled).
If the dream environment, LPD and RWW (and WLB) are talking
about had existed, creating the CPP would have been a week or
two's work for a skilled user rather than several months' work
for a systems programmer. Extrapolate this estimate to the
many other areas where we need new user systems, and the value
of having a Programmable NLS"" should become apparent. I
would like to suggest that we invite LPD to join our SEAS
Planning Team so as to be able to effectively input his ideas
into the SEAS Planning Process, and I will be glad to share
with SEAS any observations which they can elicit from me
regarding my experiences in building the Catalog Production
Processor.

1y

KEV 8-JUN-72 15:45   10714

Message: i have address for bruce if anyone is interested in
writing to him

1z

HGL 7-JUN-72 23:02   10711
FIXED NLS (WE HOPE)
Message: We have backed up to a reliable system and fixed
Update old in it. We are working on the new system
prematurely brought up last night and hope to have it up soon.
Sorry for the inconvenience. HGL

1a*

LPD 7-JUN-72 17:25   10709
Thoughts on Programmable NLS

ral-nls

Location: (JJOURNAL, 10709, 1:w)

laa

HGL 7-JUN-72 0:55   10700
TABS STILL DON'T QUITE WORK
Message: The new NLS still has a glitch in the tab code.   It
will hopefully be fixed by the end of the week.   Diane is
working on it now.   HGL

lab

HGL 6-JUN-72 23:45   10699
NEW NLS (AT LAST   )
Message: There is a new NLS with several new features
including a faster create display and a resurrected Update
old. Please tell me if there are any problems.   HGL

lac

JCN 6-JUN-72 13:56   10460
Request for Input from ARC People
re: Your Present Time Allocations
Location: (JJOURNAL, 10460, 1:w)

lad

Comments: The Initial cut document was attached to an
advance copy of this message.   lad1

JFV 6-JUN-72 9:48   10636
Dr.Arthur Hastings will visit ARC on Thursday June 8th.
Location: (JJOURNAL, 10636, 1:w)

lae

ral-nls

(J10890) 30-JUN-52 11:36;   Title: Author(s): Ralph Prather/RP;
Distribution: William P. Jones, Jeffrey C. Peters, Ralph Prather,
Beauregard A. Hardeman, Ralph Prather/WPJ JCP RP BAH((is it true u like
fat women) RP; Keywords:

; Sub-Collections: SRI-ARC; Clerk: RP;
Origin: <OPERATOR>RP.NLS;13, 27-JUN-72 18:04 XXX ;

Rainy Day System Blues

Considering how the journal system works, it will
be a miracle if you ever get this.

Rainy Day System Blues

The system is now in a state of great slowness. The drum
has died and chaos is everywhere. How can I learn to be a
systems-
operator if there isn't any system to operate?   1

Rainy Day System Blues

(J10891)   30-JUN-52 11:43;   Title: Author(s): Jeffrey C. Peters/JCP;
Distribution: Barbara E. Row/BER; Sub-Collections: SRI-ARC; Clerk: JCP;
Origin: <PETERS>TRASHTXT.NLS;1, 30-JUN-52 11:20 JCP ;

today is Monday

monday

(J10893)   30-JUN-52 11:37;   Title: Author(s): Joy A. Glenn/JAG;
Distribution: Kay F. Byrd/KFB; Sub-Collections: SRI-ARC; Clerk: JAG;