1

EDITING SHOULD BE DONE BY REPLACING TEXT AND NUMBERS. DO NOT CHANGE
          ANY OF THE OUTPUT PROCESSOR DIRECTIVES UNLESS YOU KNOW
          WHAT YOU ARE DOING,   2

IF YOU ARE PRINTING THIS OUT AND YOU HAVE NOT ALREADY SET THE WIDTH
          OF THE LINE TO 100 - - ABORT THE PROCEDURE <"C> AND
          SET THE WIDTH OF THE LINE TO 100. THEN START WITH THE
          OUTPUT TERMINAL COMMAND AGAIN,   3

INFORMATION PROCESSING BRANCH (ISI)   30 OCT 75

TITLE: NATIONAL SOFTWARE WORKS (NSW)   PROJ. ENGR: CAPT   4
            WINGFIELD

                                                                      4a

    OBJECTIVES: PROVIDE A HARDWARE/SOFTWARE FRAMEWORK THROUGH WHICH
                  NATIONALLY DISTRIBUTED USERS CAN INTERACT WITH
                  SEQUENCES OF NATIONALLY DISTRIBUTED SOFTWARE AND
                  HARDWARE TOOLS.   4b

                                                                      4c

    USERS: GOVERNMENT AND CONTRACTORS   HW/SW - PDP-11 ELF
                6180 MULTICS   4d

                                                                      4e

    FUNDING: FY-76 - $650K   M/Y - 1.1   4f

                                                    D. STONE   4g

                                                 M. WINGFIELD   4h

                                                                      4i

    CONTRACTOR: VARIOUS   CONTRACT NUMBER: N/A   4j

                                                                      4k

    PROJECT START: JUN 74   COMPLETION DATE: DEC 75   4l

                                                                      4m

    --I----------------------
    -------------------------------   4n

                MILESTONES   I   PROBLEMS OR POINTS
                OF SPECIAL INTEREST   4o

    --I----------------------
    -------------------------------   4p

                                        I   4q

                                        I   4r

    RADC LIST OF EXPENDITURES ON THE NSW   I   ADR CONTRACT FOR
                PDP-11   4s

FOR FY 76 HAS BEEN GENERATED   I   ELF OPERATING SYSTEM
            SUPPORT.   4t

                                      I   4u

DAR FOR PDP-11 COMPLETED   I   4v

                                      I   4w

PDP-11/35 PROCUREMENT BEGUN   I   4x

TRIP TO DESIGN CENTER TO DISCUSS   I   4y

NSW AND STRUCTURED PROGRAMING   I   4z

                                      I   4a@

NSW SYSTEM COMPONENT INTEGRATION   I   4aa

AT DSDC BEGUN   I   4ab

---I-------------------------
            -------------------------   4ac

TITLE: TECH, SUPPORT TO HIS 6000 SITESPROJ, ENGRS: F, SLIWA &   5
                M, KESSELMAN

                                                                             5a

OBJECTIVE: DEVELOP TECHNICAL APPROACHES AND PROVIDE ON-SITE
                CONSULTATION TO RESOLVE AIR FORCE USER PROBLEMS,   5b

                                                                             5c

USERS: AFDSDC (POTENTIAL: ESD, SAC, MAC, CONAD, TAC,
                REDCOM, JTSA)   HW/SW - H6180 - GCOS
                (WWMCCS)   5d

                                                                             5e

FUNDING: FY-76 - S-0-   FY-77 - -0-/$1000K
                M/Y 1,5   5f

                                                                             5g

CONTRACTOR: NONE   CONTRACT NUMBER: NONE   5h

                                                                             5i

PROJECT START: MAY 74   COMPLETION DATE: CONTINUING   5j

---I------------------------
-----------------------------------   5k

                MILESTONES   I   PROBLEMS OR POINTS
                OF SPECIAL INTEREST   5l

---I------------------------
-----------------------------------   5m

                                         I   5n

PMD DRAFTED   DEC 73 I ONE ACTIVE TASK: DMS
                TEST   5o

AFSC PROGRAM DIRECTION   FEB 74 I   D, VAN ALSTINE & L,
                LOMBARDO   5p

PMP SUBMISSION   ?   I   BEGAN TESTS AT JTSA
                ON 22 SEP 75   5q

                                                                             5r

                                          I   5s

--I-----------------------
                    -------------------------   5t

TITLE: VIRTUAL MACHINE MONITOR (VMM) DEVELOPMENT AND
                PERFORMANCE ANALYSIS
                                 PROJ. ENGR: RAYMOND A. LIUZZI   6

                                                                        6a

OBJECTIVES: TO DETERMINE PERFORMANCE CHARACTERISTICS AND EXTEND
                THE CAPABILITIES OF A VMM WHICH EXECUTES ON H6180,   6b

                                                                        6c

USERS: WWMCCS   HW/SW - H6180 MULTICS GCOS   6d

                                                                        6e

FUNDING: FY-76 - $ 65K (5581) FY 76 - $30K   M/Y -1,5   6f

                                                                        6g

CONTRACTOR: HONEYWELL INFORMATION SYSTEMS   CONTRACT NUMBER:
                XXXXX   6h

                                                                        6i

PROJECT START: FY-76   COMPLETION DATE: FY-77   6j

                                                                        6k

---I-------------------------
-------------------------   6l

            MILESTONES   I   PROBLEMS OR POINTS
            OF SPECIAL INTEREST   6m

---I-------------------------
-------------------------   6n

                                     I   6o

BASELINE VMM DELIVERED   DEC 75 I   HARDWARE
                MODIFICATIONS AND VMM PACKAGE   6p

                                     I   6q

PERFORMANCE ANALYSIS COMPLETED   APR 76 I   BEING NEGOTIATED AS
                PART OF   6r

                                     I   6s

PHASE ONE/VMM DESIGNED   JUN 76   I   SECOND H6180
             PROCUREMENT   6t

                                               I   6u

PHASE ONE VMM IMPLEMENTED   DEC 76   I   WORK STATEMENT MTG
             HELD   6v

                                               I   6w

                                               I   PROBLEM WITH REG,
             171-1   6x

                                               I   6y

---I-------------------------
              ---------------------------   6z

TITLE: SYSTEM AND MASS STORAGE STUDY FOR DMAAC   PROJ. ENGR: 7
                DEANE F. BERGSTROM

                                                                             7a

OBJECTIVES: STUDY ADVANCED COMPUTER SERVICE TECHNOLOGY FOR
                PROCESSING AND MASS STORAGE METHODS TO EFFECT MORE
                EFFICIENT OPERATION AND SUPPORT OF DIGITAL DATA
                BASES FOR DMAAC PRODUCTS.   7b

                                                                             7c

USERS: DEFENSE MAPPING AGENCY - AEROSPACE CENTER, ST.
                LOUIS, MO.   HW/SW - N/A   7d

                                                                             7e

FUNDING: FY-75 - $50K   FY-76 - $100K   M/Y - .50   7f

                                                                             7g

CONTRACTOR: NOT AVAILABLE AS OF 18 OF MARCH   CONTRACT NUMBER:
                NONE   7h

                                                                             7i

PROJECT START: AUG 74   COMPLETION DATE: DEC 75   7j

                                                                             7k

---I-----------------------
                        -------------------------   7l

                MILESTONES   I   PROBLEMS OR POINTS
                OF SPECIAL INTEREST   7m

---I-----------------------
                        -------------------------   7n

                                            I   7o

PROCUREMENT PACKAGE SUBMITTED   OCT 74 I DMAAC PROCESS & STORE
                ENVIRONMENT   7p

COMMERCE BUSINESS DAILY RELEASE   DEC 74 I   7q

SOW REVIEW   DEC 74 I   PRESENTED BY AC
                PERSONNEL   7r

RFP RELEASE   JAN 75 I   7s

TECH. PROPOSAL EVAL COMPLETED 19   MAR 75 I   7t

CONTRACT SIGNED WITH PRC   MAY 75 I   7u

FIRST MTG AT DMAAC W CONTRACTOR   MAY 75 I   7v

ORAL PRESENTATION AT DMAAC BY PRC   SEP 75 I   MAJOR REVIEW POINT   7w

                                             I   7x

---I--------------------------
--------------------------   7y

TITLE: SAMTEC STRUCTURED PROGRAMMING EXPERIMENT   PROJ, ENGR: 8
                D. BERGSTROM

                                                                         8a

   OBJECTIVES: ASSIST SAMTEC IN ADAPTING STRUCTURED PROGRAMMING
                 PRACTICES BOTH CONTRACTUALLY AND IN-HOUSE. OBTAIN
                 COST, ERROR AND PRODUCTIVITY DATA ON PROJECTS USING
                 STRUCTURED PROGRAMMING TECHNIQUES.   8b

                                                                         8c

   USERS: SAMTEC   HW/SW - IBM 360-65, OS360   8d

                                                                         8e

   FUNDING: FY-75 - $-0-K FY-76 $-0-K   M/Y
                 - .5
                                                   D. BERGSTROM
                                                   D. STONE   8f

                                                                         8g

PROJECT START: NOV 1974   COMPLETION DATE: CONTINUING   8j

                                                                         8k

---I-----------------------
-----------------------------   8l

              MILESTONES   I   PROBLEMS OR POINTS
              OF SPECIAL INTEREST   8m

---I-----------------------
----------------------------   8n

RADC INPUT TO JOINT PLAN   DEC 74 I   MIPS DEVELOPMENT
              STALLED   8o

                                        I   8p

PMP PUBLISHED   MAR 75 I   FEC MANPOWER CUT   8q

                                        I   8r

DETAILED PLAN   MAY 75 I   MEETING WITH SAMTEC
            CONTRACTOR (FEC) TO   8s

                                         I   RESOLVE EXPERIMENTAL
            ENVIRONMENT AND PLAN,   8t

                                         I   8u

DATA COLLECTION FORMS   JUN 75 I   FEC FORMS REWORKED
            BY ISIM   8v

                                         I   8w

ISIM EXPERIMENTAL PLAN   JUN 75 I   NEW FORMS AND PLAN
            FWD TO SAMTEC   8x

                                         I   8y

SAMTEC PLAN   AUG 75 I   FINAL SAMTEC PLAN
            AND   8z

                                         I   DELIVERED
            DOCUMENTATION TO RADC   8a@

                                         I   8aa

RADC/SAMTEC REVIEW MEETING   SEP 75 I   DRAFT MOA PROVIDED
            BY SAMTEC   8ab
---I-----------------------
            -------------------------   8ac

11

TITLE: WORKS MANAGER ENHANCEMENTS   PROJ. ENGR: WILLIAM E.
                RZEPKA   9

                                                                             9a

OBJECTIVES: TO DEVELOP A VIABLE NATIONAL SOFTWARE WORKS (NSW)
                WORKING ENVIRONMENT. THE NSW IS A SOPHISTICATED
                SOFTWARE DEVELOPMENT ENVIRONMENT WHICH CAN BE
                SHARED BY PROGRAMMERS BUILDING SYSTEMS FOR A
                VARIETY OF PRODUCTION MACHINES. THE NSW WORKING
                ENVIRONMENT WILL CONSIST OF EXECUTIVE CONTROL
                SOFTWARE, A SUITABLE USER INTERFACE AND THE
                CAPABILITY TO ESTABLISH AND EFFECTIVELY MANAGE A
                BATCH ORIENTED, SOFTWARE PRODUCTION ENVIRONMENT.   9b

                                                                             9c

USERS: AF DATA SYS DESIGN CNTR, AF DATA SVCS CNTR   HW/SW -
                HIS-6180/MULTICS   9d

                                                                             9e

FUNDING: FY-76 - $775K (325K PROJECT 5550 & 450K ARPA)
                M/Y .5   9f

                                                                             9g

CONTRACTOR: MASSACHUSETTS COMPUTER ASSOC., INC. (COMPASS)
                CONTRACT NUMBER: PR-B-6-3227   9h

                                                                             9i

PROJECT START: 1 JULY 75   COMPLETION DATE: 31 DEC 76   9j

                                                                             9k

--I------------------------
------------------------   9l

                MILESTONES   I   PROBLEMS OR POINTS
                OF SPECIAL INTEREST   9m

--I------------------------
------------------------   9n

                                        I   9o

PROPOSAL EVALUATION COMPLETED   AUG 75 I   CONTRACTOR REQUESTS
                COST FOR   9p

12

                                       I   ON- LINE
               DOCUMENTATION DATA BASE   9q

                                       I   9r

FEASIBILITY DEMO OF WORKS MANAGER   DEC 75 I   AUDIT OF
          SUBCONTRACTOR (BBN) INCOMPLETE;   9s

                                       I   ESTIMATE SIGNED
               CONTRACT BY 1 DEC 75   9t

                                       I   9u

---I-------------------------
            -----------------------------   9v

TITLE: 10

October Viewgraphs

(J33778) 30-OCT-75 07:46;;;;   Title: Author(s): Edmund J,
Kennedy/EJK; Distribution: /TJB2([INFO-ONLY]) ELF([INFO-ONLY]) ;
Sub-Collections: RADC; Clerk: EJK;

33778 Distribution
Thomas J, Bucciero, Edward F, LaForge,

FMS STATUS REPORT

This paper reports the progress made to date on the Financial
Management System and explains some of the reasoning that lead to
this system.

FMS STATUS REPORT

<div align="center">BACKGROUND</div>   1

In Jan 1975 a decision was made by RADC/IS to develop a
special-application information system to deal with the division's
financial resources. A number of data management systems were
considered (particularly JANUS) but a fact-finding trip to SRI-ARC
determined that building an application subsystem under NLS with
retrieval and arithmetic capabilities was feasible and within the
constraints implicitly laid out for the system (quick
implementation & few bucks). Furthermore, considering the
wide-spread familiarity of NLS through the IS division and
anticipating that an NLS-based system would be more responsive to
the changing requirements that a beginning information system
would be subjected to, it was felt that a subsystem built and
maintained in-house (under NLS via L-10 programs) would have a
higher life-expectency than one obtained from an outside computer
system.   1a

The first six months of this effort were devoted to translating
user requirements into processing functions and database
requirements. Of course, this was done on a part-time basis as we
waited for SRI to surface a programer to support us on this
effort. The net outcome of this period were two related
documents, A Functional Design and A Systems Analysis of the
proposed system. The length of time spend in this initial period
was partialy justified by the fact that these documents were of
great value when coding began and the designs and thoughts laid
out in them proved to be quite reliable throughout the coding
phase of development. The topics covered in these documents
included: a database design, functional capabilities expected of
the information system, external procudures for supporting it,
software algorithms that would be incorporated in the system
design and a three phase implementation plan, each phase
corresponding to one of the basic requirements for the system.   1b

A summary of this work was reviewed by division management and the
go-ahead was given to proceed. At the beginning of July a trip
was made to SRI where a unique programming team was put together,
consisting of: 1c

   Dean Meyer (SRI-ARC) : chief programmer - Dean was in large
   part responsible for the software design of the system, wrote
   the critical code and read and criticized all of the program
   code developed by the team. Dean also functioned as trainer
   for the other team members in L-10 and the Command Meta
   Language (CML).   1c1

   Joe Cavano (RADC/ISIM) : programmer/analyst/project engineer -
   Joe served as programmer on the system contributing significant

portions of the programming effort, following the coding plan
laid out by the chief programmer; as analyst he evaluated
requirements and their changes as they pertained to the system
for the chief programmer; as project engineer he was
responsible for keeping track of labor and auditing project
performance against the planned schedule and coordinating the
activities of the various people working on the information
system in all regards.   1c2

Frank LaMonica (RADC/ISIM) : backup programmer.   1c3

Bobbie Carrier (RADC/ISI) : Administrative Assistant who took
over the organization of line items and their PRs; Bobbie also
fuctioned as the FMS clerk for collecting the data from a
variety of sources and entering it into FMS.   1c4

Kim Carter (Utica College student) : set up the TPO file,
broken down by areas, products, workgroups and line items.   1c5

FMS REQUIREMENTS   2

Three main requirements have been determined for the Financial
Management System (FMS): keep track of resources by monitoring
the status and condition of the division's finances in terms of
PRs and contracts, forecasting expenditures of such efforts and
providing management participation in a dynamic way for changing
the division's planned and actual contractual efforts in a
temporary mode,   2a

To deal with each of these requirements, FMS has been broken down
into three subsystems: The Data Entry Subsystem, the User
Subsystem and the Dynamic Subsystem, Briefly, the Data Entry
Subsystem provides a convenient mechanism for controlling the
inputting of raw data into the FMS database, maintaining it in a
current state of readiness and providing an historical record of
transactions taken on any of its entries, The User Subsystem is
intended to provide user access to the appropriate FMS databases
in a read-only mode, will provide the transformation functions for
changing the basic data in the database into useful information by
allowing projections and computations and will contain a variety
of formats and reports for ouputting this information, The
Dynamic Subsystem will contain the means for temporarily changing
an FMS database so that new plans and spending changes can be
simulated and their impact can be anticipated,   2b

THE DATA ENTRY SUBSYSTEM

The problem with any information system is that before any useful information can be extracted, somebody must enter the data and no one wants to do this. Although the fundamental problems of the division are complex enough, the data needed to solve them is even more complicated: there is no ready source for FMS data, it has to be collected from a variety of sources (Form 77s, the PMS reports, MASIS, the Tech Activity Report and directly from division management); relationships between Purchase Requests and contracts must be maintained and this involves controlling spending over fiscal years; funding sources need to be identified even though contracts can be funded by multi-sources; actual contracts and planned efforts must both be considered in order to give an accurate picture of the division's financial condition; the procurement cycle must be monitored before a contract is reached, while afterwards, it is the contract that must be monitored. In order to reconcile all of these problems, the Data Entry Subsystem was created to maintain a consistent form for the raw data elements that must be saved.   3a

The Data Entry Subsystem is the interface between the clerks and administrators who will form the Data Entry Center for each branch and the Financial Management System, itself. This subsystem is self-contained; that is, a potential clerk does not need to know NLS in order to provide inputs to the database. It controls a number of files; the TPO databases which contain the basic data records by TPO, workfiles used by the clerks in maintaining the TPO databases and a historical file preserving all transactions made against the database.   3b

The prime function of this subsystem is to maintain and insure an integrity for the various databases and their elements. It must also reconcile the differences between efforts that could be either underway or in various stages of planning (e.g. actively in the procurement cycle or as a longer ranged plans). It also has to maintain a flexibility for handling the assorted PRs on a contract (e.g. either as OIRs or as new starts) by allowing the addition of new PRs as they are added to a contract. The database put together in this first phase contains provisions for handling questions concerning the progress of division spending. If further data items need to be added, they can included without too much difficulty.   3c

The Data Entry Subsystem allows the creation of Efforts (which correspond to job-order-numbers) and PRs regardless of their state: planned or actual. Data entry can be done via an interrogate mode that wil guide the user in filling out the record content for an Effort or a PR or entry can be done on a field by

field basis, if preferred or if just routine maintenance is being
performed. Input values are scanned as they are entered to insure
that they correspond to basic rules for a particular field (i.e. a
five charcter project will not be accepted as all projects must be
four charcters); thus, providing a more reliable database.   3d

Our strategy in building the Data Entry Subsystem was comprised of
five factors and two corollaries.   3e

   (1) Earlier work in building a database of this complexity
   under the GCOS/IDS system had graphically demonstrated that the
   ultimate success of an information system depends upon having
   the database maintenance functions as simple and as fool-proof
   as possible. This meant that access to the databse must be
   readily available at all times so that clerks could find out
   exactly what has been done and what needs to be done.   3e1

   (2) In addition, database entry done in an on-line,
   interactive mode would allow for checking of data inputs so
   that corrections can be made on the spot rather than after a
   batch run, so that only 'good' data will be entered into the
   database.   3e2

   (3) The belief that if enough attention was paid early in the
   development to the basic data items and their relationships
   that it would then be a trivial matter to provide a number of
   transformation functions for combining the raw data into
   information that users would want.   3e3

   (4) The realization that all contingencies could not be
   accounted for in the original design of such a system since it
   would have to be an evolving entity: as the users become more
   sophisticated in their demands, the system must be able to
   adapt itself to new features. Therefore, the record layout had
   to be done in such a way as to facilitate the addition or
   deletion of new fields without disrupting previous work.   3e4

