RBP 1-OCT-75 05:35 33597

Letter to ESD/MCI Regarding Modifications to FY76 PMP Submission on Security Task.

ISIM/R, Panara/Autovon 587-3857

Revision to program Management Plan (PMP) PE63728F (Your ltr, 27 Aug 1975)

ESD/MCI (Col Emma)
####;

RBP 1-OCT-75 05:35 33597

Letter to ESD/MCI Regarding Modifications to FY76 PMP Submission on Security Task.

This letter was written after discussion with Col Krutz and Al Barnum. It is intended to inform ESD that the plan to tranition the Security task to 6.4 is still in effect and that the lack of adequate funding is a 6.4 problem.

RBP 1-OCT-75 05:35 33597

Letter to ESD/MCI Regarding Modifications to FY76 PMP Submission on Security Task.

1. The revisions you submitted to Task 09, ADP System Security for the PE63728F PMP, have been reviewed and modified as on the attachment. 1

2. Plans for the Security Task under Project 5550: 2

a. Will be only for FY-76; 2a

b. Will indicate only work to be performed under Project 5550. The PE64740F PMP will be referenced in the INTRODUCTION paragraph so that those interested in the program can get a complete picture by reading both documents; 2b

c. Will indicate a need for an additional $242,000 (the Secure DMS Study was completed in FY-76) only because AFSC/DLC indicated it may reprogram funds within 6.3 to Project 5550 at a later date, if possible (reference DLC messsage R221430Z May 75). 2c

3. It was our understanding that a significant portion of the PE64740F FY-76 funds would be for the security project. Your proposed plans for security work to be performed in Project 5550 appear to fall within the scope of engineering development with the possible exceptions of the design of the security kernel and the design of the operating system. 3

4. If you feel that there is other work in the FY-7T and FY-77 which is advanced development, please contact me and it will be considered along with other programs. As you know, the primary reason for previously including much of the security work in Project 5550 was a practical one i.e., the uncertainty of approval for the 64740F program element. 4

ROBERT D. KRUTZ, Col, USAF
Chief, Information Sciences Division

1 Atch
Mods to Revisions

5

RBP 1-OCT-75 05:35 33597

Letter to ESD/MCI Regarding Modifications to FY76 PMP Submission on Security Task,

Modifications to Project 5550 PMP Revisions

Task 09, ADP System Security

26 Sept 75

Reference Attachment to your 27 Aug 1975 letter

1, Add at the end of the first paragraph of 1:

The Program Management Plan for Program Element 64740F, Applications of Information Processing Technology, should also be read to get a total description of the program,

2, Change the first sentence in the second paragraph of 1 to read:

The major problem in accomplishing the total program is that the currently programmed funding is inadequate to complete all of the efforts,

3, Change 6 as follows:

FY-76 PLANS

In FY-76, the anticipated results for a target large scale general purpose system (the ARPA-developed Multics operating system) with the available $280,000 are: (1) completion of the design of the security kernel for the central computer, (2) front-end processor design, and (3) the redesign of the operating system to interface with the kernel while providing an efficient and compatible user interface, This work will then be transitioned for implementation to PE64740F, Applications of Information Processing Technology, for the development of a secure general purpose prototype system,

4, Reword the last sentence of 6 as follows:

The joint AF-ARPA-industry project will be terminated in the 3rd quarter of FY-76 unless a total minimum program funding of $1.1 million is provided in PE63728F and PE64740F,

5, Delete 7,

6, Change 11 to read:

Finally, and most important, there may yet be another delay in the program. A minimum funding of $1.1 Million for FY-76 is required by the security program. Currently programmed funds in PE63728F and PE64740F total only $0.56 Million and program efforts will have to be terminated when these funds are expended (projected by the end of the 2nd quarter of FY-76). 20a

7. Delete FY-7T and FY-77 columns. 21

8. Change program schedule as on the attached AFSC Form 103. 22

RBP 1-OCT-75 05:35 33597

Letter to ESD/MCI Regarding Modifications to FY76 PMP Submission on Security Task.

(J33597) 1-OCT-75 05:35;;;; Title: (Expedite) Title: Author(s): Roger B. Panara/RBP; Distribution: /RBP([ACTION]) ; Sub-Collections: RADC; Clerk: RBP; Origin: < PANARA, PMP.NLS;1, >, 26-SEP-75 13:35 RBP ;;;;

33597 Distribution
Roger B. Panara,

LAC 1-OCT-75 08:35 33599

OOPS?

could you please resend your item of 30sep regarding parking of cars etc at KWAC, I got a memo about seismographs (which was interesting reading, but not really germain to the issues of parking) Thank%Larry crain 1

LAC 1-OCT-75 08:35 33599

OOPS?

(J33599) 1-OCT-75 08:35;;;; Title: (Unrecorded) Title: Author(s):
LaWrence A. Crain/LAC; Distribution: /RMS2([ACTION]) ;
Sub-Collections: NIC; Clerk: LAC;

33599 Distribution
Robert M. Sheppard,

DLS 1-OCT-75 10:15 33608

Form Letters and Address Lists

Just trying to keep you guys honest, Will there be another release describing a smoother way to do it using Process Branch, Directives, etc? for those with a Brown Belt??

Form Letters and Address Lists

Some comments on the strategies for letter production and multiple copy distribution (33404,). 1

First, congratulations on coming out with something which has application to an office. I always thought there should be at least one of these type applications on a machine called OFFICE-1. That's all the congratulations you get though. 1a

We have found the LETTER program to be useless, as I suspect that most gov't installations will. Uncle Sam, in his infinite wisdom, has seen fit to create coorespondence rules completely differnt from the rest of the world. I suspect that commercial organizations outside SRI may also have a format that they have adopted over the years, that differs slightly from the one produced by LETTER. Hence, for practical purposes, step 4 has to be replaced with a site unique version of LETTER. 1b

I'm surprised at the recommendation to create seperate files for each copy of the letter. wouldn't it be easier to just copy the letter over 20 times in the same file. This would not only save time and energy in creating the copies, but also in printing them out. 1c

For extensive comments on the trials and tribulations of maintaining mailing lists, see (31199,) and (32100,). These lists are in excess of 1000 addresses, and several types of outputs are required. As soon as you get an address list set up, people want to use it for another purpose. 1d

Finally, your strategy does not answer Dave's plea, in (26338,) for an automatic letter typing capability. It seems to me that a fairly simple Process commands Branch would do the trick much quicker and easier than the recommended approach of copying files at TENEX. 1e

I realize that your journal item was aimed at beginning NLS users, but you should not hold back goodies from them, if they are fairly straightforward to obtain. At least give them some glimmer of hope, that using NLS can be easier than an MTST!! 1f

Form Letters and Address Lists

(J33608) 1-OCT-75 10:15;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /ARC-ADG([ACTION]) KWAC([INFO-ONLY]) EJK([
INFO-ONLY]) RJC([INFO-ONLY]) JLM([INFO-ONLY]) ;
Sub-Collections: RADC ARC-ADG KWAC; Clerk: DLS;

33608 Distribution

Jeanne M. Beck, Laura J. Metzger, James H. Bair, Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter, Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone, Inez M. Mattiuz, Connie K. McLindon, Edmund J. Kennedy, Roberta J. Carrier, John L. McNamara,

Qualifications for Sgt. Crabtree's Process Branch

send any questions or problems to us if not discussed here.

Qualifications for Sgt, Crabtree's Process Branch

Two process commands branches were written for Sgt, Crabtree at Gunter to help him with his handling of Air Force Direps, (difficulty reports), This is a short explanation and list of qualifications and suggestions that should be useful to him in increasing the efficiency and smoothness of the process branches, (The branches have been journalized (Journal, Jrnl 30, J33432) 1

The process commands branches are in Sgt, Crabtree's directory, (DSDC-SC,process,), Sgt, Crabtree will input all the incoming direps, (difficulty reports) in a file called Active, The first branch moves all the problems with solutions into a file called Direp-Status-Report, Both problems and solutions entered in this file are then printed out on a standard Air Force direp report form, 2

Every solution will be preceded by four numbers in parens, In the second branch a filter is set to search for solutions preceded by four numbers beginning with a 1 or a 5 and another to search for solutions preceeded by four numbers beginning with either a 2 or an 8, The solutions beginning with a 1 or a 5 along with the corresponding problems will be filed in the Interim-Direps file and those beginning with a 2 or an 8 will be filed in the Inactive-Direps file, 3

Before starting the process branch, a number, (the number of the report) will need to be substituted for the X in statement 1 of the Direps-Status-Report file, The date will also probably need to be changed, 3a

In order to run the branch:
1, load file process and then process commands at each branch
2, or process commands at, process,print and process,file, 3b

The branch will not filter correctly if:
1, SOLUTION is all or partly in lowercase,
2, SOLUTION is not followed by a colon,
3, It is not preceded by four numbers in parens,
4, The SOLUTION is not a third level statement in the Active-Direps file, 3c

In order to stop the commands branch at any point type a ctrl-b or a ctrl-o, If interrupted and want to continue, address the remaining commands in the branch as a group,(using two addresses), 3d

After having run the print branch make sure that the file branch is also run, otherwise when the process is begun again with the print branch two copies of SOLUTIONS will appear in the Direp-Status-Report file, 3e

Qualifications for Sgt. Crabtree's Process Branch

(J33614) 1-OCT-75 13:50;;;; Title: Author(s): Priscilla A. Wold/PAW2; Distribution: /JLC([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: PAW2; Origin: < WOLD, QUALIFICATIONS.NLS;4, >, 25-SEP-75 15:10 PAW2 ;;;;####;

33614 Distribution
Johnny L. Crabtree,

DCE 1-OCT-75 15:09 33615

To Bev re 74 report, format review

Bev: Dick and Jim and I would like to review the layout and formatting conventions that will finally appear with the 74 report. I noticed in (JOURNAL, JRNL30, J26607) that you expected soon to be finished readying it for COM. Can you suggest a good way for us to make such a review? Regards, Doug 1

DCE 1-OCT-75 15:09 33615

To Bev re 74 report, format review

(J33615) 1-OCT-75 15:09;;;; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /BEV([ACTION]) RWW([INFO-ONLY]) JCN([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DCE;

33615 Distribution
Beverly Boli, Richard W. Watson, James C. Norton,

Re: JAC3's Arguments for a USER LANGUAGE (26609,)

Without commenting on the content of Jan's argument, let me raise another question about L-10. Need it be so darned hard at all? Granted, L-10 should be used to really specify things well, but my personal feeling from pawing (sorry, PAW3) through the user's manual is that L-10 requires an inordinate amount of effort to lear if one wants to do simple things like edit a document in a structured way. Certainly languages like TUTOR (PLATO-IV) are much easier to use. Perhaps what we need, in addition to cleaning up L-10, is a special language for building simple subsystems simply.

1

RA3Y 1-OCT-75 17:41 33616

Re: JAC3's Arguments for a USER LANGUAGE (26609,)

(J33616) 1-OCT-75 17:41;;;; Title: Author(s): Raymond R. Panko/RA3Y; Distribution: /JAC3([ACTION]) SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RA3Y;

33616 Distribution

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, Jan A. Cornish, 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

KPH 1-OCT-75 18:59 33617

crummy terminal

walter here -- i'm on the portable TI-735, and the print head is so bad that you can't tell the difference between a U and a W, otherwise I'm learn ing NLS pretty well, 1

KPH 1-OCT-75 18:59 33617

crummy terminal

(J33617) 1-OCT-75 18:59;;;; Title: Author(s): Kenneth P. Hearn/KPH;
Distribution: /LAC([ACTION]) ; Sub-Collections: NIC; Clerk: KPH;

33617 Distribution
Lawrence A. Crain,

KPH 1-OCT-75 19:05 33618

crummy terminal

walter here -- just practcing the sndmail subsyst. This TI-735 portable terminal is working so poorly that I can' tell the difference between a U and a W. 1

KPH 1-OCT-75 19:05 33618

crummy terminal

(J33618) 1-OCT-75 19:05;;;; Title: Author(s): Kenneth P. Hearn/KPH;
Distribution: /LAC([ACTION]) ; Sub-Collections: NIC; Clerk: KPH;

33618 Distribution
Lawrence A. Crain,

JHB 1-OCT-75 20:32 33619

Literature about SRI ARC given to HARPER'S Magazine

Some potentially interesting reading for new members of ARC.