   (5) That future users of the Financial Management System would
   not necesarily know NLS. Provisions would have to be made for
   this while at the same time allowing mechanisms for NLS users
   to take information from FMS and incorporate it into files
   where they could bring to bear NLS features as they deem
   necessary.   3e5

The two corollaries are as follows: 3f

   (1) The Dynamic Subsystem would have to contain commands for
   making changes to a FMS database and that since this subsystem
   will be used primarily by upper management, these commands

would have to be easily used by those that are not
sophisticated NLS users. Therefore, most of the work done in
developing the Data Entry Subsystem would be re-captured and
used for providing these same capabilities in the Dynamic
Subsytem instead of creating a whole new set of commands.   3f1

(2) The anticipated widespread use of this system through the
division (and perhaps beyond to the Center) meant that the
basis for the FMS would have to be something that is already
prevelant and that many people are already involved with. NLS
meets that type of constraint better than any data management
system that we could have chosen. In addition, future work
could be slanted toward making the two more compatible than
would be the case with other systems (printing Form 77s
directly from the data stored in FMS is one such example).   3f2

STATUS   4

DATA ENTRY SUBSYSTEM: the full-blown subsystem is 98% coded
although it has only been tested in a cursory fashion. An
Operator's Manual has been written that explains how to use the
Data Entry Subsystem and efforts from TP011 have been entered
according to its specifications.   4a

   What remains to be done: a number of commands need to be
   finished (but for the most part these involve cleaning up
   operations when a contract is terminated and so can be delayed
   temporarily). The case for a non-linear expenditure rate has
   yet to be handled but this also can be postponed for a while.
   More critically, a detailed test plan for this subsystem should
   be specified and put into operation.   4a1

USER'S SUBSYSTEM: some preliminary retrieval commands have been
put into use for the Data Entry Subsystem and a Summary Command
for allowing arithmetic sums on data fields has also been used.
Two filters (or reports) have been written but a selection of
more, sophisticated reports are needed. These partial
accomplishments demonstrate the viability of what we are doing,
and will be useful for giving all concerned a feel for what FMS
can do.   4b

   What remains to be done: a comprehensive design should be
   worked out and then followed. The retrieval function must be
   expanded to allow Boolean criteria and the summary capability
   must be inbedded within filters where appropriate. More
   specific and useful reports must be generated and these should
   come about as management begins to learn and experiment with
   the current FMS.   4b1

DYNAMIC SUBSYSTEM: as mentioned before, most of the commands
needed for this subsystem have been worked out in the Data Entry
Subsystem.   4c

   What remains to be done: provide the mechansims for
   incorporating any changes in a temporary mode wiithout locking
   out other database users. An unbugged NLS feature, Browse
   Mode, would seem to fit our needs but it will probably take
   support from SRI to make this work for us.   4c1

MANPOWER   5

(through Oct 24)   5a

	Time	NLS Connect	CPU Time	% Util	
					5b
					5c
Cavano	440	225.	10,78	4,79	5d
LaMonica	80	48.	.94	1,9	5e
Carrier	28	24.	1,02	4,26	5f
Carter	80				5g
Meyer	220				5h

FMS STATUS REPORT

(J33779) 30-OCT-75 13:03;;;;   Title: Author(s): Joseph P. Cavano/JPC;
Distribution: /RDK([ACTION]) ARB([ACTION]) FJH([ACTION])
TJB2([ACTION]) RJC([ACTION]) FSL([ACTION]) DFB([ACTION])
DCE([INFO-ONLY]) JCN([INFO-ONLY]) JHB([INFO-ONLY]) NDM([
INFO-ONLY]) GAS2([INFO-ONLY]) JAC3([INFO-ONLY]) FJT([
INFO-ONLY]) RBP([INFO-ONLY]) ELF([INFO-ONLY]) EJK([INFO-ONLY
]) RFI([INFO-ONLY]) JLM([INFO-ONLY]) ; Sub-Collections: RADC;
Clerk: JPC;   Origin: < FMS, STAT,NLS;5, >, 30-OCT-75 12:48 JPC
;;;;####;

33779 Distribution

Robert D. Krutz, Alan R. Barnum, Francis J. Hilbing, Thomas J. Bucciero, Roberta J. Carrier, Frank S. LaMonica, Deane F. Bergstrom, Douglas C. Engelbart, James C. Norton, James H. Bair, N. Dean Meyer, Glenn A. Sherwood, Jan A. Cornish, Frank J. Tomaini, Roger B. Panara, Edward F. LaForge, Edmund J. Kennedy, Rocco F. Iuorno, John L. McNamara,

Evaluation Questionnaire

<div style="text-align:center;">SECTION 1</div>   1

1. In the course of your job activities, do you or have you ever
utilize(d) either directly or indirectly, computer based text editing
and/or communications systems. That is do you ever type textual
material into a terminal or have it typed for you?   2

    YES   ...
    NO   ...   Section II Part B   2a

2. Do you or did you in any way, either directly or indirectly, make
use of the software package "NLS"?   3

    YES   ...
    NO, but have previously   ...   Please continue the questionnaire
                                      converting to the past tense
    NO, never have   ...   Please answer Qns in Section 2 - Part B.   3a

3. Do you yourself type the material into the NLS system, does
someone type it for you, or do both occur?   4

    TYPE IN MYSELF   ...   Answer Qn 4
    HAVE TYPED IN   ...   Answer Qn 5
    BOTH OCCUR   ...   Answer Qn 6   4a

4. a) Is the information that you input your own, someone elses or
both?   5

    OWN   ...   Go to Section 2
    Someone elses   ...
    Both   ...   5a

    b) In those cases where you input someone else's material, what is
the relationship of this (these) person(s) to you (eg. boss)?   6

    c) What type of information do you input for other people?   7

    d) If you also input information for yourself, what sort of
information do you input?   8

    categories...will follow here: 8a

    Go to Section 2   8b

5. a) Do you know how to imput material yourself?   9

    YES   ...
    NO   ...   Go to Section 2   9a

b) If YES, what are the main reasons why you have chosen to have
someone else input your material for you.   10

Go to Section 2   10a

6, 23-OCT-75 a) Under which conditions do you input material
yourself?   11

categories to follow here: 11a

b) Under which conditions do you have someone else input your
material?   12

categories to follow here :   12a

c) What is the difference between the material that you input for
yourself and the material that you have someone input for you?   13

Go to Section 2   13a

                    SECTION 2 - NLS EVALUATION   14

In this section we would like to obtain some information about
your usage of the software package "NLS". This will be done on two
levels, your general usage of the package and your usage of the
specific components within NLS. If your are a non-user of NLS,
please answer only the questions in PART B. In either case, in
these two sections base your responses on your impressions of the
software package and not the hardware you use to access it.   14a

PART A: OVERALL EVALUATION   14b

USAGE   14c

In an average week, how many hours do you spend using NLS?   14c1

    0-5 hours   14c1a

    5-10 hours   14c1b

    10-20 hours   14c1c

    20-30 hours   14c1d

    30+ hours   14c1e

    Over the last year, has your usage of NLS decreased,
    increased or stayed about the same?   14c2

Evaluation Questionnaire

        INCREASED   ...
        DECREASED   ...
        STAYED ABOUT THE SAME   ...   14c2a

    In an average week, how many times do you attempt to access
    NLS, but find that you can't.   14c3

        .... times/week   14c3a

        What are the main reasons why you have difficulty accessing
    the system?   14c4

    How long have you been using NLS?   14c5

        .....years.....months   14c5a

    What sort of training in using NLS did you generally tend to
    rec_eive?   14c6

        Formal program   ...
        From other employee in charge of training   ...
        By other user of NLS   ...
        Picked it up on my own   ...
        Not applicable - was not interested in
        learning NLS for my direct use   ...
        Other (specify)...   14c6a

    Which of the following statements best describes the ways in
    which you use NLS? If you use the system in more than one way,
    place a 1 beside the most frequent method, a 2 beside the next
    most frequent, ect.   14c7

        I give handwritten copy to someone who gets hard-copy for me
        to work with.   ...   14c7a

        I give handwritten copy to someone who inputs it into the
        system and from there I work with the material on-line via a
        terminal.   ...   14c7b

        I input the material myself, get a hard copy and work with
        that.   ...   14c7c

        I input the material myself and work on it through the
        terminal.   ...   14c7d

        I dictate the information, someone else types it in and I
        get a hard-copy to work from 14c7e

        OTHER (please describe)   ...   14c7f

Evaluation Questionnaire

6. Would you like to use NLS more or less? Why?   14c8

OVERALL IMPRESSION OF N.L.S.   14d

Which statemet best describes the support in your group for the
use of N.L.S.?   14d1

    Required to use it   ...
    Expected to use it   ...
    Am free to use it if I want to ...
    Would rather I didn't use it ...
    Other (specify)..   14d1a

What was your initial reaction when N.L.S. was first
introduced?   14d2

    I thought it would be useless   ...   14d2a

    I thought it might be useful for others but not really for
    me personally   ...   14d2b

    I was skeptical about it but willing to give it a try ...   14d2c

    I was basically indifferent or neutral   14d2d

    I thought it would be very useful for me personally   ...   14d2e

    I was very excited about its numerous prospects and
    possibilities.   14d2f

    I thought is would prove to be the greatest innovation we'd
    seen in a long time.   14d2g

    I was actively involved in the decision to subscribe to NLS
    ...
    (please describe)   14d2h

What is your present reaction to N.L.S.   14d3

    I think it is useless and should be discontinued   ...   14d3a

    I think it has its uses for others but not for me personally
    ...   14d3b

    I am skeptical but am giving it a try   ...   14d3c

    I am basically indifferent or neutral   ...   14d3d

4

Evaluation Questionnaire

I think that it is a very useful system for me personally
...   14d3e

I am excited about its numerous prospects and possibilities   14d3f

I think it is the greatest innovation we've seen in a long
time   14d3g

When NLS was first introduced to you/your organization, were
you   14d4

1) anxious to learn the commands - to use it yourself   ...   14d4a

2) willing to learn to use it yourself   ...   14d4b

3) not willing to learn to use it yourself   ...   14d4c

Did your attitude re: above change over time?
Please describe: 14d5

Describe in general how your use of NLS has changed over time -
principally focusing on changes in usage as your skills improved
and/or knowledge increased.   14e

Consider, for a moment, how NLS has affected your workstyle
(even if you are a non-user) consider the impacts NLS has had on
1) you as an individual 2) on the group as an organizational unit
3) on other group members.   14f

On a scale of 1-5, how would you say the system has affected
your workstyles in the following areas: 14f1

1) flexibility in hours   14f1a

decreased...1...2...3...4...5...increased   14f1a1

Pleased...1...2...3...4...5...Dipleased   14f1a2

2) flexibility of system - how flexible is the system to
your normal working/writing/thinking/organizing style?   14f1b

flexibile...1...2...3...4...5...inflexible   14f1b1

Pleased...1...2...3...4...5...Dipleased   14f1b2

3) overall work efficiency / productivity   14f1c

decreased...1...2...3...4...5...increased   14f1c1

       Pleased...1...2...3...4...5...Dipleased   14f1c2

4) privacy of your work   14f1d

       decreased...1...2...3...4...5...increased   14f1d1

       Pleased...1...2...3...4...5...Dipleased   14f1d2

5) amount of work related communication with other peers   14f1e

       decreased...1...2...3...4...5...increased   14f1e1

       Pleased...1...2...3...4...5...Dipleased   14f1e2

6) amount of social communication with other peers   14f1f

       dicreased...1...2...3...4...5...increased   14f1f1

       Pleased...1...2...3...4...5...Displeased   14f1f2

7) amount of communication with your superiors   14f1g

       dicreased...1...2...3...4...5...increased   14f1g1

       Pleased...1...2...3...4...5...Displeased   14f1g2

8) amount of communication with subordinates   14f1h

       dicreased...1...2...3...4...5...increased   14f1h1

       Pleased...1...2...3...4...5...Displeased   14f1h2

Do you find it easier or harder to read (scan, look at) you work
through a terminal as structured by NLS compared to normal
hard-copy?   14g

   Easier   ...
   Harder   ...
   About the Same   ...
   Not Applicable - I don't read or scan material through a
   terminal; I only read hard copy via NLS.   ...   14g1

   Do you find it easier or harder to get an overall integration of
your work as produced by NLS compared to normal hard-copy?   14h

   Easier   ...
   Harder   ...
   About the Same   ...

Evaluation Questionnaire

Not Applicable - I don't read or scan material through a
terminal; I only read hard copy via NLS.   ...   14h1

To what extent does N.L.S. guarantee the confidentiality of your
documents?   14i

Completely 1 2 3 4 5 6 7 Not at all   14i1

How would you rate the system's reliability? (do not include here
problems of access, but system reliability once you are on-line).
Give examples:
a) I am concerned, take precautions such as updating, files, etc.
b) I keep hard copies of everything important - that I wouldn't
want lost.   14j

How annoying is that? What do you do to counteract that.   14j1

In what ways could you say you have made the system adapt to you /
to your needs?   14k

In what ways have you adapted yourself to meet the system's
requirements? i.e. in what ways has the system required you to
modify your work habits or behavior?   14l

In what ways have either 11 or 12 not occurred? What frustrations
exist as a result?   14m

Are there new types of tasks or work modes you do now that you
wouldn't or couldn't do without NLS?   14n

Are there tasks that you used to do prior to NLS being available
that now as a result of NLS you omit and/or find unnecessary.   14o

Are there tasks that you did not do prior to NLS that you now find
necessary because of NLS?   14p

In general, what are the advantages of NLS over previous methods
used by you to carry out your duties?   14q

What are the disadvantages?   14q1

What things do you particularly like about N.L.S.?   14r

What do you particularly dislike about N.L.S.?   14s

Overall, what is your general feeling about N.L.S.   14t

Like it very much 1 2 3 4 5 6 7 dislike it very much   14t1

What capabilities can you imagine you would like to have, given an ideal system?   14u

  If you had to choose one, which of the following would you say best describes the NLS package?   14v

    1) a communications medium   ...   14v1

    2) a text editor   ...   14v2

    3) a tool augmenting a variety of your every day tasks ...   14v3

    4) a tool augmenting your overall intellectual, thought, and/or organizational processes   ...   14v4

Section II - Part B : EVALUATION OF SPECIFIC CAPABILITIES   15

  In the following section, we are going to describe the individual capabilities in NLS. Would you please read each of them and answer the appropriate questions? Even if you are a non-user, we would greatly appreciate you taking the time to review the descriptions that follow, answering questions about non-usage for each. It will give us some indication as to what types of methods you employ instead of NLS, and why you have made that choice.   15a

NLS FOR COMMUNICATION PURPOSES   16

  NLS can be used to communicate with other users of NLS (or anyone with access to Office 1 - the SRI computer). Do you use NLS in this capacity - to exchange messages, files, or to link with other users?   16a

    Yes ...... move to question 16E   16a1

    Yes - but also do same thing with other computer system(s).....go to question 16B.   16a2

    No - but use other computer systems to do the same thing..... go to question 16C.   16a3

    No - and use no computer system to do this......go to question 16D.   16a4

  What are these other computer systems?   16b

    What factors determine which system you use?   16b1

  What other systems do you use?   16c

Evaluation Questionnaire

Were you aware that this capability existed in NLS?   16c1

   Yes   16c1a

   No...go to next capability description, question #17.   16c1b

Are there any specific reasons for your choosing not to use
NLS?   16c2

   go to next capability description, question #17.   16c2a

How do you usually accomplish this task?   16d

Were you aware that this capability existed in NLS?   16d1

   yes   16d1a

   no   16d1b

Why did you choose not to use NLS?   16d2

   no need   16d2a

   too hard to use   16d2b

   too poorly documented   16d2c

   other: 16d2d

There are basically three types of interpersonal communications
capabilities in NLS: exchanging of messages, the exchanging of
files or documents, and linking in real time. Each of these three
can be executed in a number of ways, and in the case of the first
two, more that one program or subroutine can be selected to
accomplish the particular objective. Which of the three
CAPABILITIES do you make use of? Please answer the appropriate
questions followng each capability that you use.   16e

   THE EXCHANGE OF MESSAGES 16e1

      Describe how you use this capability. Since there are
      frequently may ways to accomplish the same task in NLS,
      please try to specify those commands , and subroutines, if
      applicable, that you use to execute this capability.   16e1a

      For what purposes do you exchange messages? Please check
      all that apply, ranking tham according to applicability
      1=most frequently applicable;5=least frequently applicable,
      etc.   16e1b

1) administrative management purposes, e.g. notices of
meetings, etc.making requests, project control   16e1b1

general information exchange or problem solving re a
particular work related topic   16e1b2

general keeping in touch with professional contacts or
friends,   16e1b3

Do you send/receive messages primarily to/from users within
your own organization or externally? With which
organizations other than your own do you exchange messages?   16e1c

How often do you use this capability in an average month?   16e1d

.........times each month   16e1d1

Is this usage increasing, decreasing, or staying about
the same?   16e1d2

increasing   16e1d2a

decreasing   16e1d2b

staying about the same   16e1d2c

When you use this capability, who inputs the information,
i.e. who executes the NLS commands?   16e1e

myself 16e1e1

someone else .... (go to question 16E1G)   16e1e2

both 16e1e3

What sort of training did you receive in the use of this
capability?   16e1f

                                                                 16e1f1

formal training   16e1f1a

from other employee in charge of training   16e1f1b

by other user of the capability   16e1f1c

picked it up on my own   16e1f1d

    learned through using the system's help commands and
    other user assistance subprograms   16e1f1e

    other (specify)   16e1f1f

   How easy was it to learn how to use this capability? 16e1f2

    Very easy...1...2...3...4...5...6...7...Very hard 16e1f2a

    Any comments related to training or ease of use? 16e1f2b

 What has been the impact of your using this capability on
 your: 16e1g

  work routine   16e1g1

  communications with other people in your group 16e1g2

  communications with people outside of your group 16e1g3

 How did you accomplish this task before you started using
 NLS?   16e1h

 Do you have any additional comments you would like to make
 regarding the pros and cons of this capability, your usage,
 its impacts, or suggestions, for change? 16e1i

THE EXCHANGE OF DOCUMENTS, REPORTS, OR FILES 16e2

 Describe how you use this capability. Since there are
 frequently many ways to accomplish the same task in NLS,
 please try to specify those commands , and subroutines, if
 applicable, that you use to execute this capability. 16e2a

 In what ways do you use this capability? Describe the kinds
 of work for which you use this capability -- for which types
 of tasks?   16e2b

 Do you send/receive files primarily to/from users within
 your own organization or externally? With which
 organizations other than your own do you exchange files? 16e2c

 How often do you use this capability in an average month? 16e2d

  ....times each month   16e2d1

  Is this usage increasing, decreasing, or staying about
  the same?   16e2d2

increasing   16e2d2a

decreasing   16e2d2b

staying about the same   16e2d2c

What has been the impact of your using this capability on
your: 16e2e

work routine   16e2e1

communications with other people in your group   16e2e2

communications with people outside of your group   16e2e3

How did you accomplish this task before you started using
NLS?   16e2f

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage,
its impacts, or suggestions for change?   16e2g

When you use this capability, who inputs the information,
i.e. who executes the NLS commands?   16e2h

myself .... (go to question 16E2I)   16e2h1

someone else 16e2h2

Do you know how to execute the necessary commands?   16e2h2a

yes.... (go to 16e3)   16e2h2a1

no.... (go to 16e3)   16e2h2a2

both 16e2h3

How easy was it to learn how to use this capability?   16e2i

Very easy...1...2...3...4...5...6...7...Very hard   16e2i1

Comments?   16e2i2

LINKING IN REAL TIME TO ANOTHER USER   16e3

Do you use this capability?   16e3a

yes   16e3a1

no   (if no, skip to next capability, question #17)   16e3a2

In what situations do you use this capability? For what
purposes?   16e3b

How often do you use this capability in an average month?   16e3c

        ....times each month   16e3c1

Is this usage increasing, decreasing, or staying about
the same?   16e3c2

    increasing   16e3c2a

    decreasing   16e3c2b

    staying about the same   16e3c2c

While linked, do you share files?   16e3d

yes   16e3d1

    if yes, how often?   16e3d1a

no   16e3d2

If no, were you aware that this capability existed in
NLS?   16e3d2a

    yes   16e3d2a1

        If yes, do you know how to use it?   16e3d2a1a

    no   16e3d2a2

Do you split the screen to share more than one file or part
of a file(s)?   16e3e

yes   16e3e1

    if yes, how often?   16e3e1a

no   16e3e2

If no, were you aware that this capability existed in
NLS?   16e3e2a

    yes   16e3e2a1

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no	16e3e2a2
If yes, do you know how to use it?	16e3e2a3
What has been the impact of your using this capability on your:	16e3f
work routine	16e3f1
communications with other people in your group	16e3f2
communications with people outside of your group	16e3f3
How did you accomplish this task before you started using NLS?	16e3g
Do you have any additional comments you would like to make regarding the pros and cons of this capability, your usage, its impacts, suggestions, etc.?	16e3h
Are there any other ways to communicate through NLS that you know of (or have invented) and use? Please describe:	16e4