Literature about SRI ARC given to HARPER'S Magazine

Literature about SRI ARC given to HARPER'S Magazine 1

A recent inquiry was made by a representative of the magazine's staff to Roger Hough about the work of his group and ARC. I provided the following to assist a reporter in a journalistic review of ARC/AKW. 1a

Selected Articles about ARC/AKW: 2

Theodor H. Nelson, COMPUTER LIB, Hugo Book Service, Chicago, 1974, pp. 82-83. (XDOC 23354) 2a

"Tools to Draw Us Close". LOOK MAGAZINE reprint, 1970. 2b

Robert Haavind, "Man-Computer 'Partnerships' Explored", In: ELECTRONIC DESIGN, Vol. 17 No. 3, 1 February 1969, pp. 25-32. 2c

Paul Dickson, THINK TANKS. New York, Atheneum, 1971, pp. 2 and 211-212. 2d

Nilo Lindgren, "Toward the Decentralized Intellectual Workshop", INNOVATION, No. 24, September 1971, pp.50-60. (A10480) 2e

J. C. R. Licklider, Robert W. Taylor. "The Computer as a Communication Device", SCIENCE & TECHNOLOGY, April 1968, pp. 21-31. 2f

ARC Supplements: 3

D. C. Engelbart, "Design Considerations for Knowledge Workshop Terminals", In: AFIPS Proceedings, Vol. 42, National Computer Conference, 1973, pp. 221-227. (14851) 3a

Richard W. Watson. "Knowledge Workshop Terminal Systems". In: 1974 SID International Symposium Digest of Technical Papers, Volume V, pp. 156-157. 3b

JHB 1-OCT-75 20:32 33619

Literature about SRI ARC given to HARPER'S Magazine

(J33619) 1-OCT-75 20:32;;;; Title: Author(s): James H. Bair/JHB;
Distribution: /US([ACTION] This might help US represent ARC) SRI-ARC(
[INFO-ONLY]) ; Sub-Collections: SRI-ARC US; Clerk: JHB;
Origin: < BAIR, HARPERS.NLS;3, >, 1-OCT-75 20:28 JHB ;;;;####;

33619 Distribution

Elizabeth K. Michael, Jonathan B. Postel, Elizabeth J. Feinler, 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, Susan Gail Roetter, Priscilla A. Wold, Jeanne M. Beck, Pamela K. Allen, Rita Hysmith, Sandy L. Johnson, 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

RMS2 2-OCT-75 06:30 33620

I apologize for sending you the wrong file in place of the correct note concerning parking near MIT. The error occured because of naming two files with nearly identical names. Here now is the correct (I hope) file that I ment to transmit earlier.

1

This is an additional note about the KWAC meeting location and the use of visitor cars. If you do rent a car , you can park on the street in front of the meeting site. There will be plenty of space for visitor cars on the first day only. For the remainder of the week there are available a limited number of visitor parking permits which will allow you to park in a nearby parking lot. Once the total number of permits is consumed (about 16) then visitors must park on the streets in the area of the meeting site. Here parking will usually be available but it is necessary to feed a parking meter every two hours however, this task can be handled by the my secretary.

2

In you travels to this part of the country I hope you encounter fewer problems then our local hero Paul Revere did when he filed his expense account of that very famous midnight trip. The untold story of the aftermath of his ride is related to you now. Thanks to the new "Freedom of Information Act" which took effect this week, the true story in now available.

3

SCENE: COLONY COUNTING HOUSE 3a

Clerk: (looking up from sheet of foolscap) A marvelous ride, Mr. Revere! Might I have your autograph for my lad? He's 3a1

Revere: Of course. (Scribbles with clerk's quill) Will it take long to process my expense account? 3a2

Clerk: Not at all, sir. A question or two and..... (Scans the sheet of foolscap, raises eyebrows at bottom line) Who Authorized this trip, incidentally? 3a3

Revere: The Sons of Liberty, Sam Adams and John Hancock, 3a4

Clerk: A copy of your travel orders should be attached, Mr. Revere, but we'll waive that. Was public transportation available? 3a5

Revere: At that hour? I was lucky I had my own horse, 3a6

Clerk: You didn't avail yourself of one of the official Post horses at the Green Dragon Tavern? 3a7

Revere: The Postmaster was a Tory. His suspicions..... 3a8

Clerk: Use of privately owned horse requires supervisory authorization, Mr. Revere. If John Hancock will sigh your..... 3a9

Revere: John Hancock will sigh anything. 3a10

Clerk: And this trip destination, "Every Middlesex village and farm." Couldn't you be more exact? 3a11

Revere: How about "Lexington-Concord and return"? 3a12

Clerk: Much better. Now, under "TIME", this "hour of darkness and peril and need" sounds .... well, inexact. 3a13

Revere: Late P.M. to early A.M.? 3a14

Clerk: Thats the ticket! Oh, and for "Purpose of Trip", might we say something less... literary than "the fate of a nation" ? 3a15

Revere: Dissemination of mobilization instructions ? 3a16

Clerk: Excellent. By the way, was any personal business conducted on route? 3a17

Revere: We took a 10 minute break--- but we're only asking straight time for the whole tour, even though it was after hours. 3a18

Clerk: Admirable. Now these "expenses for horse" break down to two shillings per day. Were you figuring the horse by the mile--- or per diem? 3a19

Revere: He eats either way. Two shillings daily. 3a20

Clerk: I take it, then you didn't employ a livery stable that offers government rates? And you didn't get three bids to ..... (Brushes aside question) Pshaw! Enough of these petty technicalities, Mr. Rever. You make a gallant ride, and you deserve your expenses, which come to.....(Runs quill deftly through several items and corrects bottom line figure) 13 shillings and sixpence in Contintental currency,, or one Spanish milled dollar. 3a21

Revere: (Clutching chit offered by clerk and staring in disbelief) Thirteen and six!! That won't even cover what the ride did to my suit! What are all these deductions? 3a22

Clerk: (Using feather end of quill to tick off items)

There's you with-holding, of course, City tax, The horses pension, Wear and tear on the highway. 3a23

Revere: Thirteen and six! I could have stayed home and make teapots for thirteen and six! 3a24

Clerk: Well, Mr. Revere, For and unauthorized trip outside business hours on privately owned transportation you're doing pretty good. 3a25

Revere: Thirteen and six! I could have been soldering tankards at five times that rate! 3a26

Clerk: Yes, On your way home, could you drop this off with the sexton at the Old North Church? It's a summons for a fire code violation, Someone's reported two lanterns in the belfry. 3a27

(J33620) 2-OCT-75 06:30;;;; Title: Author(s): Robert M. Sheppard/RMS2; Distribution: /KWAC([INFO-ONLY]) DAP([INFO-ONLY]) ; Sub-Collections: NIC KWAC; Clerk: RMS2; Origin: < SHEPPARD, CARS,NLS;4, >, 30-SEP-75 08:33 RMS2 ;;;;####;

33620 Distribution

Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter, Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone, Inez M. Mattiuz, Connie K. McLindon, David A. Potter,

RA3Y 2-OCT-75 08:26 33621

Draft of our Proposal to OSIS

This isn't finished by a long shot, but I wanted to be sure I was getting some coordination started. This is a response to Category 7 of a recent NSF Program solicitation. It goes into editing next Tuesday, to Bart Cox on Friday and out the door on the Tuesday after next.

Draft of our Proposal to OSIS

Draft 3 OCT 75 7:43PM

1

As We (Yet) May Think: 1a

A Survey and Analysis of Computer Assistance in the Use of Scientific and Technical Information

1b

prepared by: 1c

D.C. Engelbart, Director
Augmentation Research Center 1c1

R.R. Panko, Communication Analyst
Augmentation Research Center 1c2

approved by: 1d

Bonnar Cox, Executive Director
Information Sciences and Engineering Division 1d1

II CONTENTS

III ABSTRACT

3

There is evidence that scientific and technical information (STI) services will be adopted more readily if they are familiar to users (x,x). One possibile way to encourage familiarity and adoption is to provide users with a number of tools to be used on recovered STI. A number of STI services provide some bench work services and, potentially more importantly, a number of efforts are underway to provide "front end" computer service environments in which a user can access a wide variety of STI and other tools. The purpose of this study is to survey and analyze special purpose STI services that offer bench work tools and general purpose front end computer environments. The end result of the research will be recommendations for bringing the benefits of end-use services to the general STI user. 3a

The study will have two phases. In the first, Stanford Research Insitutute will survey existing special and general purpose benc work systems. In the second phase, SRI will analyze how well existing services fit generally-recognized needs of scientists and will recommend a program of research to bringbench-work tools to all STI users. 3b

Willing to expand from scientist or technologist in own head to included also transactions in task teams, formal organization, colleagues outside own organization, formal information sys 3c

IV PROJECT DESCRIPTION

4

A. The General Problem

4a

Computer-based STI services have traditionally stressed the delivery of information to users. Yet once knowledge reaches users it must be integrated into the complex process of the user's daily work. The information must be annotated and stored away in personal files, used in computations or modeling, forwarded to other members of a task team, and so forth. These types of end-use activities can be, and in some cases already are, computer-augmented, but the degree to which such augmentation is available and the quality of available tools is not well known. The intent of Category 7 is to probe the prevalence and usefulness of various types of computer assistance in daily tasks.

4a1

In 1968, Paisley developed a taxonomy of information uses, in which he viewed the scientist or technologist as living with a series of concentric environments: his or her own head, the task team, the formal organization, colleagues in other institutions, formal information services, and so forth<6>. In paisley's formulation, Category 7 deals primarily with the scientist in his or her own head, an environment that includes not only thought processes but also the demands of work tasks, personal files, computer processing tools and anything else that would normally thought of as "bench work." Although this proposal will examine such bench work services, SRI wishes to note that such research could be extended to address how a scientist or technologist would interact with other organizational and information environments in Paisley's taxonomy. As discussed in Appendix A, SRI would be willing to negotiate a change in scope of this proposal to address broader issues.

4a2

The extent to which computer assistance in the use of STI is unknown. However it is known that three projects are consciously attempting to develop working environments that will provide a scientist or technologist with whatever tools they may need in their daily work. These same projects also provide interfces to outside services, so that STI can be

located and brought in for later manipulation. One project is NLS, a service developed at SRI's Augmentation Research Center. Another is the National Software Works project, which is under way at ARC, Massachusets Computer Associates and elsewhere. The third is the Information Automation project at USC's Information Sciences Institute. It is also known that a number of individual STI services offer use assistance and that a number of computer service vendors allow files generated by some tools to be manipulated by other tools. A survey would be needed to assess the extent number and quality of use assistance services that are now offered or are under development. 4a3

In addition to the need to survey what is avialable, it is necessary to assess the types of steps that must be taken if individual users are to have access to the computer tools they need in their bench work. The experiences of the three systems that have pioneered the construction of multi-service, integrated systems has shown the many difficult problems that such systems raise, but their experiences also have produced a relatively clear overview of the types of actions that must be taken if bench work tools are to be integrated with one another and with "outside" tools such as STI services. In the second phase of the work to be proposed, SRI would survey the experiences of these three projects and, in the light of the services already available on various STI services, present a series of steps that must be taken to integrate bench work tools into general STI services. 4a4

B. Specific Objectives 4b

The program solicitation asks that the work proceed in two phases, a survey phase to determine what information is available and an analysis phase to set objectives for what must be done to make bench work services available to increasing numbers of scientists and technologists. Both phases have the overall objective of determining how bench work tools can be made available to users of STI services, so that STI services can be integrated more completely into the total enterprise of scientific and technological work. 4b1

1. Objectives of the Survey Phase 4b2

The principal objective of the survey phase is to determine what bench work aids to STI users are available or under development, and to assess the status, usefulness and characteristics of these services. 4b2a

a. Systematic Catalog of Special-Purpose Systems 4b2b

SRI will survey at least fifty STI vendors and some major suppliers of computer processing services on which STI services are available, to determine which have tools to augment the use of recovered or retrieved STI. For each tool complex (set of related bench work and STI services), SRI will develop a systematic catalog of capabilities, oriented around user actions that are augmented (filing information, collaboration in writing joint reports, etc.). 4b2b1