NLS FOR INFORMATION RETREIVAL

17

Do you use NLS in any way as an information retreival tool, to retrieve old messages, journal items, copies of letters, archived material, etc.?	17a
Do you use this capability either direcly or indirectly in NLS?	17a1
Yes ......, move to question 17B	17a1a
Yes - but also do same thing with other(s),....,go to question 17A2.	17a1b
No - but use other computer systems to do the same thing....., go to question 17A3.	17a1c
No - use no computer system to do this......go to question 17A4,	17a1d
What are these other computer systems?	17a2
What factors determine which system you use?	17a2a
(go on to question #17B)	17a2a1
What other systems do you use?	17a3

14

Were you aware that this capability existed in NLS?   17a3a

   Yes   17a3a1

   No...go to next capability description, question #18   17a3a2

Are there any specific reasons for your choosing not to use
NLS?   17a3b

   (go to next capability description, question #18)   17a3b1

How do you usually accomplish this task?   17a4

Were you aware that this capability existed in NLS?   17a4a

   yes   17a4a1

   no   17a4a2

Why did you choose not to use NLS?   17a4b

   no need   17a4b1

   too hard to use   17a4b2

   too poorly documented   17a4b3

   other: 17a4b4

There are several types of information and correspondingly several
different ways in which one can retreive information in NLS.
Which of the following do you use? Please describe breifly how
you use those that are applicable (e.g. what commands you use).   17b

RETREIVING PREVIOUSLY READ MESSAGE: 17b1

   do not use   (go to question #17B2)   17b1a

   use   17b1b

   How often?   17b1b1

   For what purposes / in what types of situations?   17b1b2

   When you use this capability, who inputs the information,
i.e. who executes the NLS commands?   17b1b3

     myself 17b1b3a

        someone else .... (go to question #17B2)   17b1b3b

        both 17b1b3c

     What procedures (commands) do you use in this capability? 17b1b4

     How easy was it to learn how to use this capability?   17b1b5

        Very easy...1...2...3...4...5...6...7...Very hard   17b1b5a

        Any comments?   17b1b5b

RETRIEVING PREVIOUSLY READ JOURNAL ITEMS   17b2

  don't use   (skip to question #17B3)   17b2a

use 17b2b

FROM YOUR PERSONAL (INDENT) FILE   17b2c

  do not use   (go to question #17B2D)   17b2c1

  use   17b2c2

    How often?   17b2c2a

    For what purposes / in what types of situations?   17b2c2b

    When you use this capability, who inputs the
    information, i.e. who executes the NLS commands?   17b2c2c

      myself 17b2c2c1

      someone else .... (go to question #17B2D)   17b2c2c2

      both 17b2c2c3

    What procedures (commands) do you use in this
    capability?   17b2c2d

    How easy was it to learn how to use this capability? 17b2c2e

      Very easy...1...2...3...4...5...6...7...Very hard 17b2c2e1

      Any comments?   17b2c2e2

  RETRIEVING FILES FROM THE PUBLIC LIBRARY OF JOURNAL
  DOCUMENTS   17b2d

Evaluation Questionnaire

        do not use   (go to question #17B3)   17b2d1

        use   17b2d2

           How often?   17b2d2a

           For what purposes / in what types of situations?   17b2d2b

           when you use this capability, who inputs the
information, i.e. who executes the NLS commands?   17b2d2c

              myself 17b2d2c1

              someone else .... (go to question #17B3)   17b2d2c2

              both 17b2d2c3

           What procedures (commands) do you use in this
capability?   17b2d2d

           How easy was it to learn how to use this capability? 17b2d2e

              Very easy...1...2...3...4...5...6...7...Very hard 17b2d2e1

              Any comments?   17b2d2e2

retreiving archived material   17b3

   do not use   (go to question #18)   17b3a

   use   17b3b

      How often?   17b3b1

      Is there any particular type of file you tend to recall? 17b3b2

      Under any particular conditions (e.g. for what
particular purposes)?   17b3b3

      What is the average turn around time between your issuing
the request and receiving the document back on-line. 17b3b4

When you use this capability, who inputs the information,
i.e. who executes the NLS commands?   17b3c

   myself 17b3c1

   someone else ....18(go to question #3)   17b3c2

                    both 17b3c3

                what procedures (commands) do you use in this capability? 17b3d

                How easy was it to learn how to use this capability?   17b3e

                    Very easy...1...2...3...4...5...6...7...Very hard   17b3e1

                    Would you like to explain?   17b3e2

CREATING FILES   18

        This is the capability acheived by typing a <sp>CReate File, and
        then giving the file a name.   18a

        Do you use this capability either directy or indirectly in NLS?   18b

            1. Yes ...... move to question 18F   18b1

            2. Yes - but also do same thing with other computer
            system(s).....go to question 18C.   18b2

            3. No - but use other computer systems to do the same
            thing..... go to question 18D.   18b3

            4. No - use no computer system to do this......go to question
            18E.   18b4

        What are these other computer systems?   18c

            What factors determine wich system you use?   18c1

        What other systems do you use?   18d

            Were you aware that this capability existed in NLS?   18d1

                Yes   18d1a

                No....go to next capability description, question #   18d1b

            Are there any specific reasons for your choosing not to use
            NLS?   18d2

                (go to next capability description, question #19)   18d2a

        How do you usually accomplish this task?   18e

            Were you aware that this capability existed in NLS?   18e1

yes   18e1a

no (go to next capability description, question #19)   18e1b

If yes, why did you choose not to use NLS?   18e2

no need   18e2a

too hard to use   18e2b

too poorly documented   18e2c

other: 18e2d

(go on to next capability description, question #19)   18e2e

For what types of material do you create NLS files? For what
types of purposes? (e.g., you may create files for reports,
letters, reminders lists, budgets, etc.) Try to be as specific as
possible.   18f

How did you accomplish this task before you started using NLS?   18g

How would you compare previous methods used with NLS?   18g1

How often do you use this capability in an average month?   18h

........times each month   18h1

Is this usage increasing, decreasing, or staying about the
same?   18h2

increasing   18h2a

decreasing   18h2b

staying about the same   18h2c

What is the approximate size of your directory in terms of the
number of files?   18i

PROTECTING THE PRIVACY OF YOUR FILES   19

Do you in any way command the system to restrict access to your
files?   19a

yes   19a1

no   19a2

Evaluation Questionnaire

If yes, what privacy codes do you use?   19b

Are there any comments you would like to make regarding the
system's privacy provisions or lack thereof?   19c

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage, its
impacts, or suggestions for change?   19d

NLS as a Shared Work Space   20

Do you access other people's files?   20a

    1. yes, directly   20a1

    2. yes, but someone does it for me   20a2

    3. no (go on to next capability, question #21)   20a3

The capability to access other people's files and share, in a
sense, the same work space, again has several dimensions.   which
do you make use of, how, and for what purposes? If you answered
yes to 20A1, please also indicate the commands or procedures you
use in the space provided after each: 20b

    for reading/reviewing other's work   20b1

    to write on other people's files   20b2

    to copy statements, sections of files, or perhaps entire files
    from one person's directory into your own   20b3

    other (please specify):   20b4

What would you say are the purposes of your accessing other
peoples files?   20c

    for management or supervisory purposes   20c1

    for general interest / a way of keeping informed   20c2

    for purposes of joint or collaborative authorship   20c3

    for purposes of transfering information from someone else's
    file into your own, perhaps later to quote or reference in your
    own document.   20c4

    other (please specify):   20c5

Evaluation Questionnaire

Do you access files of those individuals: 20d

   within your own organization ?....   20d1

      yes   20d1a

         With approximately how many different individuals?   20d1a1

      no   20d1b

   external to your organization?...   20d2

      yes   20d2a

         which organizations? (please list)   20d2a1

      no   20d2b

How often do you use this capability in an average month?   20e

   ....times each month   20e1

   Is this usage increasing, decreasing, or staying about the
   same?   20e2

      increasing   20e2a

      decreasing   20e2b

      staying about the same   20e2c

What has been the impact of your using this capability on your: 20f

   work routine   20f1

   communications with other people in your group   20f2

   communications with people outside of your group   20f3

How did you accomplish this task before you started using NLS?   20g

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage, its
impacts, or suggestions for change?   20h

NLS AS A WORD PROCESSOR: ON-LINE EDITING, CUTTING, AND PASTING   21

   NLS has the capability to essentially allow the user to cut and

paste a document on-line, and to perfect the "print" through
numerous editing features.   21a

Do you use this capability either dIrecty or indirectly in NLS?   21b

   1, Yes ......, move to question 21F   21b1

   2, Yes - but also do same thing with other computer
system(s),....,go to question 21C,   21b2

   3, No - but use other computer systems to do the same
thing,.... go to question 21D,   21b3

   4, No - use no computer system to do this,.....,go to question
21E,   21b4

What are these other computer systems?   21c

   How many times in the last month have you used a text-editing
system other than NLS? ,....times/month   21c1

   What factors determine which system you use?   21c2

     go on to question #21F   21c2a

What other systems do you use?   21d

   How many times in the last month have you used a text-editing
system other than NLS? ,....times/month   21d1

   Were you aware that this capability existed in NLS?   21d2

     Yes   21d2a

     No,...go to next capability description, question #22,   21d2b

   Are there any specific reasons for your choosing not to use
NLS?   21d3

     (go to next capability description, question #22)   21d3a

How do you usually accomplish this task?   21e

   Were you aware that this capability existed in NLS?   21e1

     yes   21e1a

     no go to next capability description, question #22,   21e1b

Why did you choose not to use NLS?   21e2

   no need   21e2a

   too hard to use   21e2b

   too poorly documented   21e2c

   other: 21e2d

    go on to next capability description, question #22,   21e2d1

When you use this capability, who inputs the information, i.e. who
executes the NLS commands?   21f

   myself 21f1

   someone else 21f2

   both 21f3

In what ways do you use this capability? Describe the kinds of
work for which you use this capability -- for which types of
tasks?   21g

How often do you use this capability in an average month?   21h

   ....times each month   21h1

   Is this usage increasing, decreasing, or staying about the
same?   21h2

    increasing   21h2a

    decreasing   21h2b

    staying about the same   21h2c

What has been the impact of your using this capability on your
work routine   21i

How did you accomplish this task before you started using NLS?   21j

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage, its
impacts, suggestions for change, etc.?   21k

In those situations where SOMEONE ELSE inputs the information,
what is the average turnaround for: 21l

Evaluation Questionnaire

a one page document ....hours......days   2111

a 10 page document ....hours.......days   2112

a document of more than ten pages .....hours,......days   2113

How may revisions do you go through before you get a
satisfactory product?   2114

........revisionIf you ONLY use this capability
indirectly, that is through another user, (go on to question
#22).   2114a

What sort of training did you receive in the use of this
capability?   21m

                                                                        21m1

formal training   21m1a

from other employee in charge of training   21m1b

by other user of the capability   21m1c

picked it up on my own   21m1d

learned through using the system's help commands and other
user assistance subprograms   21m1e

othr (specify)   21m1f

How easy was it to learn how to use this capability?   21m2

Very easy,..1...2...3...4...5...6...7...Very hard   21m2a

Would you like to explain?   21m2b

Which system do you use for editing, cutting and pasting?   21n

DNLS 21n1

TNLS,...   21n2

Please describe how you make these basic changes in your text,
again, specifically the commands you most often use. Be sure to
mention if your cutting and pasting includes extracting text from
other peoples files. Again, describe what commands are required
to accomplish this.   21o

NLS FOR INFORMATION SCREENING AND SCANNING OF TEXT   22

   Whether you are reading most recent journal mail items, searching
   through old files, or reading through a current file to locate a
   particular item, there are a number of capabilities within NLS to
   screen that information (i,e, with view specifications) , to jump
   to particlar sections (with locators or pointers) , or to perhaps
   impose a content search on the text, In any of your uses of NLS
   do you employ these information "screening"capabilities?   22a

      yes (go to 22B)   22a1

      no   22a2

         How do you usually accomplish this task?   22a2a

            Were you aware that this capability existed in NLS?   22a2a1

               yes   22a2a1a

               no (go to Section 4 "General Information")   22a2a1b

            Why did you choose not to use NLS?   22a2a2

               no need   22a2a2a

               too hard to use   22a2a2b

               too poorly documented   22a2a2c

               other (please specify):   22a2a2d

               (go to Section 4 "General Information")   22a2a2e

   If yes, which of the following do you use? Describe under what
   general conditions or for what purpoes you use each,   22b

      viewspecs: 22b1

      content searching by key word or phrase: 22b2

      other ways you scan text or move about in a file: 22b3

   Do you have any additional comments you would like to make
   regarding the pros and cons of this capability, your usage, its
   impacts,or suggestions for change?   22c

NLS AS A PRINTER   23

Evaluation Questionnaire

NLS also has the capability to provide the user with hard copy in
a number of ways. Do you ever use NLS for printing?   23a

    yes   23a1

    no (go to next capability description, question #24)   23a2

If yes, in which of the following ways: 23b

    I press THE "PRINT" BUTTON, and obtain hard copy from a
    terminal printer located nearby.   23b1

    yes (go to question #23B1D)   23b1a

    don't know (I use the capability indirectly) go to question
    #23B3   23b1b

    no   23b1c

        If no, why?   23b1c1

            was not aware of the capability   23b1c1a

            was aware but don't know how to use it   23b1c1b

            we don't have the necessary hardware   23b1c1c

            no need for it   23b1c1d

            other   23b1c1e

        comments: 23b1c2

            (go on to question #23B3)   23b1c2a

    How often do you use this capability in an average month?   23b1d

        ....times each month   23b1d1

        Is this usage increasing, decreasing, or staying about
        the same?   23b1d2

            increasing   23b1d2a

            decreasing   23b1d2b

            staying about the same   23b1d2c

In what types of situations, or under what conditions do you
use this capability?   23b1e

What has been the impact of your using this capability on
your: 23b1f

   work routine   23b1f1

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage,
its impacts, or suggestions for change?   23b1g

I use the above but also use THE OUTPUT PROCESSING COMMAND: 23b2

   yes (go to question #23B2D)   23b2a

   yes, but use it indirectly (go to question #23B2E)   23b2b

   no   23b2c

      If no, why?   23b2c1

         was not aware of the capability   23b2c1a

         was aware but don't know how to use it   23b2c1b

         we don't have the necessary hardware   23b2c1c

         no need for it   23b2c1d

         other   23b2c1e

      comments: 23b2c2

         (go to question #23B3)   23b2c2a

   How easy was it to learn how to use this capability?   23b2d

      Very easy...1...2...3...4...5...6...7...Very hard   23b2d1

      Any comments?   23b2d2

   How often do you use this capability in an average month? 23b2e

      ....times each month   23b2e1

      Is this usage increasing, decreasing, or staying about
      the same?   23b2e2

increasing   23b2e2a

decreasing   23b2e2b

staying about the same   23b2e2c

In what types of situations, or under what conditions do you
use this capability?   23b2f

What has been the impact of your using this capability on
your: 23b2g

work routine   23b2g1

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage,
its impacts, suggestions, etc,?   23b2h

I use THE "COM" SYSTEM   23b3

yes (go to question #23B3D)   23b3a

yes, but use it indirectly (go to question #23B3E)   23b3b

no   23b3c

If no, why?   23b3c1

was not aware of the capability   23b3c1a

was aware but don't know how to use it   23b3c1b

we don't have the necessary hardware   23b3c1c

no need for it   23b3c1d

other   23b3c1e

comments: 23b3c2

(go to next capability description, question #24)   23b3c2a

How easy was it to learn how to use this capability?   23b3d

Very easy...1...2...3...4...5...6...7...very hard   23b3d1

Any comments?   23b3d2

How often do you use this capability in an average month?   23b3e

........times each month   23b3e1

Is this usage increasing, decreasing, or staying about
the same?   23b3e2

increasing   23b3e2a

decreasing   23b3e2b

staying about the same   23b3e2c

In what types of situations, or under what conditions do you
use this capability?   23b3f

What is the average turnaround time for your COM documents?   23b3g

What has been the impact of your using this capability on
your: work routine?   23b3h

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage,
its impacts, or suggestions for change?   23b3i

NLS AS A CALCULATOR   24

NLS also has a subsystem that is essentially an on-line
calculator. Do you use this capability either directly or
indirectly in NLS?   24a

Yes .... move to question 24E   24a1

Yes - but also do same thing with other computer
system(s).....go to question 24B.   24a2

No - but use other computer systems to do the same thing.....
go to question 24C.   24a3

No - use no computer system to do this.......go to question 24D.   24a4

What are these other computer systems?   24b

What factors determine wich system you use?   24b1

What other systems do you use?   24c

Were you aware that this capability existed in NLS?   24c1

Yes   24c1a

Evaluation Questionnaire

No,,,go to next capability description, question #25 24c1b

Are there any specific reasons for your choosing not to use
NLS? 24c2

(go to next capability description, question #25) 24c2a

How do you usually accomplish this task? 24d

Were you aware that this capability existed in NLS? 24d1

   yes 24d1a

   no 24d1b

Why did you choose not to use NLS? 24d2

   no need 24d2a

   too hard to use 24d2b

   too poorly documented 24d2c

   other: 24d2d

      go to next capability description, question #25 24d2d1

When you use this capability, who inputs the information, i,e, who
executes the NLS commands? 24e

  24e1

   myself ,,,, 24e1a

   someone else ,,,, (go to question #24) 24e1b

   both ,,,, 24e1c

How easy was it to learn how to use this capability? 24e2

Very easy,,,1,,,2,,,3,,,4,,,5,,,6,,,7,,,Very hard 24e2a

Any comments? 24e2b

Describe briefly how you use this capability: 24f

How often do you use this capability in an average month? 24g

   ,,,,,,,,times each month 24g1

Is this usage increasing, decreasing, or staying about the
same? is   24g2

   increasing   24g2a

   decreasing   24g2b

   staying about the same   24g2c

What has been the impact of your using this capability on your: 24h

   work routine   24h1

How did you accomplish this task before you started using NLS?   24i

Do you have any additional comments you would like to make
regarding the pros and cons of this capability, your usage, its
impacts, suggestions, etc,?   24j

If yes, how and for what types of material?   24k

USEROPTIONS   25

NLS also contains a number of useroptions subprograms, Do you
make use of any of these?   25a

   yes (go to question #25B)   25a1

   no   25a2

      If no, why? (check all that apply)   25a2a

         I do not use NLS at all, Go on to Section 4 (General
         Information)   25a2a1

         was not aware of the capability   25a2a2

         was aware of it but don't know how to use it   25a2a3

         no need for the capability   25a2a4

         too hard to use   25a2a5

         other   25a2a6

If yes, which subprograms do you use? Please list and describe
how you use each and for what purposes / types of tasks: 25b

   Were these generally easy or hard to learn to use?   25b1

Evaluation Questionnaire

      very easy..1..2..3..4..5..very hard   25b1a

   How frequently do you use each of the above?   25b2

Do you have any additional comments you would like to make
regarding the pros and cons of the useroptions, your usage, its
impacts, or suggestions for change?   25c

Evaluation Questionnaire

(J33780) 30-OCT-75 13:09;;;;   Title: Author(s): Gwen C, Edwards/GCE;
Distribution: /MIKE([ACTION]) ; Sub-Collections: NIC; Clerk: GCE;
Origin: < GEDWARDS, QUESTIONNAIRE.NLS;1, >, 25-OCT-75 14:10 GCE
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Data Project Directive ....