A features analysis performed on each complex will focus on general availability, price, extent of usage and how well the service is implemented. The catalog will also specify what computer hardware and executive system software are required and what terminal equipment is supported. The catalog will emphasize fully-implemented systems, except where a highly interesting system is under development. 4b2b2

The survey will include only tool complexes that are generally available to the public or may soon be

generally available. Exclusively in-house systems, such as those that may exist within university computer centers and that access a set of tools not generally sold as a package, will not be surveyed, except to report the use of highly original (and exportable) approaches. 4b2b3

b. Survey of General-Purpose Systems 4b2c

SRI will survey the four systems that are aiming at providing a general "front end" working environment through which users can reach a large variety of services on a large number of machines with comparatively little effort. These systems are important because they can fulfill the need for manipulating information after it is gathered and even to tie bench work services and STI services to a number of formal and informal communication services, through which the scientist or technologist can converse with task team members, others in his or her formal organization and external colleagues. 4b2c1

Specifically, the NLS-8 system currently in use will be surveyed for price, general availability, usage and the level of sophistication at which various tools are implemented. Software and hardware requirements will also be considered. SRI will also survey the three systems still in the planning stage that could be available within a year after the survey's end: NLS-9, the National Software Works priject and the Information Automation project. In each case, specific capabilities and the extent to which general tools can be used will be surveyed. Special emphasis will be give to core tools that will form the user's intimate working environment and to the techniques being used to implement generality of access to tools. 4b2c2

c. Generation of an Overview 4b2d

SRI will summarize the state of the art in a ten to twenty five page summary that will present major trends and note a few exceptional systems. This summary will be made available for widespread distribution and will be submitted to a scientific journal for publication. 4b2d1

2. Objectives of the Analysis Phase 4b3

The overall objectives of the analysis phase are to determine how well current and nearly-developed bench work services fit users' general information needs and to determine what research and development should be encouraged to spur the development of these tools. 4b3a

a. Needs 4b3b

A large number of studies have attempted to survey the information "needs" of scientists. In general, we feel that these studies have not succeeded in developing a systematic catalog of needs, but they have created evidence for a number of themes, especially what features of STI services facilitate adoption, how information needs vary among scientists in different fields and between scientists and technologists, and how task life cycles and organizational factors determine when information or bench work tools are needed. SRI will review the literature to present evidence for what features bench work tools tied to STI services must have if these tools are to be broadly adopted and to fit the work needs of individual knowledge workers and their task teams. 4b3b1

b. Assessment of the Existing Technology 4b3c

In lights of the need assessment and the characteristics of available and nearly-developed bench work services to augment STI use, the match between needs and available tools will be assessed. It is not clear whether a feature-by-feature comparison or a broader and more theoretical comparison will be most suitable. The method of comparison will depend upon the results of prior work. The assessment, however, will aim at finding trends that should be encouraged or discouraged and at pinpointing especially promising tool complexes. 4b3c1

c. Specific Objectives for Advancing the Technology 4b3d

From consideration of promising and potentially

dangerous trends in current developments, SRI will propose a set of specific actions that can be taken to close the gap between the tools that scientists need to use STI services effectively in their daily work. The actions to be proposed would depend upon the availability of bench work tools on existing STI systems, the time frame in which full front end working environments are likely to be ready and the prevalance of nontechnological problems (such as the setting of standards) that might be encountered. Further research may be proposed to settle upon specific courses of action, particularly if two or three promising systems emerge from the assessment and the selection of one or more for development could only be decided by a detailed comparison. 4b3d1

C. Anticipated Impact 4c

The estimated impact of successful completion is difficult to predict. At a minimum, a broad but rather detailed picture of future research needs would emerge from the work, and this should serve to crystallize further research in this area. If further research does result and bench work systems are implemented on a large scale, the impacts could be very large. 4c1

Number of scientists, technologists and knowledge workers in general= 4c2

Productivity if information, need for integration to get adoption 4c3

Interest in the creaton of integrated systems 4c4

D. Technical Approach 4d

1. The Survey Phase 4d1

a. Survey of Special Purpose Systems 4d1a

SRI will develop a list of fifty to one hundred STI systems and general computation vendors that might offer end use services in conjunction with STI. Simultaneously, SRI will develop a one-page project description and mail this description to prospective interviewees. 4d1a1

Next, a telephone interviewing procedure will be developed. The intent of this procedure will be to determine whether bench work services are provided and their nature. All services on the vendors list will then be interviewed by telephone. Live interviews will then be conducted with representatives of promising systems. 4d1a2

To control the interviewing, an online list of vendors will be maintained and reports from telephone and live interviews will be stored there as well. This status file will be available to the technical contract monitor. 4d1a3

b. Survey of General-Purpose systems 4d1b

SRI is already reasonably familiar with major developments among systems attempting to provide fully-integrated online working environment. However SRI will obtain all available documentation and conduct interviews with system designers. Where possible, use data will be collected, as well as data on prices and the specific services that are actually available to users. Hardware, executive system software and terminal constraints will be studied. 4d1b1

The analysis will be most detailed for NLS-8, the only currently operational system. However the National Software Works project and the Information Automation

project at USC's Information Sciences Institute are well into their development phase. The final system, NLS-9 with a Distributed Programming System, does not have a firm implementation date, but DPS and most of the tools for NLS-9 are fully developed, and the integration of NLS-9 with DPS is under development. 4d1b2

After collecting data, SRI will develop a systematic overview of fully-integrated systems. This overview will present methods being used to achieve integration and other methods that could be used. Problems encountered to date will also be discussed. Overall, a systematic conceptual overview will be provided. A systematic overview, rather than a catalog of services, is desirable because the systems are few in number and have not developed in isolation from one another. 4d1b3

c. Summary 4d1c

A ten to twenty five page summary of the phase will be developed jointly by members of the project team. The objective of this summary will be to present suscinctly the current status of bench work tools tied to STI, major trends, and a conceptual overview of what current and emerging systems can offer users. 4d1c1

d. report 4d1d

The report will have four sections, an Introduction to introduce the study and review SRI's approach, surveys of special-purpose and integrated bench-work services available to STI users, and a summary of the results. This summary will essentially be the summary mentioned in the preceeding subsection. detailed information about special-purpose systems offering assistance in the use of STI information will be presented in an Appendix, which may appear as a second volume. 4d1d1

The report will be prepared online and made available for examination to the technical contract monitor. The summary will be extracted as a separate document (an introduction will be added) and published separately. Twenty copies of the final report and fifty

copies of the summary will be delivered to the Office of Science Information Services on July 31, 1976. Should the project be terminated after the survey phase, SRI would be willing to negotiate a contract to publish the final report and executive summary through high-quality, multifont, computer output to microfilm printing. 4d1d2

2. Assessment Phase 4d2

a. Needs Assessment 4d2a

The needs assessment will be based upon a reviews of 1) the literature on communication among scientists and technologists and 2) how computer technology has been used to augment general knowledge workers. The review of the STI literature will be roughly coextensive with what Paisley has characterized as "the scientist within his own head," a distinction that has gained acceptance among several reviewers in the Annual Reviews of Information Science and Technology<99,99,99>. 4d2a1

After the literature review, SRI would extract a summary of which specific features a system to augment the end uses of STI could offer and of which general features such a system would need to fully integrate end uses and to be accepted by users. 4d2a2

b. Existing Capabilities and User Needs 4d2b

Having surveyed both existing capabilities and the probable needs of scientists and technologists, SRI will compare the two and develop specific and general comparisons between capabilities and needs. 4d2b1

c. Agenda of Opportunities for Action 4d2c

Based on the comparison of needs and existing capabilities, SRI will isolate two to five general strategies by which current capabilities could be expanded to fit these needs. One likely strategy is the encouragement of sharing among special-purpose

subsystems, possibly including the creation of a few general tool packages to fill lacunae. Another is the encouragement of current trends to develop fully-integrated systems, perhaps including the creation of special envirnonments to simplify the user interface to a number of STI tools. 4d2c1

The discussion of these strategies would include a broad spectrum of actions that would be required to ensure national availability and adequate quality: R&D to develop tools or probe user needs experimentally, the setting of standards for data sharing among integrated or special-purpose systems, the development of excellent user interfaces and training tools, and so forth. 4d2c2

After selecting these alternative strategies, SRI will evaluate each in terms of probable cost to various agencies and the probable usefulness and generality of the products. Probable user acceptance and cost to users will also be evaluated. On the basis of the evaluation, SRI will propose one or two promising courses of action. If two are proposed, SRI will suggest a program for fuller evaluation of alternatives than the scope of this study would permit. 4d2c3

d. report 4d2d

A final report for the entire project will be prepared online by the project team. During preparation, the report would be available for comment to the technical contract monitor. A twenty- to thirty- page executive summary of the project would also be written online and made available to the technical contract monitor for comment. The executive summary would be submitted for publication in a scientific journal. 4d2d1

Both the final report and the Executive summary would be published through multi-font computer output to microfilm printing. Fifty copies of the final report and 250 copies of the executive summary would be presented to the Office of Science Information Services at the conclusion of the project. 4d2d2

E. Qualifications in this Area 4e

In 1962, Dr. Douglas C. Engelbart completed the study "Augmenting Human Intellect: a Conceptual Framework <99>." Engelbart reviewed the literature on human working forms, the emerging computer technology and conceptual designs for human work systems, including Vannevar Bush's Memex <99>. Engelbart concluded that 1) online tools could augment both the individual and working communities and 2) that an integrated, online working environment could best serve all types of groups and individual knowledge workers. 4e1

Between 1962 and the present, Engelbart's group has been developing an integrated working environment called NLS (for online system). About 150 person-years have gone into the development of NLS. In 1974, NLS was made available to organizations outside the Stanford Research Institute's Augmentation Research Center, where it was designed and implemented. 4e2

Although heavily involved in the creation of NLS, the Augmentation Research Center has been more broadly concerned with the problems of integrating people into the new working environments made possible by computer systems and in the general problem of building more flexible and more fully integrated working environments. ARC was concerned, for example, with the need to broaden NLS's core services by tieing users with resources on other computer systems, especially to tools like large-scale information retrieval for which NLS would not be suitable. As a result of ARC's conceptual work, it was selected to design a distributed programming system and a front-end working environment for the National Software Works project, which is aiming at building a general user interface to resources on the network. 4e3

ARC is also in the process of adapting a new version of NLS (NLS-9), which was developed under the NSW project, and the DPS to non-ARPA Net working environments. The future of this project is not clear at the time of this writing, but the creation of a general tool interface is high on ARC's list of objectives. 4e4

ARC is also closely tied to other research organizations that are developing computer tool environments. For example,

there is currently a teleconference under way among system designers to probe the needs of future communication systems. Among the participants other than ARC is USC's Information Automation project, which is constructing a front-end working environment for correspondence creation and control in military organizations, MIT's project MAC, which is developing a general online working environment for computer programmers, Bolt Beranek and Neuman, which is developing communication facilities for the ARPA Network and several users. 4e5

F. Bibliography 4f

Allen, T.J. and Gerstberger, P.G., "Report of a Field Experiment to Improve Communications in a Product Engineering Department: the Nonterritorial Office," Alfred P. Sloan School of Management Working Paper No. 579-71, M.I.T., 1971. 4f1

A nonterritorial office, in which there are no fixed desks, improves communication. 4f1a

Allen, T.J. and P.G. Gerstberger, "Criteria for the Selection of an Information Source," Alfred P. Sloan School of Management Working Paper 284-67, M.I.T., 1967. 4f2

Accessibility, familiarity and ease of use are more important than quality in determining which sources of STI are used first, although not in determining which sources information will be selected from. 4f2a

Allen, T.J., "Managing the Flow of Scientific and Technological Information," Ph. D. Dissertation, M.I.T., 1966. 4f3

Gatekeepers are important in determining what information reaches scientists and technologists. 4f3a

High quality R and D organizations in competitive bidding situations use more internal communication and less communication outside the firm than bidders with lower quality proposals. 4f3b

Scientists may use literature more than technologists because of training, nature of their tasks or the adequacy of available STI information. 4f3c