31 October 1975

####;

Draft NSW DPD

1. PURPOSE

This Data Project Directive is for the purpose of providing the
authority for continued AFDAA participation in the development of the
National Software Works (NSW) and its subsequent transition and
installation as an operational system.

2. BACKGROUND.

Software production in the DoD is estimated to cost over $3 Billion
per year, and dominates the schedule of development of almost all
computer systems. Yet software production remains a loosely
controlled manual process, with little automated assistance. There
are numerous reasons for this   state of affairs, but probably the
most important is the fact that tools which can materially aid
programmers, analysts and their managers are inherently expensive to
develop, and typically require computers much larger than those
required to run finished programs. Since most programmers are
constrained to use the same computer for both development and
operations, only the simplest and widespread tools are developed for
each computer. For these same reasons, new tool development is
inhibited during system development.

In the Summer of 1973, the Defense Advanced Research Projects
Agency(ARPA) organized discussions among a number of professionals
from industry, the Services and universities. The general notion
emerged of a software factory implemented on a computer network, with

a coherent collection of tools which would expand and become more
powerful over time. During the Fall 1973, all three Services were
presented with the National Software Works idea. The strongest
interest was expressed by the Air Force Data Automation Agency. The
Army Computer Systems Command also assigned an officer to participate
in NSW planning sessions.

AFDAA tasked two of its components, the Air Force Data Services
Center (AFDSC) and the Air Force Data Systems Design Center (AFDSDC),
to participate in the project. AFDSDC is located at Gunter AFS,
Alabama and is responsible for developing and maintaining standard
data systems which run at over 130 AF bases throughout the world.
AFDSC is located in the Pentagon, and supports the Headquarters Air
Force and the Office of the Secretary of Defense. (The third
organization within AFDAA, the Federal ADPE Simulation Center in
Springfield, Virginia, is not currently participating.)

The first meeting of the NSW Steering Committee was held in October
1973, and was attended by representatives from ARPA, the U. S Army
Computer Systems Command, the Air Force Data Services Center, The Air
Force Data Systems Design Center, Information Sciences, Incorporated,
and Massachusetts Computer Associates.

Further discussions with the Services in the Fall and Winter of
1973-74 refined the concept, and led ARPA to form a joint program
with the Air Force Data Automation Agency(AFDAA) to implement the

first version of a distributed software factory, to be called the
National Software Works (NSW). Air Force Systems Command (AFSC)
joined the project in the Summer of 1974 through its computer science
research organization at Rome Air Development Center. The National
Software Works can potentially provide for DOD-wide utilization of
capabilities which otherwise will be created ad hoc for each new
software development program, or worse, not be available at all.

3. PROJECT JUSTIFICATION

Demands for software production are increasing in volume and
complexity, but progress in software technology has been slow. The
demands have clearly outstripped the state-of-the-art, with very
costly results. Cost overruns on software development projects are
legendary. Software is seldom delivered on time. There is much
waste in programming and computing, resulting from poor matching of
software and hardware. Incompatibility between computers results in
costly reprogramming or an inability to take advantage of the reduced
computing costs of new hardware. The maintenance costs for old
software products may be an order of magnitude larger than production
cost, due to poor original design and production.

The rapidly decreasing costs of computer power resulting from new
technological advances and the rapid growth in computer networks is
bringing about a corresponding expansion in the population of
computer users and a large increase in the variety of applications.

The threshold of economic feasibility is dropping for many systems, and awareness of how to employ computations is spreading to many sectors where computing is not a present activity. This will result not only in more computer usage but also in the need for much more software.

Major changes are also occurring in the character of computing. Batch-mode processing currently dominates computing, but there is a strong trend toward on-line computing of ever-increasing scale. Requirements for complex real-time processing in such areas as tactical systems are also growing. The present software art is poorly matched to the current methods and levels of computation, and as these modes grow in importance, software costs will escalate. The "learning" costs incurred as the art strives to meet new kinds of demands will be high indeed.

As computing becomes more widespread, the problem of tracking users' requirements will become acute. Keeping up with changing requirements may already be the biggest source of DoD software costs, not only in the maintenance phase, but also during the development phase. In the future, these costs will increase as more DoD functions are partially or completely automated.

The structure inherent in the NSW, a common communications media, creates a potential for an extremely efficient project management and control system. The project management system contained in the new

USAF ADP Software Project Manual (AFM   ) is readily adaptable to
an on-line system.

The tools used to develop software do not reflect software's relative
importance in determining the cost, reliability, and delivery
schedule of the total system. In most billion dollar industries, a
substantial investment is accumulated in supportive tools. The
development of such tools is difficult for labor intensive activities
like software production, where each product is somewhat unique; but
the real barrier to the development of adequate tools to support
software production has been the requirement that the tools be
reimplemented for each new kind of hardware. Converting development
tools to run on different hardware is usually more difficult than
converting an applications system. Since a prime use of software
tools is to shield the applications programmers from the details of
the computer hardware, the logic of the tool must embody specific
knowledge of the hardware characteristics if the results are to be
efficient. In the face of conversion costs, some valuable tools have
been lost. For example, there were satisfactory solutions to the
problems of round-off, overflow, and underflow in numerical
computations for the IBM 7094. That was 1966, but the problems are
still recurring in newer, and in theory more sophisticated, computer
systems.

For planning purposes, the Air Force uses six years as the economic
life of computer hardware. That means that almost all applications

systems development must be completed in the first year or two after
a system is installed if the development costs are to be recovered.
Tools which are developed after the hardware is delivered will also
come after the programming staff has finally become accustomed to the
new system and developed standard procedures for using it. Since new
tools will be completed too late to help with the bulk of the
applications systems, and constant retraining is something
operational organizations can ill afford in any case, there is little
incentive for people outside of the software R&D community to build
tools.

A related problem is the fact that machines are usually sized for
their production requirements, not their development ones. Hence,
they typically do not contain enough mass storage for the files that
would be required in an on-line environment, nor enough memory to
support both the code being developed and the tools used during that
development. Additionally, access to the system is limited by the
priorities of the production work load. A little recognized fact is
that the tradeoff between manhours and machine resources is vastly
different during development than during production. The CCIP-85
study has shown that development costs increase exponentially as
the machine approaches saturation.

Despite these problems, the inventory of support software has been
gradually expanding. Among the most widely used software tools are
compilers, operating systems, time-sharing executives, file systems,

program librarians, and interactive editors, Virtually all multi-programming operating systems have attempted to create a suitable programming environment by providing a set of tools. Some merely provide a library from which tools can be selected one at a time by the programmer. Others, like Multics, CP-67, VS-370, and TENEX, have provided an on-line environment for program building and debugging.

These systems have not been as productive as they could have been, because there are at present no interfacing standards which assure that tools can be used together effectively. Non-integrated, tool-at-a-time operation places too great a load on the programmer to specify exactly what operations are to occur. This problem is particularly acute since tools often have command language idiosyncracies. On the other hand, if the tools supporting a programming language are tightly integrated, then it is at present impossible to access them from other languages. For example, the APL environment is completely isolated from the rest of its host IBM 360 or 370. Thus, tools may have to be duplicated for each language supported on a hardware system, as well as for all the different kinds of hardware systems.

The costs of both processing and on-line storage are dropping rapidly, so it will soon be feasible to have all programmers working on-line. Experiments like the Programmer's Interface have shown that many software tools are language independent or only slightly

language dependent. Experiments using the ARPANET have shown that programs running in several machines can cooperate and appear to the user as a single system. Such cooperation is possible even if the host machines were built by different vendors and have significantly different architectures and operating systems. Finally, there are several examples of large time-sharing systems being used to support development environments for other kinds of hardware, in particular mini-computers. Thus there is strong evidence to suggest that tools running on a diverse collection of computers can be used together effectively to develop software for a variety of target machines, using a variety of languages. The key is the definition of appropriate interfacing standards. The National Software Works will provide those standards.

4. OBJECTIVES. The objectives of the DPD are:

a. Develop a formal chain of authority for AFDAA participation in development of the NSW and its transition to an operational environment.

b. Establish an official NSW Project Management Office at the AFDSDC.

c. Establish clear fiscal channels for funding the AFDAA portion of the NSW, and to coordinate that funding with other NSW participants.

d. Provide basis for interdepartmental transfer of funds.

5. PARTICIPANTS AND IMPLEMENTING ACTIVITIES.

a. HQ USAF/KRA.

(1) Provide Air Staff Coordination point for the NSW Project.

(2) Provide tasking of AF organizations outside AFDAA for the support of the NSW project, to include procurement, planning, and inter-DOD Agency interfacing of the project.

(3) Provide overall policy guidance in meeting stated objectives.

b. HQ AFDAA.

(1) Provide funding support and policy guidance as required.

c. HQ AFDSDC.

(1) Provide initial implementation site for NSW.

(2) Perform NSW Project Management functions as outlined in Attachment 1.

(3) Provide Chairman of the NSW Steering Committee.

d. HQ AFDSC.

(1) Provide representation on NSW Steering Committee.

(2) Plan for implementation of the NSW at AFDSC.

e. RADC/IF.

(1) Develop procurement plan for acquisition and installation of NSW tools as described in attachment 2.

(2) Negotiate terms and conditions of continuation contracts, as required.

(3) Act as Administrative Contracting Officer for NSW.

f. Participating Contractors. See Attachment 3.

6. PROJECT LOCATIONS.

a. Primary Policy Interest - HQ USAF/KRA.

b. Primary Development Interest -- Advanced Research Projects Agency, Information Processing Technology Division.

c. Primary User Interest - HQ AFDSDC/SYO.

d. Collateral User Interest - HQ AFDSC/XM.

e. Primary Procurement Activity - HQ RADC/IF>

f. Participating Contractors - See Attachment 3.

7. CRITERIA AND TECHNICAL REQUIREMENTS.

a. Procedural Constraints. The AFDAA represents USAF in the NSW, which is itself an inter-departmental DOD development project, under the sponsorship of the Defense Advanced Research Projects Agency. The AFDAA is operating as the USAF agent in transitioning the NSW

from a purely research and development environment to an operational system. In this capacity, previous AFDAA participation was authorized under the Memorandum of Understanding (see attachment 4) which provided for joint funding of the project. Past funding has been handled through the process of Military Inter-Departmental Purchase Requests (MIPR) in which funds were transferred from AFDAA to RADC, and then disbursed. New procedures must be developed for the purchase of equipment and services that more closely conform to the normal procurement practices of the Air Force, to provide adequate audit trails, performance periods, warranties, maintenance agreements, and the like.

b. Interface with other ADPS. NSW will provide new and expanded means of creating applications software for use on both the Base Level B3500/B4700 and U1050 systems, hence it will interface at some point with all base level systems. Similarly, NSW is anticipated to provide new capabilities for building systems on the H6000. No change in existing base level or MAJCOM systems is anticipated as a result of the NSW project, however.

c. Security Requirements. All systems using the NSW must be unclassified.

d. ADPE Requirements. A time phased ADPE acquisition and implementation plan will be developed and incorporated in the Data

Project Plan for NSW. Most ADPE is anticipated to be of the terminal or documentation entry/editting variety.

e. Communications Requirements. Communications requirements external to the AFDAA (e.g., external to Gunter AFS and the Pentagon) are provided by the Defense Communications Agency (DCA) in their role as manager of the ARPANET. Internal communications requirements will be processed in accordance with the general plan that will be developed and published as part of the NSW DPP.

f. Software Requirements. Software to support the NSW is being developed currently by various contractors, as detailed in attachment 3. Additional tools will be developed, acquired, and installed under the provisions of attachment 2, Plan for Acquisition and Installation of Tools, as exercised by RADC.

8. Financial/Resource Considerations.

a. Funding. As described above, the NSW is jointly funded by ARPA, RADC, and AFDAA. The percentages of the funding provided by each is 49% from ARPA, 23% from RADC, and 28% from AFDAA for expenditures through 30 September 1975. Breakout of funding programs is as shown below.

	FY74-75	FY76	FY77	TOTAL
AFDAA	$1,212	625	625	2,462

ARPA	1,014	1,521	1,715	4,250
RADC	455	760	760	1,975
TOTALS	$2,681	2,906	3,100	$8,687

Future funding by the AFDAA for years beyond FY77 is contingent upon approval of thei DPD, as the AFDAA funds are for Operations and Maintenance, and must be used for the O&M of the NSW. Evaluation of the initial NSW package in the November 1975 Time-frame and the subsequent iterations in the 3rd and 4th quarters of FY76 will determine the level of AFDAA committment beyond 1 July 1975.

b. Manpower. AFDAA manpower expenditures for the design, implementation and transition of the NSW, to include the manning necessary for the operation of the Project Management Office at AFDSDC is expected to be in excess of 15 man-years through FY77.

9. Other Considerations.

a. NSW Development Status. Unlike most AFDAA projects, the NSW has been somewhat unique. High level AFDAA interest was generated at the project's inception, accompanied by relatively high funding levels. Traditional USAF Data Automation has been primarily "Blue Suit" with relatively low funding levels in R&D or contract services categories. Personnel costs, since they are not reflected in the O&M funds, tend to be relatively obscure, if not invisible. NSW has been a predominately R&D project from its inception, and even through FY76,

AFDAA funding has been from the O&M budget however, with those funds
being used to purchase computer time, contractual services, and EDPE
maintenance. The only operational use evident in the NSW is the use
of the ON-Line System (NLS) for entering, editting, formatting, and
publishing documentation. Foremost among the documentation efforts
have been the rewrite of AFM 66-1, and the automation of AFM's 85-652
and 171-652. Additional users are active at both AFDSDC and AFDSC,
including STALOG Management, BASE-TOPS DPP, and the DIREPS for base
level systems.

b. The involvement of multiple DOD agencies in developing NSW
creates additional management burdens. Potential users of the NSW
include all services and separate DOD agencies. This factor must be
kept in mind when planning for the final NSW configuration, but it
should not in any way restrict or inhibit the NSW design to the
detriment of the AFDAA.

10, MILESTONES. The milestones contained in attachment 5 are presented for planning purposes.

ATTACHMENT 1

Introduction

At the 8 April 1975 NSW Steering Committee meeting a plan for
managing the NSW for the next three years was accepted. This plan
parcels responsibilities to each of the three NSW funding groups,
ARPA, AFDAA, and RADC, in order to smoothly coordinate the
multiple activities required to make the NSW a viable system.
These activities include system integration of extensive
software/hardware deliverables from multiple contractors,
acquisition and integration of tools for the expected software
development centers, operation of the NSW, and the conduct of
experiments with users to determine software productivity
enhancements. A Project Management Office will monitor these
activities, analyzing and reducing information to be presented to
the NSW Steering Committee for long range planning, and to provide
the day to day management necessary. The following offices will
be established to accomplish this organization.

1. PROJECT MANAGEMENT OFFICE - AFDSDC

The NSW Steering Committee is a body which of necessity can
meet only only periodically, composed of personnel who have
other responsibilities both within and external to the project.
There is, however a recognized need for a full time extension
of the Steering Committee, to perform the very necessary task

of providing policy guidance and overall project management
when the Steering Committee is not in session. Responsibilities
of this full time representative of the Committee will include
providing policy guidance and interpretation to all phases of
the effort, managing the financial and budgetary aspects of the
project, coordinating and directing the efforts of the various
Offices and Contractors, and providing a central locus for all
questions from Management and external organizations pertaining
to every aspects of the project. The Project Management Officer
will be the individual tasked with these responsibilities.

The PMO will be provided by AFDSDC, and will also serve as the
Chief of the System Integration Office (to be discussed later).
He will be a field-grade officer (or civilian equivalent) and
will draw upon the resources of the System Integration Office
for assistance as required. His areas of responsibility
include:

Steering Committee Representative

Between meetings of the Steering Committee, the PMO will be
the Committee's direct representative, empowered to make
policy decisions and direct the efforts of Contractors and
Offices. All such actions will be documented and distributed
for information to the individual members of the Steering
Committee. When possible, the PMO will attempt to coordinate

any major decisions with the Steering Committee members prior to releasing the decision.

The PMO will be responsible for researching, documenting and preparing proposed positions for Steering Committee approval on issues of major policy importance. In cases where differences of opinion exist among various project personnel/organizations, the PMO will be responsible for collecting and summarizing position papers representing all viewpoints.

The PMO will select, with Steering Committee concurrence, an NSW Measurements and Evaluation Office and/or contractor(s), and direct such efforts as are necessary to evaluate and improve the cost effectiveness of the total system.

Financial Management

The PMO will be responsible for the preparation and maintenance of the Project Budgets, for the tracking of expendatures, and for highlighting opportunities which require additional or diverted funding. The PMO will review budgets and plans of related projects for opportunities for joint funding, and to insure neither "gaps" or "overlaps" exist. Such project financial information will be distributed by the PMO as directed by the Steering Committee.

Coordination and Direction of Project Efforts

The PMO will coordinate and direct the work of all other
Project Offices and Contractors within the guidelines of the
policies directed by the Steering Committee and Commanders
of the participating Organizations. He will be responsible
for determining priorities for resources, when necessary, to
best meet Total Project goals.

Management and External Interface

The PMO will maintain overall project visibility and answer
(or task the appropriate individual(s) to answer) all
questions pertaining to the project, both from the
management of the participating Organizations, and from
external agencies. The PMO will actively seek out other Air
Force and DOD projects which could be useful to the NSW
effort, or which should be aware of the the goals and
progress of the NSW.

3. SYSTEM INTEGRATION OFFICE - AFDSDC

The Design Center will be the largest initial user of the NSW.
Therefore, System Integration office will be organized and
staffed by AFDSDC/SYO, and located at Gunter AFS, The three to
four man full-time staff will be responsible for the following
areas:

Technical management and review of system evolution

Prepare and/or compile concept documentation for PMO and
Contractors.

Review and evaluate contractor-prepared detailed product
specifications to insure operational requirements will be
met. Propose changes as appropriate.

Coordinate contractor efforts; facilitate and monitor
inter-contractor communication.

Maintain close contact with Technical Coordination
contractor. Keep complete project milestone projections and
history files. Monitor completion of milestones, both with
respect to date completed and valid delivery of systems
which meet product specifications. Coordinate/prepare
proposals for PMO to minimize impact of any projected
slippages.

Arrange and support Conceptual and Design reviews by
Steering Committee, Advisory group, and/or selected external
agencies at appropriate points in development of NSW total
system, and of key component subsystems.

Document and distribute results of all reviews,
complaints/suggestions for technical improvements, and other
inputs to conceptional/technical model of NSW.

Explore and propose extensions to current design concepts to improve NSW's user interface, cost effectiveness, efficiency, flexibility, generality and/or reliability in the operational environments of current and projected users.

Capture best versions of source and object code, and procedures for loading and executing same, prior to end of contractual periods (to insure continuity of project).

Project Information

Prepare and maintain briefings (to be presented as directed by PMO) for potential NSW participants and users.

Prepare, maintain, and distribute "Public relations" type documentation on project.

Answer inquiries about conceptual and planning aspects on NSW from external organizations.

Answer scheduling and integration inquiries from PMO.

Configuration Selection

Prepare (or supervise preparation of) technical and policy evaluations of distributed vs. regionalized vs. centralized location of Tool Bearing Hosts.

Prepare (or supervise preparation of) RFP and/or sole-source

hardware specifications for Framework computers, Frontend computers, standard terminal configurations, any other large scale hardware procurements required to implement or expand production system.

Prepare, update, and distribute planning guidelines for configuration requirements to support different classes and levels of work within NSW.

Prepare configuration requirements for AFDSDC projected expansion plans.   1

Provide assistance to AFDSC, RADC in preparing configuration plans to meet workload requirements.   1

Assist potential users in developing configuration requirements.   1

Release Control and Acceptance Testing.

Develop procedures for testing/verifying new versions of Framework and basic support tools prior to release for general usage.

Conduct pre-release Environmental System Tests of new releases of Framework, basic support tools. Report results to Steering Committee.

System Documentation.

Develop requirements and standards for system and user
documentation, disseminate as appropriate.

Maintain a complete and up-to-date library of system and
user documentation.

Monitor Contractors to insure documentation produced is
consistent, complete, and in accordance with contract
requirements and standards.