The work team is the most significant source of STI. 4f3d

Allen, T.J., "The Utilization of Information Sources during R and D Proposal Preparation," Research Program on the Organization and Management of R and D, M.I.T., 1964 4f4

Stage of research affects information seeking behaviors. 4f4a

Allen, T.J., A Gerstenfield and P.G. Gerstberger, "The Problem of Internal Consulting in an R and D Laboratory," Alfred P. Sloan School of Management Working Paper 319-68, M.I.T., 1968. 4f5

When task teams doing similar tasks are compared, those using larger amounts of communication with colleagues in the organization outside the work team are usually the most successful. Communication within the team is high regardless of performance. 4f5a

Literature is often turned to first, probably in preparation for oral discussions. 4f5b

Allen, T.J., M. Adrien and A. Gerstenfeld, "Time Allocation Among Three Technical Information Channels by R and D Engineers," Alfred P. Sloan School of Management Working Paper 184-66, M.I.T., 1966. 4f6

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Americans and foreign scientists at an international meeting rated sources of information differently. 4f7a

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A colleague in the work team is the modal choice for seeking information. 4f9a

Augmentation Research Center, "Online Team Environment: Network Information Center and Computer Augmented Team Interaction," Stanford Research Institute, Menlo Park, Ca. 94025, March 1968. 4f10

Baker, N.R., J. Siegmann and A.H. Rubenstein, "The Effects of Perceived Needs and Means on the Generation of Ideas for Industrial Research and Development Programs," I.E.E.E. Transactions on Engineering Management, 14, 1968. 4f11

Needs information (i.e., demand information) most often comes from colleagues outside the immediate group. Even when special idea-generating group sessions are initiated, as many needs ideas come from outside the immediate group as within the group. 4f11a

Brittain, J.M., "User Studies in Education and the Feasibility of an International Survey of Information Needs in Education," Council of Europe, EUDISED Steering Group, Strasbourg, France, 1971. 4f12

Needs may be very different than demands. 4f12a

Crane, D., "Social Structure in a Group of Scientists: a Test of the 'Invisible College' Hypothesis," American Sociological Review, Vol. 34, No. 3, June 1969, pp. 335-352. 4f13

A scientist's field of research guides his or her problem selection. 4f13a

Crane, D., "The Nature of Scientific Communication and Influence," International Social Science Journal, Vol. 22, No. 1, 1970, pp. 28-41. 4f14

A scientist's field of research guides his or her problem selection. 4f14a

Crane, D., Invisible Colleges: Diffusion of Knowledge in Scientific Communities, Univ. of Chicago Press, 1972. 4f15

A scientist's field of research guides his or her problem selection. 4f15a

Del Frate, A.A. and J.T. Riddle, "Computer User Interaction: Does it Exist?" Proceedings of the American Society for Information Science Annual Meeting No. 36, Los Angeles, 1973. 4f16

Few people used the RECON system directly. Most worked through intermediaries. 4f16a

Engelbart, D.C., "Augmenting Human Intellect: a Conceptual Framework," Stanford Research Institute, Menlo Park, Ca. 94025, October 1962. 4f17

This was the original concept paper that led to the development of NLS. The concept of an integrated online working environment was described. The document refers extensively to Memex and other STI tools and needs. 4f17a

Engelbart, D.C., "Augmenting Human Intellect: Experiments, Concepts and Possibilities," Stanford Research Institute, Menlo Park, Ca. 94025, March 1963. 4f18

Engelbart, D.C. and B. Huddart, "Research on Computer-Augmented Information Management," Stanford Research Institute, Menlo Park, Ca. 94025, March 1965. 4f19

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Engelbart, D.C., "Coordinated Information Services for a Discipline- or Mission-Oriented Community," paper presented at the Second Annual Computer Communications Conference, January 24, 1973. 4f21

Describes how online and offline information services for a community of workers can be designed and coordinated. 4f21a

Engelbart, D.C., R.W. Watson and J.C. Norton, "The Augmented Knowledge Workshop," Proceedings of the National Computer Conference, June 1973. 4f22

Describes the community of users making use of online and offline working environments coordinated through the use of NLS and technology transfer techniques developed by the Augmentation Research Center and these organizations. 4f22a

Friedlander, J., "Clinician Search for Information," Journal of the American Society for Information Science, Vol. 24, No. 1, (January-February 1973), pp. 65-69. 4f23

Ease of Accessibility promotes use. 4f23a

Frischmuth, D.S. and T.J. Allen, "A Model for the Description and Evalutation of Technical Problem Solving," I.E.E.E. Transactions on Engineering Management. 4f24

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Frost, P. and R. Whitley, "Communication Patterns in a Research Laboratory," R&D Management, Vol. 1, No. 2, February 1971, pp. 71-79. 4f25

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Social scientist differ from hard scientists in their information seeking behaviors. 4f26a

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Goldberg, A.L., "Information Needs of Social Scientists and Ways of Meeting Them," International Social Science Journal, Vol. 23, No. 2, 1971, pp. 273-284. 4f28

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Propinquity affects communication. 4f29a

Hall, A., P. Clague and T.M. Aitchison, "The Effect of the Use of a SDI Service on Information-Gathering Habits of Scientists and Technologists," Institution of Electrical Engineers, INSPEC, London, 1972. 4f30

Scientists who use SDI services tended to value them despite a general decline in valuation among other scientists. Suspected to be a familiarity effect. 4f30a

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Krulee, G.K. and E.B. Nadler, "Studies of Education for Scientists and Engineers: Student Values and Curriculum Choice," I.E.E.E. Transactions on Engineering Management, December 1960. 4f34

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About two thirds of the important ideas leading to innovation in an industrial firm came from outside the firm. 4f35a

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Propinquity affects communication. 4f36a

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The availability of services in libraries stimulates demand for library services. 4f38a

Teachers differ from researchers in their uses of library services. 4f38b

Line, M.B., M.J. Britain and F.A. Cranmer, "Information Requirements of Education Lecturers and School Teachers,"

Research Report No. 3, Bath University of Technology, Bath England, 1971. 4f39

Teachers differ from researchers in their uses of library services. 4f39a

Line, M.B., M.J. Britain and F.A. Cranmer, "Information Requirements of Social Scientist in Government Departments," Investigation into Information Requirements, Research Report No. 3, Bath University of Technology, Bath England, 1971. 4f40