ATTACHMENT 2

2. TOOL SELECTION, ACQUISITION, AND INTEGRATION OFFICE - RADC

Introduction

The National Software Works is an environment which consists of
the set of core functions including the Works Manager and
Front-end, and a set of tools. The Works Manager and Front-end
provide a consistent file system and user interface to a
distributed set of software programing tools which aid the user
in the various stages of computer program development,
debugging, documentation, and maintenance.

As in other industries, the productivity of the programer in a
software factory is related to the sophistication of his "tool
kit". It is current practice for programing shops to build up
a set of tools matched to the needs of that set of programers.
However, because of limitations within the local computer
facility with regard to size and budgetary constraints, it is
often the case that tool kits are not adequate to meet new
software development project requirements. For example, the
development of a new avionics computer requires a new set of
assemblers, loaders, compilers, and debuggers.

The NSW will not obviate the requirement to develop these sets
of tools required to support software development. Rather, it

is anticipated that a tool technology transfer can occur among

projects through the use of a network based tool repository. A

more global view of tool development requirements will result

in centers of expertise which assume the responsibility of tool

development for classes of tools. For example, computer

language control centers will emerge which provide uniform

compiler front-ends with mechanisms for producing code

generation back-ends for different machines. A user request

for a compiler for a specific language would result in a

duplication of the compiler front end and an implementation of

the code generation portion of the compiler, with the compiler

running as an NSW tool on a different machine.

Within this context of the requirement for NSW tools to support

programing development, RADC has been charged with the

responsibility for the selection, acquisition, and integration

of tools within the National Software Works environment. The

following are the responsibilities associated with this task.

Responsibilities

Software Development Tool Index

An index of available software development tools will be

compiled which will eventually represent the sum total of

applicable tools owned by contractors and research centers.

Characteristics of each tool such as its host, its

programing language, its function, file input/output
requirements, limitations, and cost of execution will be
outlined. Requests from users concerning specific tool
existence can be handled by reference to the tool index
which will eventually be on-line to NSW users. Selected
tools can then be procured, modified, and installed in an
appropriate TBH for the NSW user. An index of NSW tools
will also be maintained. Specific classes of tools include
the following:

Language processors- compilers, preprocessors   1

Debuggers   1

Management- programing support libraries   1

Measurement   1

Documentation   1

Design Aids- simulators   1

NSW Tool Installation

RADC will be responsible for publishing and maintaining tool
installation guidelines which specify requirements for
converting ordinary tools to NSW tools. Initially, these
guidelines will originate from the major contractors of the
NSW core software. Technical expertise on tool installation

that is gained locally as tools for RADC TBH's are
integrated within the NSW will be offered to other tool
installers. RADC will offer specific aid to tool installers
through in-house efforts or by managing the procurement of
services for tool integration.

As each new tool is installed, it will be validated through
this office to ensure conformance to an established set of
standards which reflect proper interfaces to FE, WM, and the
TBH.

Tool Kit Selection

It is anticipated that NSW users will be grouped in areas of
programing activity. Each group will require its own
programing environment and tool kit which is related to the
type of activity of the site. For example, programers of
communications software may have a different tool kit then
ones writing base level COBOL software. There will also be
overlapping tools such as editers used by both groups.

The first cluster of programers will emerge at the Data
Systems Design Center where an estimated 700 programers will
be on-line to the NSW within six years. A second cluster
will emerge at the Data Services Center. As the advantages
of using the NSW become apparent to the programer community,

it is expected that many other groups will begin to use the
NSW.

It is the responsibility of RADC to interact with potential
NSW user groups and ascertain their particular programing
development tool requirements. Working closely with the
user groups in an advisary role, RADC will suggest those
tools which are most applicable and available.

RADC TBH Installation

As a research center in the development of software tools,
RADC has a vested interest in becoming an active member of
the NSW community through the installation of our computers
as tool bearing hosts. Currently, it is planned to augment
our MULTICS and GCOS computer systems to become TBH's and
install a subset of our existing tools in the NSW
environment to conduct experiments. Technical expertise
will be gained through such installation which will reflect
in a growing knowledge of general tool integration and will
aid in closing the loop in our role as tool installation
advisors.

The tools which RADC will provide will be in support of a
number of experiment which are currently being planned in
the following areas which have been detailed earlier in the
Plan.

Programer Productivity Measurements

It has long been desired to determine the effect on
programing efficiency of a proper and adequate set of tools
and a discipline for programing. A number of experiments
are being planned which attempt to measure this process and
answer many of the questions that have been posed. The
effect of structured programing techniques with programer
support libraries on production efficiency, readibility, and
maintainability of produced software will be determined.
The NSW and its tool environment can provide an ideal
environment for conducting such tests.

Language Control Facility

An attempt will be made to determine the effect of
networking on the problem of maintaining computer languages.
A centralized facility with tools for compiler
specification, generation, and maintenance of compilers
which are available to a wide range of users should tend to
stabilize those languages. Changes due to language
evolution will be made centrally resulting in fewer
dialects.

Resource Control

RADC will act as a broker, in planning for and procuring

computer resources, training and documentation, They will

monitor resource useage via the WM and issue the necessary

invoices, and perform the contractual paperwork necessary to

meet invoices from TBH and tool suppliers.

ATTACHMENT 3

LIST OF PARTICIPATING CONTRACTORS

: :

CONTRACTOR   FUNCTION

==========   ========

Garliardi Systems Group, Ins   Management (Consultants

Deerfield, New Hampshire 03037

Massachusetts Computer Associates   1. Tech Coordinator

Wakefield, MA 01880   2Software Production

                                    a. NSW Works Manager

                                    b. NSW Integration in

TENEX

                                    c. B4700 RJE System

                                    d. Project Management

Tools

                                    e. GCOS RJE System

f. Hardening & Scaling

of NSW

g. Multi-Host Protocols

h. NSW File Movement

i. B4700 Batch via

ARPANET

j. PDP-11/B4700 Foreman

Stanford Research Institute
Development

1. Software Tool

a. NLS

b. Document Publication

2. Operating System Maint

(ELF)

Applied Data Research, Inc.

System Integration (PDP-11)

Route 206 Center

Princton, NJ 08540

Information Sciences Institute   UNIVAC 1050-II Emulator

University of Southern California

4676 Admiralty Way

Marina del Rey, CA 90291

Computer Corporation of America   Data Computer

575 Technology Square

Cambridge, MA 02139

Bolt, Beranek and Newman   1. ARPANET National Control
Center

50 Moulton Street   2. Provide Host PDP-10 TENEX

Cambridge, MA 02138   3. TIP/IMP Fabrication.

Science Applications, Inc   B4700 Network Protocol

IN

ATTACHMENT 5

I. INITIAL OPERATING CAPABILITY

A. Integration of initial components in a single TENEX (available
for limited use and testing by the Air Force, with the
understanding that problems and lapses of service will be
encountered).

Estimated Date of Completion...............................15 NOV 75

Remarks:

1. Includes Front-End, Works Manager, Encapsulator for TENEX
tools, Interactive Batch Specifier system, Works Manager
Operator, ability to create, edit and format COBOL programs and
submit them, via tape, to the Gunter B4700.

B. NLS Editor and Output Processor installed as NSW tools

Estimated Date of Completion -- NLS Editor................1 NOV
75

Estimated Date of Completion -- Output Processor..........1 JAN
76

C. B4700 RJE system

Estimated Date of Completion..............................1 JAN
76

D, FE in PDP-11.

Estimated Date of Completion.................................1 JAN
76

Remarks:

1. This milestone replaces the previous milestone I.D. The
replacement is made because it has definitely been decided
to implement a PDP-11 FE, and such implementation is a step
toward the previous milestone.

E, At least one contractor starts to use NSW for development
work.

Estimated Date of Completion.................................15 JAN
76

F, 360 RJE system.

Estimated Date of Completion.................................1 NOV
75

G, First Multics tool (QEDX).

Estimated Date of Completion.................................15 JAN
76

H, Initial project management tools.

Estimated Date of Completion.................................15 NOV
75

I. GCOS RJE system.

Estimated Date of
Completion.....................................

J. Plan for hardening and scaling of the NSW.

Estimated Date of Completion.............................15 JAN
76

K. NSW system software ready for regular operational use.

Estimated Date of Completion -- First release..............1 MAY
76

Remarks:

1. The first system to be released will be externally firm
(although incomplete), but will not be internally structured
in final form.

II. PROTOCOLS

A. Release of preliminary documentation on multi-host
interprocess communication protocols (Version 3 of NSW
protocols).

Estimated Date of Completion........................15 JAN 76

B. Release of documentation on NSW file movement (formats, conversions).

Estimated Date of Completion........................15 JAN 76

C. TENEX Foreman integrated with Works Manager and a general Foreman specification abstracted from it.

Estimated Date of Completion........................1 JAN 76

Remarks:

1. This involves the file system aspects of the Foreman component, and does not involve TBH Communications facilities. The communications facilities supplied to NSW processes may or may not be supported by what is known as the Foreman component. Such functional decomposition is still open for discussion, and the result of these decisions may influence the delivery date of an initial completed Foreman for TENEX.

D. NSW protocols finalized and available for unlimited distribution.

Estimated Date of Completion........................1 MAY 76

4

III. B4700

A. Messages passed from Gunter PDP-11 to B4700 via BBLC.

Estimated Date of Completion............................1 NOV 75

B. AFDSDC B4700 on the ARPANET and able to accept batch jobs under control of the Works Manager Operator.

Estimated Date of Completion............................1 JAN 76

C. PDP-11/B4700 Foreman, including control of interactive B4700 jobs.

Estimated Date of Completion............................1 MAY 76

IV. PROJECT MANAGEMENT TOOLS

A. Draft documentation.

Estimated Date of Completion............................1 JAN 76

B. Initial implementation.

Estimated Date of Completion...........................31 MAR 76

C. Full implementation.

Estimated Date of Completion...........................31 DEC 76

V. NLS (Operational capabilities, for the most part separate from the NSW in the near term and therefore managed by the Air Force, not COMPASS).

A. Maintenance of files containing mixed text and graphics.

Estimated Date of Completion -- Now available in NLS 8.5.

B. Photo-ready hardcopy and microfiche automatically generated in Air Force formats.

Estimated Date of Completion - No date can be given until the Air Force agrees on document format standards.   1

C. Publication of files containing mixed text and graphics.

Estimated Date of Completion...........................1 JAN 76

(J33781) 30-OCT-75 13:56;;;;   Title: Author(s): Kenneth P, Hearn/KPH;
Distribution: /LAC([ACTION]) ; Sub-Collections: NIC; Clerk: KPH;
Origin: < HEARN, WORK,NLS;22, >, 30-OCT-75 08:56 KPH ;;;;

33781 Distribution
   Lawrence A, Crain,

QUESTIONS

TIME AVAILABLE BASIS 1

QUESTIONS

(J33782)   30-OCT-75 15:40;;;;   Title: Author(s): David B, Nelson/DBN;
Distribution: /MEJ([ACTION]) ; Sub-Collections: NIC; Clerk: DBN;

33782 Distribution
   Mil E. Jernigan,

QUESTION1

WHERE DO I FIND OUT HOW TO INCREASE MY QUOTA ON THE DATA COMPUTER?   1

QUESTION1

(J33783)   30-OCT-75 15:44;;;;   Title: Author(s): David B, Nelson/DBN;
Distribution: /MEJ([ACTION]) ; Sub-Collections: NIC; Clerk: DBN;

33783 Distribution
Mil E, Jernigan,

QUESTION2

WHAT IS MY FIRST SYEP TO FIND OUT WHAT PROGRAMS EXIST ON PDP10'S ON
THE NET? THANKS IN ADVANCE DAVE.   1

QUESTION2

(J33784)   30-OCT-75 15:46;;;;   Title: Author(s): David B, Nelson/DBN;
Distribution: /MEJ([ACTION]) ; Sub-Collections: NIC; Clerk: DBN;

33784 Distribution
  Mil E, Jernigan,

Backspace-Delete algorithms for DEX (cf JMB -- 26765,)

Implementation for the three backspace-delete operations in question should be: 1

    Backspace Character: < CH; 1a

    Backspace Visible: < $-PT $PT; [Change entity term from old-DEX "word" to "visible"] 1b

    Backspace Line: < $1(EOL) $-EOL; 1c

Note: In future DEX systems, the whole range of address-expression operations will be available to the user, 2

    One particular operation that I'd personally like to see implemented in a near-future improved DEX is: 2a

        Backspace Invisible: < $PT $-PT; 2a1

In each case, deletion occurs back to the next preceding position that is e.g. a "front of a Visible entity" (or Line entity, or Character entity), 3

This brings the backspace-delete conventions for DEX into being consistent with those in NLS LIT entry, Our intent is to make the text-addressing and back-deleting operations throughout DEX and NLS to be consistent, 4

The user-concept approach that has been selected for this unification is as follows: 5

    Back-delete operations are to be identical with the negative address-expression elements with respect to how the control marker is pictured to be moved by them, So the Backspace-Character and Backspace-Visible operations should produce exactly the same effects as "-c" and "-v", 5a

    For any given type of text entity being used to express a backward or forward re-positioning of the control marker, the user is to conceive of there being little entity-front markers at the front of each occurrence of that type of entity in the text, Execution of a + or - repositioning operation moves the control marker in the specified direction to the next occurrence of one of those entity-front markers, 5b

    [NOTE: NLS address-expression implementation for backward movement is not now consistent with these, but it should be made consistent in a future update of NLS,] 5c

Backspace-Delete algorithms for DEX (cf JMB -- 26765,)

(J33785)   30-OCT-75 15:52;;;;   Title: Author(s): Douglas C,
Engelbart/DCE; Distribution: /JMB([ACTION]) HGL([ACTION]) JCN([
INFO-ONLY]) JHB([INFO-ONLY]) SGR([INFO-ONLY]) CHI([INFO-ONLY
]) JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DCE;

33785 Distribution
    Jeanne M, Beck, Harvey G, Lehtman, James C, Norton, James H, Bair,
    Susan Gail Roetter, Charles H, Irby, Jonathan B, Postel,

Regrets and a Warning

During the past several weeks, I have occasionally printed out
multiple (like two hundred) copies of files by mistake. I now know
why. I had received text files with large numerical extsions, for
example 174. Then I copied the file to ARCprinter, hitting a
carriage return after the new file name. Unknown to me, the Tenex
copy command added the numerical extension to the new file
automatically, hence the umpteen copies. I'm sorry for the
inconvenience my lack of knowledge has caused you.   1

Regrets and a Warning

(J33786)   30-OCT-75 17:27;;;;;   Title: Author(s): Raymond R,
Panko/RA3Y; Distribution: /SRI-ARC([ACTION]) ; Sub-Collections:
SRI-ARC; Clerk: RA3Y;

33786 Distribution
James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D.
Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey
C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W.
Watson, Don I. Andrews,
Bonny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken,
Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L.
Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L.
Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks,
Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan
Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C.
McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman,
Sandy L. Johnson, James H. Bair, Jeanne M. Leavitt, Rodney A.
Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael,
Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley, N. Dean
Meyer

Phone Log, 30 Oct 75: Phil Enslow, Georgia Tech

Professor Phillip Enslow
School of Information and Computer Sciences
Georgia Institute of Technology
Atlanta, Ga,   30332   1

I met Phil perhaps three years ago, when he was a Navy officer
assigned to the White House as chief of "Telecommunications something
or other", Then two years ago, when he was assigned to NATO in some
sort of technical liaison capacity, he was instrumental in the NATO
Advanced Study Institute on "Computer Communication Networks" held at
the University of Sussex, a week-long conference that I attended,
(The "Community paper" was republished in their proceedings --
12445,)   2

He now is at Georgia Tech, One of his current activities is to do a
bit of consulting with Ron Uhlig of AMC, who apparently has passed on
to Phil some bits and pieces of news about us.   3

The specific reason for his call pertained to the NSF OSIS Program
Solicitation, "Improved Dissemination and More Productive Use of
Scientific and Technical Information," NSF 75-23 (XDOC -- 32600,).   I
gather that he is especially interested in Category 8: Innovative
Communication Systems for Small Scientific Communities, He would
like to learn more about the state of our system and of the Utility
services, and he wondered if we were going to propose something under
Category 8 (I told him that we had submitted a proposal already under
Category 5),   4

    I told him that a) we hadn't decided about proposing under
    Category 8 (proposal due 2 Dec 75), and I also told him how we
    were trying to build a multi-participant community where the
    involvement of a university-based group using Utility services and
    experimenting or developing special aspects would be most welcome,   4a

I promised to send him a comprehensive bundle of information; he'll
look it over and perhaps call me back, He also mentioned that he
expected to be in this area in Feb 76, and would plan to drop by,   5

Documents sent: 6

    "A Research Center for Augmenting Human Intellect," D,C,
    Engelbart, FJCC Proceedings, 1968 (3954,)   6a

    "Coordinated Information Services for a Discipline- or
    Mission-Oriented Community," D, C, Engelbart, (12445,)   6b

    "The Augmented Knowldge Workshop," Engelbart, Watson and Norton,,
    NCC June 73 (14724,)   6c

Phone Log, 30 Oct 75: Phil Enslow, Georgia Tech

"Experimental Development of a Small Computer-Augmented
Information System," J,B, North, Dec 73 (21453,)   6d

"NLS-8 Command Summary" (24831,) 16 May 75 (plus a cue card --
25765,)   6e

"NLS-8 Glossary" (16 Jul 75)   6f

"Output Processor Users' Guide," 29 Jul 75 (32812,)   6g

"Window to the Office of the Future," SRI, Investment in Tomorrow,
No, 14, Winter 75   6h

"SRI-ARC Utility Services" (Lieberman, short blurb)   6i

"Listing of Client Organizations using the NLS system," as of Oct
75   6j

"The SRI-ARC Workshop Utility Service: What and Why" Norton, Sep
75 (26368,)   6k

Phone Log, 30 Oct 75: Phil Enslow, Georgia Tech

(J33787) 30-OCT-75 17:36;;;;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: /JML([ACTION] Jeanne: Please send copy
of this, plus the stack of documents) SRI-ARC([INFO-ONLY]) ;
Sub-Collections: SRI-ARC; Clerk: DCE;

33787 Distribution
Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Douglas C.
Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G.
Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys,
Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews,
Jeanne M. Leavitt, Bonny Mosher, Israel A. Torres, Jan H. Kremers,
Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy
Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A.
Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen,
Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation,
Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann
Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard,
Robert N. Lieberman, Sandy L. Johnson, James H. Bair, Jeanne M.
Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney,
Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler

Resource Notebook Has Lots of Information

Dave-
The Resource Notebook probably has most of the information you need,
The handiest way to approach is: In EXEC, type nic<CR>, then follow
instructions, The "bring" loads a new file, while the "show" shows
portions oof a file, If you will type b[ring] programs<CR>, I think
it will list a lost of programs at a lot of different sites,
providing Jake Feinler, who has the contract for keeping up the
Resource Notebook has that particular file online, By asking NIC
QUERY (which is the program you will be using) to "bring" computers,
you will see what kind of computers are where...suggest you use a TI
terminal so you can have the paper printout to refer to,

The program has full instructions in how to use it, Try it; it is a
neat little diddle you will find interesting. Have fun... Mil   1

Resource Notebook Has Lots of Information

(J33788)   30-OCT-75 17:44;;;;   Title: Author(s): Mil E, Jernigan/MEJ;
Distribution: /DBN([ACTION]) ; Sub-Collections: NIC; Clerk: MEJ;

33788 Distribution
    David B. Nelson,

Phone Log, 30 Oct 75: Ira Cotton of NBS

Cost estimate requested for putting NLS Backend on PDP10, TOPS10

Phone Log, 30 Oct 75: Ira Cotton of NBS

Ira has persisted in his interest in getting NLS running on a PDP-10 under DEC's TOPS 10 operating system. NBS's 10 has 192 K core, and 500 MegaBytes of disk (no drum). He would really like to have some time and dollar estimate for converting NLS to run on ther system, he'd like to propose that the Bureau invest thereto (would be like a capital-equipment buy from their point of view). He points out that they are teaching secretaries to use TECO, and that it would be a good community of potential NLS users to reach (he's right).   1

He understands that we are talking about a Backend running on TOPS10, and a PDP-11 Frontend. He himself doesn't know what's in the TOPS10 system, but he says that there is good talent available there to answer questions. (Perhaps the good talent could write the op-sys interface module if we proposed on the job?)   2

Note that he has been steadily using NLS7 at BBN, where NBS has maintained an account. He has 40 to 50 files, and has been working contentedly without any debugging or application support. NBS is beginning to crack down on the outside PDP-10 service buy, since they now have an inhouse PDP10, so he will probably lose his NLS access.   3

I told him that I would get him some rough answers within a week -- for the cost and time involved in such a transfer.   4

    Dick, would you please provide me with those numbers?   4a

Phone Log, 30 Oct 75: Ira Cotton of NBS

(J33789) 30-OCT-75 17:50;;;;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: /RWW([ACTION]) SRI-ARC([INFO-ONLY])
; Sub-Collections: SRI-ARC; Clerk: DCE;

33789 Distribution
    Kirk E. Kelley, N. Dean Meyer, James E. (Jim) White, Douglas C.
    Engelbart, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Harvey G.
    Lehtman, James C. Norton, Jeffrey C. Peters, Dirk H. Van Nouhuys,
    Kenneth E. (Ken) Victor, Richard W. Watson, Don I. Andrews,
    Richard W. Watson, Bonny Mosher, Israel A. Torres, Jan H. Kremers,
    Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy
    Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A.
    Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen,
    Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation,
    Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann
    Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard,
    Robert N. Lieberman, Sandy L. Johnson, James H. Bair, Jeanne M.
    Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney,
    Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler

Dick: We've talked before about assessing the time and costs of
putting NLS Backend on Tymshare'sPDP10 systems. I'd like now to have
a rough assessment made soon; would you please see if you can get a
dual assessment done, this one along with that for DECs TOPS10
(requested by Ira Cotton for NBS).

Jim: Put a stop to this if it seems bad timing from your point of
view. Seems to me that it would be worth having a preliminary
assessment before we have our next talk with TS.

Regards to both, Doug   1

Requesting rough estimate for putting NLS Backend on Tymshare PDP10s

(J33790)   30-OCT-75 18:00;;;;   Title: Author(s): Douglas C.
Engelbart/DCE; Distribution: /RWW([ACTION]) JCN([ACTION]) ;
Sub-Collections: SRI-ARC; Clerk: DCE;

33790 Distribution
    Richard W. Watson, James C. Norton,

kwac meeting topics (forwarded)

RMS2 30-OCT-75 06:54   33776

Location: (IJOURNAL, 33776, 1:w)
*****Note: [ACTION] *****

1

    Comments: After scanning the minutes of the last KWAC meeting in
    October, I have collected most of the suggestions that we felt
    needed some action. This is a first try to collect these topics
    and present them to ARC for futher discussion.   By adopting a
    more formal presentation of our views on the system it is hoped
    that we can obtain more concrete results than has been the rule in
    the past.

    Could you take some time out of you day to go over this Journal
    item and make any suggestions that you think would improve our
    presentation to ARC and therby help us to obtain some improvements
    in the system. Some areas that you are particulariry interested
    in may have been ommitted , so I would appreciate you comments and
    suggestions.

    Once the final document is agreeded upon then we will submit it to
    ARC and hope for the best.   1a

kwac meeting topics (forwarded)

(J33791)   30-OCT-75 18:32;;;;   Title: Author(s): E. S. VonGehren/ESV;
Distribution: /STEF([ACTION]) ; Sub-Collections: NIC; Clerk: ESV;

33791 Distribution
   Einar Stefferud,

rev, Feb 76

THE TNLS SECOND COURSE OUTLINE:
INTRODUCTION TO STRUCTURE AND VIEWING

ARC-ADG

19 NOV 75

Applications Development

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

INTRODUCTION TO TNLS

AKW = Augmented knowledge Workshop

PURPOSE OF SYSTEM: Augmentation of Knowledge Work

  GOAL: To provide computer based tools to accomplish all aspects of knowledge work with an emphasis on collaboration.

OVERVIEW of system

  NLS = oN Line System

  TNLS = Typewriter Version

  CAPABILITIES OF SYSTEM:

    Composing

    Editing

    Studying

      Structuring

      Browsing - viewing

    Printing

    Publishing

    Communicating -

      sending and receiving mail, messages, documents; teleconferencing; etc.

    Storing and retrieving -

      record keeping, library services, data bases, searching, etc.

    Calculating

1

Course Organization

NLS COURSE LEVEL:

NLS training is divided into five courses for ease of learning.
Each level corresponds to what can be covered at one time. The
things introduced at each level are determined by difficulty,
usefulness, complexity, and quantity (i.e., so that there is not
an excessive amount to cover at any one time).

Each level in the series of NLS courses contains most of the
commands from the previous level for review in addition to the
commands to be introduced (which are marked by an *).

BASIC TNLS
This is the first course level (basic) which covers those
commands necessary to enter, edit, and "mail" typewritten
information. It has a special structure and is published in the
Journal (see -- Journal, 33874,).

*INTRODUCTION TO TNLS STRUCTURE AND VIEWING
This is the second course which introduces NLS structure
(hierarchical) and special tools for viewing structured
information ("viewspecs").

NLS is divided under headings for the purposes of this course. The
commands under each heading can be used to perform the general
operation denoted by the heading, e.g., "printing" includes commands
that cause the system to print in various ways. Certain headings are
introduced in later courses.

COURSE HEADINGS:
1. GETTING TO NLS
2. STRUCTURE
3. PRINTING & VIEWSPECS
4. ADDRESSING
5. EDITING
6. COMMUNICATING
7. TROUBLE SHOOTING AND HELP

(2)Note: This course must be preceeded by
the Basic Course and sufficient time to
practice & become thoroughly familiar with
the Basic Course Material to be effective.

DEFINITIONS FOR THE COURSE OUTLINE

COMMANDS = You type some characters to tell the computer what to do.
The characters you type are represented by the uppercase letters in
each "command word"; the rest are lower case. ✗

<SP> = You type a space.

Uppercase words = You ~~type in~~ specify ✗ the appropriate information for that
command phrase, e.g., CONTENT.

✗
*TYPEIN ~~and CONTENT~~ = a string of characters from the keyboard,
ending with an OK, prompted by T:. [TYPEIN has a special form when a
FILENAME or Link or Ident is called for (You can tell from the noise ✗
words)].

missing!

ADDRESS: specify a location in an NLS file. End it with CR. For current location, just type
CR. When referring to Group or Text, 2 addresses are needed. (prompted by A:)
[ ] = Comments and suggestions will appear in brackets.

CONTROL MARKER (CM) = WHERE YOU ARE: Where the computer thinks you
are pointing to (to some character in some file); you may move it by
specifying an ADDRESS; this is where your command will be done.
Note: your address must be followed by an OK or a Carriage Return.

CTRL = hold down the control (CTRL) key WHILE typing the specified
character.

OK or CR = you type a Carriage Return. ~~OK: is the~~ prompted by OK: ✗

<esc> = the ESC or escape key on your terminal (sometimes labeled
"alt mode").

BASE C: = the TNLS ready signal. It means that you can type in an
editing or file handling command (like home base...).

SEND C: = the Sendmail subsystem ready signal. It means that you can
type in a Sendmail command.

*LEVEL-ADJUST: specifies level relative to addressed statement --
type any number of u's [for up], d's [for down] followed by an OK, or
just an OK for the same level, prompted by L:.

*VIEWSPECS: a string of one or more viewspec characters followed by
OK, prompted by V: [type just OK if no viewspecs are to be entered]

*STRING: Character or Word or Text, prompted by C:

*STRUCTURE: Statement or Branch or Group, prompted by C:

3

                    * INTRODUCTION TO TNLS STRUCTURE AND VIEWING

1. GETTING TO NLS

    THE TERMINAL AND USE:
        See the "Basic TNLS-8 Course" [You usually have to dial a
                                      telephone number and place the
                                      receiver in your terminal's
                                      cradle]

    ARPA NETWORK   [for a new connection where you dial in]

                    NETWORK CONNECTION:

        [I]   Type E [to get the Network's attention]

        [II] Type @ O <SP> 43 CR   [to open a connection to
                                     Office-1, Host 43; BBNB is 49]

        You now should be connected to TENEX and will receive the usual
        notice to that effect and the @ (the TENEX ready signal).

    TENEX

                        X   LOGIN PROCEDURE:
                      <SP>
        [III] Type LOG USERNAME <SP> PASSWORD <SP> CR
                         ∧ [SPACE fills in your account number
                      X ⤴ automatically; you're then ready to
        the last space   call NLS]
                          terminals
            *For some systems to accept lower case characters, it may be
            necessary to type the TENEX command:

                    NO RAISE CR

                        CALLING NLS:

        [IV] Type NLS CR   [it's not necessary to call NLS more
                                than once during one login session]
                         from NLS
        To Go to Tenex (as a subsystem):
        X from BASE or SEND C:
            Goto (subsystem) Tenex OK
            QUIT CR [to return to where you were]

* Other ways to get to Tenex from NLS

    *Quit Nls CR [to leave NLS]
    CONTINUE CR [to return to where you were]

To leave the system, logout in NLS:
    ⤶ from BASE ← only
    <SP> Logout OK [you type only the L of logout]

To close the network connection:

    @ C CR

2. ORGANIZATION OF THE SYSTEM

FILES & DIRECTORIES

Information in the origin ("parent") statement of a file:
The origin statement contains the file name, version number, the
date and time of last modification, the ident of the last person
to modify the file, and 4 semicolons. The statement should not be
edited. It is numbered 0, but no number will be printed.

File names

* Types of files [indicated by filename extensions]

* TXT = sequential file which can be copied into NLS
COPY = a temporary sequential file, usually a message
∨ NLS = an NLS file which you can load & redd in NLS
Load File:

Load File FILENAME OK [FILENAME WILL BE ECHOED]

User creation of files:

<SP>CReate File FILENAME OK

To see a list of all your files:

<SP>SHow Directory (of) OK OK OK

FILE STRUCTURE

STATEMENT: The basic element of structure in a file
          [each has a statement number]

*Relationship between statements:

*All statements: have a "source" (may be the Origin) and may
have statements as "substructure".

*STRUCTURES made up of statements:

BRANCH: a statement plus substructure (if any)
GROUP: set of contiguous branches with same source

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3. PRINTING: to see specified view of stored information

    [To see anything in TNLS you must print it]

    Printing on a terminal:

        Print File OK

        Print Rest OK

        Print Journal (mail) Ok

        \ [easy print, typing a \ prints the statement where you are]

        * LF [line feed prints the next statement regardless of level]

        * ^ [print back one statement regardless of level]

        * Print STRUCTURE (at) ADDRESS VIEWSPECS

    VIEWSPECS: to specify what you see, use the characters below when
                prompted with a V: and end with an OK.

        w = Default, all lines & levels (show all of the text)
           m/n = numbers on/off
           y/z = blank lines on/off

            [have instructor set these for your default]

        * To clip levels and lines, use lower case viewspecs including:
            a/b - show one level less/more
            c/d - show all levels/show first level
            e   - show referenced statement level
            g/h - show branch only/show all branches
            q/r - show one line less/more
            s/t - show all lines/show first lines only
            w/x - show all lines, all levels/show one line,
                  one level

        Capital Letter Viewspecs:
        * SIDS (Statement Identification Numbers)
            I/J - SIDS on instead of statement numbers/statement
                  numbers instead of SIDS (when mis on) ✓
                  [can be used in place of statement numbers in NLS]

            √ G/H - Numbers -- SIDS or statement numbers -- on Right / on Left
                        (when m is on)

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4. ADDRESSING

    Control Marker concept = where you are [travels left to right]

        Jump to a new address:
            Jump (to) Address ADDRESS VIEWSPECS OK

        * To tell where the Control Marker is:

            / slash command shows Control Marker context

            * . period command shows statement number and character
            number:
                                    i.e.   ✓
                            (you can give an ADDRESS in an editing command,)
            *   [Note that addressing can be combined with
                            editing, you do not have to move the
                            marker separately]←

    ADDRESSING WITHIN A FILE
        Use the following which will be referred to as IN-FILE-ADDRESS:

        STATEMENT NUMBER:
        Automatically assigned to a statement, but not included in it.

        CONTENT SEARCH: "TYPEIN"   [must be surrounded by quotes]
        where TYPEIN = the text to be searched for.

        * SID: Statement IDentifier: another number assigned to each
        statement, it's a permanent number (despite editing changes)
        [always beginning with a zero]

        * IN-FILE-ADDRESSes within one statement:

            *+e   skip to end (last character) of statement
                        [always use a plus sign]

            *+f   skip to front (first character) of statement
                        [always use a plus sign]

8

* ADDRESSING BY JUMPING
     [Note: Use the Jump command when you do not want the ~~keep-~~
     ~~STRUCTURE at the new location printed]~~ (too ambiguous) change/explain

     TO FIND A WORD OR STRING OF CHARACTERS (CONTENT) [no quotes]:

          * Jump (to) Word First ~~CONTENT~~ TYPE-IN VIEWSPECS OK

          * Jump (to) Word Next CONTENT VIEWSPECS OK

   Reverse   * Jump (to) Content First CONTENT VIEWSPECS OK
   order
   NO   * Jump (to) Content Next CONTENT VIEWSPECS OK
               [type a CTRL B for CONTENT to continue to
               search for the same thing] in response to RPT; ✓

     * TO JUMP BY STRUCTURE:

          * Jump (to) Origin ADDRESS VIEWSPECS OK

          * Jump (to) End (of Branch) ADDRESS VIEWSPECS OK

ADDRESSING BETWEEN FILES AND DIRECTORIES:

     * To address another file in your directory you need to add the
     FILENAME to the addresses within a file. To address a file in
     another user's directory, you need to add their DIRECTORY name as
     well as the filename. FILENAME and DIRECTORY must be followed by
     commas.
               [These may be used after A: in any command]

     * To address another file:

          * A: FILENAME,IN-FILE-ADDRESS OK

               * [If IN-FILE-ADDRESS is not specified it will be
                 statement 0]

     * To address another user's file:

          * A: DIRECTORY,FILENAME,IN-FILE-ADDRESS OK
                    [e.g.: Copy Branch (from) BAIR,JHB,1 OK (to) 3a OK]

9

LINKS: special forms of text that may be used for addressing
         and other purposes.

* Characteristics of Links:

   * -- it is text in a statement rather than typed in after
         the A:

   * -- must be surrounded by angle brackets < >
         (or parentheses)

   * -- may contain any logical Address

   * -- it may include viewspecs that will take effect at the
         address in the link   [Note: those are not the only
                                                  valid forms. -JMB]
   * -- ~~some valid forms are:~~
         ~~the following forms are valid:~~

      * <DIRECTORY,FILENAME,IN-FILE-ADDRESS:VIEWSPECS>

      * [without optional Viewspecs:]
         <DIRECTORY,FILENAME,IN-FILE-ADDRESS>

      * [or in current directory:]
         <FILENAME,IN-FILE-ADDRESS>

      * [or in current file:]
         <IN-FILE-ADDRESS>

         Note that the different fields default to the current
         value if not specified (the same as addresses).

   * -- may include things other than addresses and/or
         viewspecs [which will be covered in more advanced
                    courses]
                                that has been put in a statement
* To use a link, give the Address of the Statement that
contains the link and the letter l preceded by a period after
any A: , for example:

      * Jump (to) Address IN-FILE-ADDRESS .l OK

* TO GO BACK TO PREVIOUS FILES:

   * Jump (to) File Return OK ANSWER OK
         [~~type an~~ N for ANSWER - next filename
         in stack will be echoed; repeat for file before that
         Y for ANSWER selects that file]

            (remembers the last 10 files loaded in the
             present log in session)

10

5. EDITING

Syntax: VERB NOUN A: ADDRESS(ES) (L: LEVEL) (T: CONTENT) OK (OK? OK)

* STRING and STRUCTURE = "nouns":

  * STRING: [one of the following command words that
              refers to part of a statement]

    * Character

    * Word [note that the system readjusts spaces]

    * Text [two addresses necessary]

  * STRUCTURE: [one of the following command words that refers to
                one or more statements]

      Statement

    * Branch

    * Group [two addresses necessary]

EDITING COMMANDS = "verbs":

  INSERT

      Insert Statement (to follow) ADDRESS LEVEL-ADJUST CONTENT OK

      * The LEVEL-ADJUST determines the level of a statement at a new
      location -- it is one of the following ended by. an OK:

        Just an OK = same level

        * u [position up a level from referenced statement]

        * d [position down a level from referenced statement]

      * Insert STRING (to follow) ADDRESS CONTENT OK

      Continue to insert: CTRL E instead of OK puts you in the Enter
      statement mode. Type a CTRL X to get out.

DELETE

    TYPEIN

    Delete File ~~CONTENT~~ OK

    Delete STRUCTURE (at) ADDRESS OK

    * Delete STRING (at) ADDRESS OK

SUBSTITUTE

    Substitute STRING in STRUCTURE (at) ADDRESS CR
    (New STRING) T: TYPEIN CR
    (Old STRING) T: TYPEIN CR Finished? S/Y/N: Y [for yes]
    Substitutions made: Number

            [will replace the old STRING with new
            STRING every time it finds it in the
            STRUCTURE.]

MOVE

    Move STRUCTURE (from) ADDRESS (to follow) ADDRESS LEVEL-ADJUST
    OK

    *Move STRING (from) ADDRESS (to follow) ADDRESS OK

COPY

    Copy STRUCTURE (from) ADDRESS (to follow) ADDRESS LEVEL-ADJUST
    OK

    *Copy STRING (from) ADDRESS (to follow) ADDRESS OK

*REPLACE

                          TYPE IN

    *Replace STRUCTURE (at) ADDRESS (by) ~~CONTENT~~ OK

*TRANSPOSE

    *Transpose STRUCTURE (at) ADDRESS (and) ADDRESS OK

*APPEND [joins two statements together to form one statement]

                                           TYPEIN

    *Append Statement (at) ADDRESS (to) ADDRESS (join with) ~~CONTENT~~
    OK *TYPEIN*
       [~~CONTENT~~ is text that will be added where the old
       and new statements join]

*BREAK [to break a statement into two statements after the
        visible you point to]

*Break Statement (at) ADDRESS LEVEL-ADJUST OK

UPDATE FILE [not imperative, but good practice]

Update File OK

* Update File Compact OK
        [Note: this will ensure the efficient storage of a file
        that has been edited extensively. To find out the percent
        of efficiently used storage, use <SP>SHow File Status OK]

6. COMMUNICATING with other users

    SENDMAIL SUBSYSTEM and the Journal

        Goto (subsystem) Sendmail OK

        Interrogate Command

            Interrogate OK
            (distribute for action to:) IDENT/.LASTNAME
            (distribute for information-only to:) IDENT/.LASTNAME
            (title:) CONTENT *TYPEIN*
            (type of source:) Message or Statement or Branch or File (at)   *or Group*
            ADDRESS
            (show status?) ANSWER
            (distribute the mail now?) ANSWER

        * Individual commands: instead of or in addition to Interrogate,
        you may use the following:
                    TYPEIN
            *   Title CONTENT OK

            *   Distribute (for) Information (Only) (to)
                    IDENT/.LASTNAME OK   [you may give a series of IDENTS, separated by commas]

            *   Distribute (for) Action (to) IDENT/.LASTNAME OK
                    TYPEIN
            *   Comments CONTENT OK

        * To send a message or statement:
                    TYPEIN
            * Message CONTENT OK

            * <SP>STatement (at) ADDRESS OK

        * To send a structure or file:

            * <SP>Group (at) ADDRESS OK

            * Branch (at) ADDRESS OK

            * File ADDRESS OK

            *   <SP>SHow Status OK

            *   Send (the mail) OK

Questions that come up

1. Why are there two different words describing the fact that I have to type something?
   p. 3 - TYPEIN & CONTENT

   I also feel we should use one or the other. One reason for using CONTENT is that that's the word & used in command syntax -- if we want to get people to the point where they can find out how to give a command by reading HELP or command summary, glossary, etc, then at some point in the courses we ~~would~~ get them used to the word CONTENT. Yet, we don't do that too much in the second course with any other words; ie. we use ~~ADDRESS~~ rather than! SOURCE or DESTINATION.

   ∴ we could leave CONTENT til the 3rd course (unless you're using Full prompting or teaching about options).
   —JMB

2. I find, time after time, ~~during~~ in teaching the Basic and second Course, people find the terms structure and String very confusing. In referring to those terms they have difficulty remembering what options are available and often try using them as command words. PAW2

(over) 3. On page 7 it is mentioned that viewspec W is a default — no others are specified however.

4. Are you going to underline everything
   that the user must type — like has
   been done in the Basic, I think they
   should be consistent.

5. The colored diagram at the end of the
   course is good, too bad no definition of
   group is shown.

    * To identify a user by lastname or ident:

        * <SP>SHow Record (for ident) .LASTNAME OK   [precede by
                                                         a period]

        * <SP>SHow Record (for ident) IDENT OK

    Mailbox = (journal) branch of your initial file -- sendmail
    automatically inserts citation

    To leave the Sendmail subsystem when you are done:
        Quit OK [returns you to Base]

SEND MESSAGE (Tenex)
    Goto (subsystem) Tenex OK

    SND CR   [The system will prompt you:]
    (To (? for help):) TYPEIN CR [lastnames separated by comma]
    (cc (? for help):) TYPEIN CR [lastnames separated by comma]
    (subject:) TYPEIN CR   [subject of your message]
    (message:) TYPEIN
    CRTL Z   [to terminate the message]
    (Q, S, ?, carriage return:) CR [to send the message]
    QU CR   [to return to NLS]

    Linking (Tenex)
        first: Goto (subsystem) Tenex OK
        WHE<esc>re (is) USERNAME CR [do not link when user is in
                                    SNDMSG, OUTPRC, NOUTPRC, or XLIST]
        LIN<esc>k (to) USERNAME CR [precede comment with ; end with CR,
                                    repeat every 3 lines]
        BYE CR   [to break the link. One person must do this only]
        QU CR [returns you to NLS]

        > BREAK works at both BBN and Off-1

7. TROUBLE SHOOTING AND HELP

    Immediate assistance from the system:

        Type ? for commands or needed information after any prompt.

        * HELP:

            *Type CTRL Q for help concerning what you are doing or type H
            for Help command (after typing H you can type any word in NLS
            you wish to know about). CTRL X gets you out of Help and back
            to where you were.

            * Help TYPEIN OK

            * Help OK

        System Status:

        Two   CTRL T's [note the words RUNNING or WAIT -- WAIT means the
            computer is waiting for you to do something]

            * <SP>SHow <SP>Disk (space status) OK   [each user has a certain
                                                   allocation of pages]

    Send a message or sendmail item to: FEEDBACK

    Call SRI/ARC, (415 326-6200, ext.3630)

    Link to FEEDBACK

    Remedies:

        CTRL C [use only in emergencies to get to TENEX]
        RESET CR
        NLS CR

        *If over allocation:
        <SP>EXpunge Directory OK<SP>
        <SP>Trim Directory (no. of versions to keep) CONTENT OK (really?) OK

        Update File Compact OK [restores file more efficiently
                                in computer]
        Delete Modifications OK (really?) OK [destroys all changes since
                                the last update!]

If your connection is broken: *why not just say here / Type @ O <SP> 43 CR (same as step 2 of the Net login p. 4)*

Repeat Step 2 of the Net login procedure on page 4
To check if you are detached, use the where command: *It seems dumb to make people turn back for one thing.*
  WHERE <SP> USERNAME CR
If you are detached, instead of logging in, type:
  ATT <SP> USERNAME <SP> PASSWORD <SP> CR
  CTRL O [to wake up NLS if that's where you were, or] *if not,*
  CTRL C NLS CR [to start over again]
If you are "not logged in", log in again (step III of the Login procedure, p. 4)   OK

PRACTICE

Primer ("TNLS-8 Primer," Journal Accession Number -- 32954,)

* Introductory TNLS Sample Sessions for TNLS Course Level 2
  (Journal Reference Number -- 33405,)

* Use Strategies
  If there is time available while your trainer is present, ask her
to explain how to use the system to accomplish specific tasks, from
daily routine tasks (such as message handling) to creative
intellectual enterprise.

OTHER AVAILABLE COURSES:

* 3. INTERMEDIATE TNLS
  This is the third formal course or level of expertise, and
represents significant experience with the system. The Programs and
Useroptions subsystems are introduced as well as Output Processing
for printer formating.

* INTRODUCTION TO DNLS
  This is an introduction to the display version of NLS designed to
follow the second TNLS course (it requires an understanding of
structure and viewing). It covers the use of the special workstation
required for DNLS as well as the special ways of pointing and
displaying information that are available.

* EXAMPLE OF STRUCTURE:

    < BAIR, MENU.NLS;1, >, 28-JAN-75 17:29 JHB ;;;;

    1 SOUP

        1A VEGETABLE

        1B CREAM OF MUSHROOM

    2 ENTREE

        2A FRIED CHICKEN

        2B SALMON

            2B1 WITH CREAM SAUCE

        2C PRIME RIBS

    3 DESSERT

        3A PIE

            3A1 APPLE

                3A1A A LA MODE

            3A2 BLUEBERRY

        3B ICE CREAM

            3B1 VANILLA

            3B2 PEPPERMINT

            3B3 MAPLENUT

            3B4 CHOCOLATE

    4 BEVERAGE

        4A TEA

        4B COFFEE

0 < REPORT, OUTLINE.NLS; 1, > 1-FEB-74 08:30

BRANCH 1 {

1 INTRODUCTION

    1a ⓅREFACE:

    1b [BACKGROUND]:

        1b1 PREVIOUS REPORT

        1b2 REPORT ON◯PREVIOUS INTRODUCTION

        1b3 " BACKGROUND [ON] PREVIOUS REPORT "

    1c [REQUIREMENTS:] } BRANCH 1c

2 PERSPECTIVE:

    2a DEFINITION:

    2b ASPIRATIONS:

    2b1 FUTURE } BRANCH 2b

3 ENVIRONMENT:

    3a ENVIRONMENT DEFINED:

    3b RELEVANT FACTORS IN ENVIRONMENT:

        3b1 DEFINITIONS OF RELEVANT ENVIRONMENTS

        3b2 REPORTS ON OTHER RELEVANT DEFINITIONS

        3b3 FACTORS IN RELEVANCE

    3c REQUIREMENTS:

KEY:
CHARACTERS ARE ENCLOSED IN CIRCLES
WORDS ARE ENCLOSED IN RECTANGLES
TEXT IS ENCLOSED IN SQUARE BRACKETS
STATEMENTS ARE ENCLOSED IN QUOTES

FIGURE 1

THE TNLS SECOND COURSE OUTLINE:
INTRODUCTION TO STRUCTURE AND VIEWING

ARC-ADG

19 NOV 75

Applications Development

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

INTRODUCTION TO TNLS

AKW = Augmented Knowledge Workshop

PURPOSE OF SYSTEM: Augmentation of Knowledge Work

GOAL: To provide computer based tools to accomplish all aspects of knowledge work with an emphasis on collaboration.

OVERVIEW of system

NLS = oN Line System

TNLS = Typewriter Version

CAPABILITIES OF SYSTEM:

Composing

Editing

Studying

Structuring

Browsing - viewing

Printing

Publishing

Communicating -

sending and receiving mail, messages, documents; teleconferencing; etc.

Storing and retrieving -

record keeping, library services, data bases, searching, etc.

Calculating

Course Organization

  NLS COURSE LEVEL:

      NLS training is divided into five courses for ease of learning.
      Each level corresponds to what can be covered at one time. The
      things introduced at each level are determined by difficulty,
      usefulness, complexity, and quantity (i.e., so that there is not
      an excessive amount to cover at any one time).

      Each level in the series of NLS courses contains most of the
      commands from the previous level for review in addition to the
      commands to be introduced (which are marked by an *).

    BASIC TNLS
      This is the first course level (basic) which covers those
    commands necessary to enter, edit, and "mail" typewritten
    information. It has a special structure and is published in the
    Journal (see -- Journal, 33874,).

    *INTRODUCTION TO TNLS STRUCTURE AND VIEWING
      This is the second course which introduces NLS structure
    (hierarchical) and special tools for viewing structured
    information ("viewspecs").

  NLS is divided under headings for the purposes of this course. The
  commands under each heading can be used to perform the general
  operation denoted by the heading, e.g., "printing" includes commands
  that cause the system to print in various ways. Certain headings are
  introduced in later courses.

    COURSE HEADINGS:
      1. GETTING TO NLS
      2. STRUCTURE
      3. PRINTING
      4. ADDRESSING
      5. EDITING
      6. COMMUNICATING
      7. TROUBLE SHOOTING AND HELP

DEFINITIONS FOR THE COURSE OUTLINE

COMMANDS = You type some characters to tell the computer what to do. The characters you type are represented by the uppercase letters in each "command word".

<SP> = You type a space.

Uppercase words = You type in the appropriate information for that command phrase, e.g., CONTENT.

*TYPEIN and CONTENT = a string of characters from the keyboard, ending with an OK, prompted by T:. [TYPEIN has a special form when a FILENAME or Link or Ident is called for (You can tell from the noise words)].

[ ] = Comments and suggestions will appear in brackets.

CONTROL MARKER (CM) = WHERE YOU ARE: Where the computer thinks you are pointing to (to some character in some file); you may move it by specifying an ADDRESS; this is where your command will be done. Note: your address must be followed by an OK or a Carriage Return.

CTRL = hold down the control (CTRL) key WHILE typing the specified character.

OK or CR = you type a Carriage Return.

<esc> = the ESC or escape key on your terminal (sometimes labeled "alt mode").

BASE C: = the TNLS ready signal. It means that you can type in an editing or file handling command (like home base...).

SEND C: = the Sendmail subsystem ready signal. It means that you can type in a Sendmail command.

*LEVEL-ADJUST: specifies level relative to addressed statement -- type any number of u's [for up], d's [for down] followed by an OK, or just an OK for the same level, prompted by L:.

*VIEWSPECS: a string of one or more viewspec characters followed by OK, prompted by V: [type just OK if no viewspecs are to be entered]

*STRING: Character or Word or Text, prompted by C:

*STRUCTURE: Statement or Branch or Group, prompted by C:

        * INTRODUCTION TO TNLS STRUCTURE AND VIEWING

1. GETTING TO NLS

    THE TERMINAL AND USE:
      See the "Basic TNLS-8 Course" [You usually have to dial a
                                     telephone number and place the
                                     receiver in your terminal's
                                     cradle]

    ARPA NETWORK   [for a new connection where you dial in]

                        NETWORK CONNECTION:

      [I]   Type E [to get the Network's attention]

      [II] Type @ O <SP> 43 CR [to open a connection to
                                   Office-1, Host 43; BBNB is 49]

      You now should be connected to TENEX and will receive the usual
      notice to that effect and the @ (the TENEX ready signal).

    TENEX

                        LOGIN PROCEDURE:

      [III] Type LOG USERNAME <SP> PASSWORD <SP> CR
                           [SPACE fills in your account number
                            automatically; you're then ready to
                            call NLS]

        *For some systems to accept lower case characters, it may be
        necessary to type the TENEX command:

                        NO RAISE CR

                        CALLING NLS:

      [IV] Type NLS CR   [it's not necessary to call NLS more
                             than once during one login session]

        To Go to Tenex (as a subsystem):

          Goto (subsystem) Tenex OK
          QUIT CR [to return to where you were]

* Other ways to get to Tenex from NLS

    *Quit Nls CR [to leave NLS]
    CONTINUE CR [to return to where you were]

To leave the system, logout in NLS:

    <SP> Logout OK   [you type only the L of logout]

To close the network connection:

    @ C CR

2. ORGANIZATION OF THE SYSTEM

    FILES & DIRECTORIES

        Information in the origin ("parent") statement of a file:
        The origin statement contains the file name, version number, the
        date and time of last modification, the ident of the last person
        to modify the file, and 4 semicolons. The statement should not be
        edited. It is numbered 0, but no number will be printed.

          File names

      * Types of files [indicated by filename extensions]

        * TXT = sequential file which can be copied into NLS
        COPY = a temporary sequential file, usually a message

     Load File:

        Load File FILENAME OK   [FILENAME WILL BE ECHOED]

     User creation of files:

        <SP>CReate File FILENAME OK

    To see a list of all your files:

        <SP>SHow Directory (of) OK OK

    FILE STRUCTURE

        STATEMENT: The basic element of structure in a file
                [each has a statement number]

        *Relationship between statements:

          *All statements have a "source" (may be the Origin) and may
          have statements as "substructure".

        *STRUCTURES made up of statements:

          BRANCH: a statement plus substructure (if any)
          GROUP: set of contiguous branches with same source

3. PRINTING: to see specified view of stored information

    [To see anything in TNLS you must print it]

    Printing on a terminal:

        Print File OK

        Print Rest OK

        Print Journal (mail) OK

        \ [easy print, typing a \ prints the statement where you are]

        * LF [line feed prints the next statement regardless of level]

        * ^ [print back one statement regardless of level]

        * Print STRUCTURE (at) ADDRESS VIEWSPECS

    VIEWSPECS: to specify what you see, use the characters below when
                prompted with a V: and end with an OK.

        w = Default, all lines & levels (show all of the text)
        m/n = numbers on/off
        y/z = blank lines on/off

            [have instructor set these for your default]

            * To clip levels and lines, use lower case viewspecs including:
                a/b - show one level less/more
                c/d - show all levels/show first level
                e   - show referenced statement level
                g/h - show branch only/show all branches
                q/r - show one line less/more
                s/t - show all lines/show first lines only
                w/x - show all lines, all levels/show one line,
                    one level

            * SIDS (Statement Identification Numbers)
                I/J - SIDS on instead of statement numbers/statement
                    numbers instead of SIDS
                    [can be used in place of statement numbers in NLS]

4. ADDRESSING

    Control Marker concept = where you are [travels left to right]

        Jump to a new address:
            Jump (to) Address ADDRESS VIEWSPECS OK

        * To tell where the Control Marker is:

            / slash command shows Control Marker context

            * . period command shows statement number and character
            number:

            *   [Note that addressing can be combined with
                            editing, you do not have to move the
                            marker separately]

    ADDRESSING WITHIN A FILE
        Use the following which will be referred to as IN-FILE-ADDRESS:

        STATEMENT NUMBER:
        Automatically assigned to a statement, but not included in it.

        CONTENT SEARCH: "TYPEIN"   [must be surrounded by quotes]
        where TYPEIN = the text to be searched for.

        * SID: Statement IDentifier: another number assigned to each
        statement, it's a permanent number (despite editing changes)
        [always beginning with a zero]

        * IN-FILE-ADDRESSes within one statement:

            *+e   skip to end (last character) of statement
                    [always use a plus sign]

            *+f   skip to front (first character) of statement
                    [always use a plus sign]

* ADDRESSING BY JUMPING
        [Note: Use the Jump command when you do not want the
         STRUCTURE at the new location printed]

    TO FIND A WORD OR STRING OF CHARACTERS (CONTENT) [no quotes]:

        * Jump (to) Word First CONTENT VIEWSPECS OK

        * Jump (to) Word Next CONTENT VIEWSPECS OK

        * Jump (to) Content First CONTENT VIEWSPECS OK

        * Jump (to) Content Next CONTENT VIEWSPECS OK
                [type a CTRL B for CONTENT to continue to
                 search for the same thing]

    * TO JUMP BY STRUCTURE:

        * Jump (to) Origin ADDRESS VIEWSPECS OK

        * Jump (to) End (of Branch) ADDRESS VIEWSPECS OK

ADDRESSING BETWEEN FILES AND DIRECTORIES:

    * To address another file in your directory you need to add the
    FILENAME to the addresses within a file. To address a file in
    another user's directory, you need to add their DIRECTORY name as
    well as the filename. FILENAME and DIRECTORY must be followed by
    commas.
                [These may be used after A: in any command]

    * To address another file:

        * A: FILENAME,IN-FILE-ADDRESS OK

            * [If IN-FILE-ADDRESS is not specified it will be
               statement 0]

    * To address another user's file:

        * A: DIRECTORY,FILENAME,IN-FILE-ADDRESS OK
                [e.g.: Copy Branch (from) BAIR,JHB,1 OK (to) 3a OK]

LINKS: special forms of text that may be used for addressing
        and other purposes.

* Characteristics of Links:

    * -- it is text in a statement rather than typed in after
         the A:

    * -- must be surrounded by angle brackets < >
         (or parentheses)

    * -- may contain any logical Address

    * -- it may include viewspecs that will take effect at the
         address in the link

    * -- the following forms are valid:

        * <DIRECTORY,FILENAME,IN-FILE-ADDRESS:VIEWSPECS>

        * [Without optional Viewspecs:]
          <DIRECTORY,FILENAME,IN-FILE-ADDRESS>

        * [or in current directory:]
          <FILENAME,IN-FILE-ADDRESS>

        * [or in current file:]
          <IN-FILE-ADDRESS>

            Note that the different fields default to the current
            value if not specified (the same as addresses).

    * -- may include things other than addresses and/or
         viewspecs [which will be covered in more advanced
                    courses]

* To use a link, give the Address of the Statement that
contains the link and the letter l preceded by a period after
any A: , for example:

    * Jump (to) Address IN-FILE-ADDRESS .l OK

* TO GO BACK TO PREVIOUS FILES:

    * Jump (to) File Return OK ANSWER OK
         [type an N for ANSWER - next filename
          in stack will be echoed; repeat for file before that]

10

5. EDITING

    Syntax: VERB NOUN A: ADDRESS(ES) (L: LEVEL) (T: CONTENT) OK (OK? OK)

    * STRING and STRUCTURE = "nouns":

        * STRING: [one of the following command words that
                     refers to part of a statement]

            * Character

            * Word [note that the system readjusts spaces]

            * Text [two addresses necessary]

        * STRUCTURE: [one of the following command words that refers to
                       one or more statements]

            Statement

            * Branch

            * Group [two addresses necessary]

    EDITING COMMANDS = "verbs":

        ·INSERT

            Insert Statement (to follow) ADDRESS LEVEL-ADJUST CONTENT OK

            * The LEVEL-ADJUST determines the level of a statement at a new
            location -- it is one of the following ended by an OK:

                Just an OK = same level

                * u [position up a level from referenced statement]

                * d [position down a level from referenced statement]

            * Insert STRING (to follow) ADDRESS CONTENT OK

            Continue to insert: CTRL E instead of OK puts you in the Enter
            statement mode. Type a CTRL X to get out.

11

DELETE

    Delete File CONTENT OK

    Delete STRUCTURE (at) ADDRESS OK

    * Delete STRING (at) ADDRESS OK

SUBSTITUTE

    Substitute STRING in STRUCTURE (at) ADDRESS CR
    (New STRING) T: TYPEIN CR
    (Old STRING) T: TYPEIN CR Finished? S/Y/N: Y [for yes]
    Substitutions made: Number

                [will replace the old STRING with new
                 STRING every time it finds it in the
                 STRUCTURE.]

MOVE

    Move STRUCTURE (from) ADDRESS (to follow) ADDRESS LEVEL-ADJUST
    OK

    *Move STRING (from) ADDRESS (to follow) ADDRESS OK

COPY

    Copy STRUCTURE (from) ADDRESS (to follow) ADDRESS LEVEL-ADJUST
    OK

    *Copy STRING (from) ADDRESS (to follow) ADDRESS OK

*REPLACE

    *Replace STRUCTURE (at) ADDRESS (by) CONTENT OK

*TRANSPOSE

    *Transpose STRUCTURE (at) ADDRESS (and) ADDRESS OK

*APPEND [joins two statements together to form one statement]

    *Append Statement (at) ADDRESS (to) ADDRESS (join with) CONTENT
    OK
        [CONTENT is text that will be added where the old
         and new statements join]

     *BREAK [to break a statement into two statements after the
             visible you point to]

       *Break Statement (at) ADDRESS LEVEL-ADJUST OK

   UPDATE FILE [not imperative, but good practice]

     Update File OK

     * Update File Compact OK
             [Note: this will ensure the efficient storage of a file
              that has been edited extensively. To find out the percent
              of efficiently used storage, use <SP>SHow File Status OK]

6. COMMUNICATING with other users

   SENDMAIL SUBSYSTEM and the Journal

      Goto (subsystem) Sendmail OK

       Interrogate Command

          Interrogate OK
          (distribute for action to:) IDENT/.LASTNAME
          (distribute for information-only to:) IDENT/.LASTNAME
          (title:) CONTENT
          (type of source:) Message or Statement or Branch or File (at)
          ADDRESS
          (show status?) ANSWER
          (distribute the mail now?) ANSWER

       * Individual commands: instead of or in addition to Interrogate,
       you may use the following:

          *   Title CONTENT OK

          *   Distribute (for) Information (Only) (to)
                  IDENT/.LASTNAME OK

          *   Distribute (for) Action (to) IDENT/.LASTNAME OK

          *   Comments CONTENT OK

          * To send a message or statement:

            * Message CONTENT OK

            * <SP>STatement (at) ADDRESS OK

          * To send a structure or file:

            * <SP>Group (at) ADDRESS OK

            * Branch (at) ADDRESS OK

            * File ADDRESS OK

          *   <SP>SHow Status OK

          *   Send (the mail) OK

      * To identify a user by lastname or ident:

         * <SP>SHow Record (for ident) .LASTNAME OK   [precede by
                                                               a period]

         * <SP>SHow Record (for ident) IDENT OK

   Mailbox = (journal) branch of your initial file -- sendmail
  automatically inserts citation

  To leave the Sendmail subsystem when you are done:
    Quit OK [returns you to Base]

SEND MESSAGE (Tenex)

  * Goto (subsystem) Tenex OK

  * SND CR   [The system will prompt you:]
  (To (? for help):) TYPEIN CR   [lastnames separated by comma]
  (cc (? for help):) TYPEIN CR   [lastnames separated by comma]
  (subject:) TYPEIN CR   [subject of your message]
  (message:) TYPEIN
  CRTL Z   [to terminate the message]
  (Q, S, ?, carriage return:) CR [to send the message]
  QU CR   [to return to NLS]

  Linking (Tenex)
    first: Goto (subsystem) Tenex OK
    WHE<esc>re (is) USERNAME CR   [do not link when user is in
                                SNDMSG, OUTPRC, NOUTPRC, or XLIST]
    LIN<esc>k (to) USERNAME CR [precede comment with ; end with CR,
                                 repeat every 3 lines]
    BYE CR   [to break the link]
    QU CR   [returns you to NLS]

7. TROUBLE SHOOTING AND HELP

    Immediate assistance from the system:

        Type ? for commands or needed information after any prompt.

        * HELP:

            *Type CTRL Q for help concerning what you are doing or type H
            for Help command (after typing H you can type any word in NLS
            you wish to know about). CTRL X gets you out of Help and back
            to where you were.

            * Help TYPEIN OK

            * Help OK

        System Status:

            CTRL T [note the words RUNNING or WAIT -- WAIT means the
            computer is waiting for you to do something]

            * <SP>SHow <SP>Disk (space status) OK   [each user has a certain
                                                     allocation of pages]

    Send a message or sendmail item to: FEEDBACK

    Call SRI/ARC, (415 326-6200, ext.3630)

    Link to FEEDBACK

    Remedies:

        CTRL C [use only in emergencies to get to TENEX]
        RESET CR
        NLS CR

        *If over allocation:
        <SP>EXpunge Directory OK<SP>
        Trim Directory (no. of versions to keep) CONTENT OK (really?) OK

        Update File Compact OK [restores file more efficiently
                                in computer]
        Delete Modifications OK (really?) OK [destroys all changes since
                                             the last update!]

If your connection is broken:

    Repeat Step 2 of the Net login procedure on page 4
    To check if you are detached, use the where command:
        WHERE <SP> USERNAME CR
    If you are detached, instead of logging in, type:
        ATT <SP> USERNAME <SP> PASSWORD <SP> CR
        CTRL X [to wake up NLS if that's where you were, or:]
        CTRL C NLS CR [to start over again]

PRACTICE

    Primer ("TNLS-8 Primer," Journal Accession Number -- 32954,)

    * Introductory TNLS Sample Sessions for TNLS Course Level 2
      (Journal Reference Number -- 33405,)

    * Use Strategies
        If there is time available while your trainer is present, ask her
    to explain how to use the system to accomplish specific tasks, from
    daily routine tasks (such as message handling) to creative
    intellectual enterprise.

OTHER AVAILABLE COURSES:

    * 3. INTERMEDIATE TNLS
        This is the third formal course or level of expertise, and
    represents significant experience with the system. The Programs and
    Useroptions subsystems are introduced as well as Output Processing
    for printer formating.

    * INTRODUCTION TO DNLS
        This is an introduction to the display version of NLS designed to
    follow the second TNLS course (it requires an understanding of
    structure and viewing). It covers the use of the special workstation
    required for DNLS as well as the special ways of pointing and
    displaying information that are available.

* EXAMPLE OF STRUCTURE:

< BAIR, MENU.NLS;1, >, 28-JAN-75 17:29 JHB ;;;;

1 SOUP

   1A VEGETABLE

   1B CREAM OF MUSHROOM

2 ENTREE

   2A FRIED CHICKEN

   2B SALMON

      2B1 WITH CREAM SAUCE

   2C PRIME RIBS

3 DESSERT

   3A PIE

      3A1 APPLE

         3A1A A LA MODE

      3A2 BLUEBERRY

   3B ICE CREAM

      3B1 VANILLA

      3B2 PEPPERMINT

      3B3 MAPLENUT

      3B4 CHOCOLATE

4 BEVERAGE

   4A TEA

   4B COFFEE

Re: (33789,) Ira Cotton of NBS's use of NLS-7

I was fascinated to here that people outside the utility were using
NLS, albeit NLS-7, Can anyone tell me how many installations are
running old versions of NLS?   1

Re: (33789,) Ira Cotton of NBS's use of NLS-7

(J33793)   31-OCT-75 08:08;;;;   Title: Author(s): Raymond R,
Panko/RA3Y; Distribution: /SRI-ARC([ACTION]) ; Sub-Collections:
SRI-ARC; Clerk: RA3Y;

33793 Distribution
    James E. (Jim) White, Douglas C. Engelbart, Martin E. Hardy, J. D.
    Hopper, Charles H. Irby, Harvey G. Lehtman, James C. Norton, Jeffrey
    C. Peters, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor, Richard W.
    Watson, Don I. Andrews,
    Bonny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken,
    Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L.
    Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L.
    Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks,
    Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan
    Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C.
    McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman,
    Sandy L. Johnson, James H. Bair, Jeanne M. Leavitt, Rodney A.
    Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael,
    Jonathan B. Postel, Elizabeth J. Feinler, Kirk E. Kelley, N. Dean
    Meyer

1

Bell Canada tentative address fo mail strikes

Bell Canada, P,O, Box 762, Rouses Point, New York, U,S,A, 12979,
Please still include the group --BUSINESS Planning, Thanks alot,   1

Bell Canada tentative address fo mail strikes

(J33794)   31-OCT-75 10:03;;;;   Title: Author(s): Gwen C. Edwards/GCE;
Distribution: /RA3Y([INFO-ONLY]) ; Sub-Collections: NIC; Clerk:
GCE;

33794 Distribution
Raymond R. Panko,

letter-from-rich

To Roger Pye   1

Concur with Phil taking items 28 to 31 and 35. Think it would be
most efficient to carefully frame questions and get answers from
Fantus. Phil concurs this point as such data are not available to
him within he time limits. Phil is agreed that Fantus will be hired
out of the BPG subcontract. In the large scope of things I feel we
should answer these items as cheaply as possibleand get on with more
interesting aspects of Prjoect. Thus the less of Phil's time and
money spent on 28-31 and 35 the better.   2

The reason I suggested two weeks with Phil is that would allow you to
jointly prepare for Fantus visit including sending them the questions
in advance and then really clean up 28-31 and 35 all in one week.
The second week would be for you and Phil to plan the remaining use
of his time, perhaps to help you with item 23 or others in the 20 to
35 range. In short, you need to finish up the Fantus part and then
get Phil started on something else of mutual interest and value. If
you think two weeks is too much, fine perhaps you can play it by ear.
We may even want to discuss Phil's coming to SRI in Dec for a while.
I am really worried that these long lines of communication are
impeding a good team effort.   3

Roger, I guess there is nothing sacred about your arriving the 17th.
I would like to (but don't need to) come to Fantus with you and Phil.
I would be available to do so Dec. 4th and 5th, were you to delay
your departure date to the 23rd. On the other hand, you should still
schedule the Fantus meeting to best suit your and Phil's schedule,
and if I can come finek if not, fine. You, Phil and I should
coordinate the call to Fantus and the billing procedures.   4

I agree with your new suggestion of a 4 day task for Phil related to
location behavior. It seems to me to flow over items 27-35.   5

Please be advised that Miller's availability before 1 January is 5
man-weeks at best. He already has items 46 and 47 which will take
most of this and has expressed desire to be involved in 24 and 34.
Thus it is unlikely he can do 20, 21, and 25. We don't know right
now who can pick these up, but Hough and I will look for another
sociologist.   6

Panko wants items 2, and 50. Unless relieved of part of 2 he won't
have time for 33, 34.   7

We will probably fold item 27 into 2. Does this sound reasonable?   8

Phil might also be logical for itme 26.   9

letter-from-rich

Roger, I see you focused on 32, 33 and 34. Does this sound
reasonable? I thought you were very interested in 33 and 34.   10

I am now about two weeks older and hopefully wiser than when I
budgeted $90K for the matrix effort. In retrospect this seems too
much and the large number of man days in items 20-35 seems especially
too large. I think we should plan to complete these items in about
half that time so there is more time left to digest the matrix data
and work on the policy aspects.   11

We have been telling Harvey et al to skim the cream by focusing on
identification of the counterintuitive, unexpected, irreversable, and
most important impacts. I have not had time to think much about the
whole synthesis/policy phase of the project. If we are to meet our
schedule that needs to be compressed into 1 Jan to 1 March. No
wonder I get frustrated writing 30 minute messages to tell you what
we could do face to face or by phone in 5 minutes.   12

In summary, relative to your suggested assignments, I concur except:
Miller can't do 20, 21, and 25, we need another sociologist; Phil
assignment o.k.; Panko hasn't time for 33, 34, I don't know who can
be assigned; I will do 22; you and Phil are going for 23. As you
can't find new help to do the omitted items, Hough and I will worry
about that. What might be helpful to us is:1) if you would send us
your opinions about cutting the effort to items 20-35 to half that
shown in my matrix and relocating those hours to policy, synthesis,
etc., 2) if you react to the relative effort each item between 20-35,
3) if you let us know whether you and Phil can handle omissions noted
above, given, the lower level of effort--or whether we would rather
get some help on these omissions and spend part of your time to 1
January doing synthesis and policy.   13

Hough and I will be reviewing budget again tomorrow to see where we
really are and what is really possible.   14

letter-from-rich

(J33795) 31-OCT-75 13:50;;;;   Title: Author(s): Roger W. Hough/RWH;
Distribution: /PIW([ACTION]) ; Sub-Collections: NIC; Clerk: RWH;
Origin: < HOUGH, LETTER-FROM-RICH.NLS;1, >, 30-OCT-75 11:10 RWH
;;;;####;

33795 Distribution
    Phil I. Weintraub,

Friday night in S.F.

I am glad i am on the West coast because the East coast is having a
cold wave.   1

John H. Keys is no more a supersleuth than he is a trained scientist
, but he insists he has discoveredd the ultimate in criminal
conaspiracy: "the free sunshine falling aon the earth is being stolen
from you.   2

     That makes the Colordan angry, not just beacose the sun figures
into the nation's energy plans but because he hopes to sell a lot of
homeheating solar devices.   3

Last week the young student-turned-inventor and self-made solar exert
published his allegations in a strident, free-swinging book.   4

Friday night in S.F.

(J33796)   31-OCT-75 15:13;;;;   Title: Author(s): Robert D.
Archer/RDA; Distribution: /PKA([ACTION]) FGB([ACTION]) ;
Sub-Collections: NIC; Clerk: RDA;   Origin: < NSWC, TEST.NLS;2,
>, 31-OCT-75 12:01 RDA ;;;;####;

33796 Distribution
    Pamela K, Allen, Frank G, Brignoli,

Fee on project 4417: a pending adjustment

Until the final fee was negotiated on the NSW project, a fee of zero
percent was assumed for the project in our accounting system.
Although fee is now correctly accrued at a rate of 5.8 percent, we
have yet to see the fee on roughly three months' worth of charges.

Sometime in period 12, the lost fee will be returned to us. On one
hand, our financial performance will receive an $8,000 (or so)
booster shot. On the other hand, the NSW will receive an extra
$8,000 in total cost (including fee). Congratulations or
condolances.   1

Fee on project 4417: a pending adjustment

(J33797)   31-OCT-75 16:55;;;;   Title: Author(s): Raymond R.
Panko/RA3Y; Distribution: /JBP([ACTION]) RWW([ACTION]) JCN([
INFO-ONLY]) MEH([INFO-ONLY]) DCE([INFO-ONLY]) ;
Sub-Collections: SRI-ARC; Clerk: RA3Y;

33797 Distribution
    Jonathan B, Postel, Richard W, Watson, James C, Norton, Martin E,
    Hardy, Douglas C, Engelbart, -

recent documents of interest

Ann, the following documents may be of interest to you,
                                              %larry   1

    31-OCT-75 0930-P   LAC: Timesharing, Pie Slicing, and TENEX
        Distribution: LAC KPH EFF MAS2 JHB
    Location: (IJOURNAL, 26815, 1:w)   1a

    31-OCT-75 0927-P   LAC: NLS and AKW overview
        Distribution: LAC KPH MAS2 EFF JHB
        Location: (IJOURNAL, 26814, 1:w)   1b

    22-OCT-75 0642-P   LAC: ELF Manual for Gunter AFS Users
        Distribution: LAC GUNTER POOH SGR EWG
        Location: (IJOURNAL, 26727, 1:w)   1c

    20-OCT-75 1153-P   LAC: Gunter Site Overview
        Distribution: LAC KPH AAB KWAC
        Location: (IJOURNAL, 26705, 1:w)   1d

recent documents of interest

(J33798)   1-NOV-75 11:33;;;;   Title: Author(s): Lawrence A.
Crain/LAC; Distribution: /POOH([ACTION]) ; Sub-Collections: NIC;
Clerk: LAC;   Origin: < DSDC-SYD, POOMSG.NLS;4, >, 1-NOV-75 11:31
LAC ;;;;####;

33798 Distribution
Ann Weinberg,

Seminar On the Augmented Knowledge Workshop, ***Initial Agenda***

Well, its almost that time again. Here's the agenda pretty much as
it was distributed toward the end of the first seminar. The complete
agenda (all levels) including the details of most talks is in
(office-1,bair,shortcourse,agenda). Any ideas for improvemnt,
novelty etc.?

SEMINAR ON THE AUGMENTED KNOWLEDGE WORKSHOP

Initial Agenda   1

MONDAY
                                                                   2

9   Overview of the week's activities JHB (see page 5 for
personnel)   2a

         Introduction of SRI-ARC Staff JHB   2a1

         Introduction of participants   2a2

9:30   Welcome and introduction DCE   2b

         Comments on background, mission, and history of ARC   2b1

         Introduction to ARC Organization   2b2

10:45   Introduction to ARC Applications JCN   2c

         Organization   2c1

         People support and service system   2c2

12   Lunch at the SRI International Dining Room   2d

1:15   System Architecture JHB   2e

         The computer environment in an AKW   2e1

         DEX: Deffered EXecution   2e2

         TNLS: Teletype oNLine System   2e3

         DNLS: Display oNLine System   2e4

2:30   Experience with NLS SGR   2f

         Use of the interface devices   2f1

         Command syntax and command word alternatives   2f2

         Displaying information by pointing and controlling the view 2f3

         The organization of information in NLS (structure, files) 2f4

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

5:15   Cocktails   2g

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

TUESDAY

3

10:30   Application Principles   JHB   3b

         Technology Transfer Strategy: Courseware, Applications
         Dcoumentation, Trainers, User Facilities   3b1

         Types of knowledge workers, proficiency, and courses   3b2

         NLS System Design: man-machine interface optimization   3b3

         NLS System Uses: all aspects of knowledge work   3b4

12   Lunch   3c

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

1:30   Application Principles   JHB   3d

         Composing and editing textual information   3d1

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

5:15   End of Program   3f

7   Practice opportunity (optional upon request)   3g

WEDNESDAY

4

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

10:00   Case study   JHB and NDM   4b

           Detailed analysis of applications at ETS and RADC   4b1

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

12   Lunch   4c

1:15   Applications: Introduction to the afternoon's usage   JHB   4d

          Communication sending, receiving, and handling   4d1

          Process commands for handling communications   4d2

2	Experience with NLS SGR	4e
	Sendmail, Journal, and Sndmsg	4e1
	Subsystems	4e2

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

5:15   Dinner break   4f

7   Practice opportunity with ARC resource person (optional)   4g

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

THURSDAY

5

10:30   Case study   JCN and POOH   5b

        Document production application - USAF NSW Project   5b1

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

11:15   Demonstration of Calculator and user statistics   RA3Y   5c

12   Lunch   5d

1:15   Application Principles   JHB   5e

         Distributed editing and shared screens   5e1

         Printing and COM   5e2

         Subsystems for formating and global editing   5e3

         Data base structuring, filtering, sorting, and keying   5e4

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

2:15	Experience with NLS SGR	5f
	Output Processor and Directives	5f1
	Format, Letter, and Modify programs	5f2
	Wrap up of content analyzer (review discussions of previous days)	5f3
	TNLS session (Section K - relevant sections of Course Outlines)	5f4

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

5:15   Dinner Break   5g

7   Practice opportunity with ARC resource person (optional)   5h

Seminar On the Augmented Knowledge Workshop Agenda -- 17-22 November
75

FRIDAY

6

9   Developments   6a

         Demonstration of Graphics and Proof   RLB   6a1

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

10   Evolution of Augmented Communities   DCE   6b

11   Discussion and Recap   DCE JCN JHB RLL SGR   6c

12   Formal End of AKW Seminar

6d

Seminar On the Augmented Knowledge Workshop Agenda -- 17-22 November 75

1-5   Optional Workshop on the implemention of an AKW   6e

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

Seminar staff (with seminar role and position at ARC):   7

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

JHB   James H. Bair, coordinator of the seminar and Head of
Applications Development   7a

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

RLL   Robert Lieberman, speaker, coordinator of attendance and Head of
Marketing   7b

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

SGR   Susan G Roetter, instructor and Head of Training   7c

Seminar On the Augmented Knowledge Workshop Agenda -- 17-22 November
75

DCE   Douglas C Engelbart, speaker and Director of the Augmentation
Research Center   7d

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

JCN   James C Norton, speaker, Director of Applications and Assistant
Director of ARC   7e

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
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DVN   Dirk Vannouhuys, speaker and Documentation Specialist/Consultant
and coordinator of the documentation community   7f

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November
75

NDM   N Dean Meyer, speaker and Research Analyst and programmer   7g

Seminar On the Augmented Knowledge Workshop   Agenda -- 17-22 November 75

RLB, Robert L Belleville, speaker, Computer Scientist and graphics specialist   7h

POOH   Ann Weinberg, speaker and Applications Development
Nucleator/Consultant   71

Seminar On the Augmented Knowledge Workshop, ***Initial Agenda***

(J33799) 1-NOV-75 16:15;;;;   Title: Author(s): James H. Bair/JHB;
Distribution: /JCN([ACTION]) RLL([ACTION]) SGR([ACTION])
MEH([ACTION]) BJP([ACTION]) DCE([ACTION]) ARC-ADG([ACTION
]) DVN([ACTION]) POOH([ACTION]) RLB2([ACTION]) ;
Sub-Collections: SRI-ARC ARC-ADG; Clerk: JHB;

33799 Distribution
James C. Norton, Robert N. Lieberman, Susan Gail Roetter, Martin E.
Hardy, Buddie J. Pine, Douglas C. Engelbart, Jeanne M. Beck, Laura J.
Metzger, James H. Bair, Dirk H. Van Nouhuys, Ann Weinberg, Robert
Louis Belleville,