Social scientists in government positions need fewer information services than social scientists working in educational institutions. 4f40a

Menzel, H., "Scientific Communication: Five Themes from Social Science Research," American Psychologist, pp. 99-1004, 21, November 1966. 4f41

Needs are not identical to habits. A scientist or technologist's way of proceeding and attitudes toward information souces may be unrelated to his or her need for information. 4f41a

Menzel, H.T., "Can Science Information Needs be Empirically Determined," in Thayer, L., ed., Communication: Concepts and Perspectives, Spartan, 1967. 4f42

Dissimilarity of styles may lead to high performance because the individual has more access to unplanned communication. 4f42a

Nelson, J., "Faculty Awareness and Attitudes toward Academic Library Reference Services: a Measure of Communication," College and Research Libraries, Vol. 34, No. 5,, September 1973, pp. 415-423. 4f43

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North American Aviation, Department of Defense User Needs Study, Phase II. Final Technical Report, 1966. 4f44

A colleague in the work team is the modal choice for seeking information. 4f44a

Pelz, D.C. and F.M. Andrews, Scientists in Organizations: Productive Climates for Research and Development, Wiley, 1966. 4f45

High individual performace relates to high levels of communication. Diversity of communication sources also correlates with high performance. 4f45a

The work team is the most significant source of STI. 4f45b

Price, D.J.dS., "Science Since Babylon," Yale, 1961. 4f46

Rosenberg, V., "Factors Affecting the Preferences of Industrial Personnel for Information Gathering Methods," Information Storage and Retrieval, 3, June 1967. 4f47

Accessibility and ease of use determine which source of information will be used first. 4f47a

Rosenbloom d, R.S. and F.W. Wolek, Technology, Information and Organization: Information Transfer in Industrial R and D., Harvard Graduate School of Business, 1967. 4f48

The type of information sought and the channels used depend on work setting, task, experience, seniority, education and professional activity in ways that are difficult to discuss simply. 4f48a

Task differences among scientists and among technologists dilute the traditional dissimilarities in information seeking styles between scientists and technologists. 4f48b

The work team is the most significant source of STI, even for technologists. 4f48c

Rosenbloom, R.S., C.P. McLaughlin and F.W. Wolek, "Technology Transfer and the Flow of Technical Information in a Large Industrial Corporation," Graduate School of Business, Harvard University, 1965. 4f49

Chance acquisition accounts for 30 percent of successful information-receiving episodes. 4f49a

Scott, C., "The Use of Technical Literature by Industrial Technologists," Proceedings of the International Conference on Scientific Information, NAS-NRC, Washington, D.C., 1959. 4f50

Dissimilarity of styles in a group is important to high performance. 4f50a

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Chemists make two data searches, on the average, each day. 4f51a

Smith, C.G., "Scientific Performance and the Composition of Research Teams," Administrative Science Quarterly, Vol. 16, No. 4, December 1971, pp. 486-495. 4f52

If leaders use different problem-solving techniques than followers, there will be a higher volume of results. 4f52a

Sussex, University of, Science Policy Research Unit, "Success and Failure in Industrial Innovation," Center for the Study of Industrial Innovation, London, 1972. 4f53

Differences in Social vs. Physical Scientists. 4f53a

Organizations that are superior in meeting market demand are better tied with communications to the outside world. 4f53b

Utterback, J.M. "The Process of Technical Innovation in Industrial Firms," Ph. D. dissertation, M.I.T. 1969. 4f54

Needs information (i.e., demand) comes primarily from discussions with other, while most means information (i.e. solution) information comes from the individual. After the problem has been identified, information seeking patterns change. 4f54a

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V PROJECT PLAN 5

A. Schedule of Activities 5a

The Survey Phase 5a1

The survey of special-purpose systems will begin in January 2, 1976. During January and most of February, a list of prospective interviewees will be generated and each will be sent a description of the project. Beginning in late February, telephone interviews will be conducted and a few site visits will be made. During March and April, site visits will be completed. 5a1a

The survey of genral-purpose systems will begin immediately on January 2. SRI is familiar with all major general-urpose systems, but it will make an attempt to locate additional systems that could grow into integrated systems. Between January and May, ARC will develop a conceptual overview of trends and techniques in the integration of work environments, pointing out where important trends are developing well and where other trends have yet to emerge. The analysis will also consider in depth the reasons to create integrated work environments in terms of human work processes. The price of NLS service will be analyzed and future cost trends for various types of integrated systems assessed. 5a1b

In May and June, SRI will prepare the final report and summary. As noted above, the report and summary will be prepared online and the technical contract monitor will be invited to comment upon it. Although no attempt will be made to structure the report and summary for output on computer output to microfilm (COM), it should be possible to add COM directives to normal output processing directives with a minimum of effort should OSIS wish to negotiate a spearate contract to COM the final report or summary. 5a1c

B. Project Management 5b

The project leader will be Dr. R.R. Panko. Dr. Panko will be responsible for the overall management of the project. The project supervisor will be Dr. D.C. Engelbart. 5b1

VI BUDGET

VII INSTITUTIONAL INFORMATION 7

A. Facilities and Personnel 7a

the NLS system 7a1

B. Biographical Sketches 7b

DCE, RA3Y, RWW, JEW, CHI, RWH or somebody at SRI who likes to do surveys 7b1

C. Certification of Availability 7c

D. Related Programs that May Help or Interfere 7d

NSW, NSA (or just others to whom being approached), ongoing NLS development, including the AKW 7d1

VIII APPENDICES 8

Draft of our Proposal to OSIS

(J33621) 2-OCT-75 08:26;;;; Title: Author(s): Raymond R. Panko/RA3Y;
Distribution: /DCE([INFO-ONLY]) RLL([INFO-ONLY]) JEW([
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RA3Y; Origin: < PANKO, OSIS-CATEGORY7-PROPOSAL-DRAFT.NLS;13, >,
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33621 Distribution
Douglas C. Engelbart, Robert N. Lieberman, James E. (Jim) White,
James H. Bair,

RADC Weekly NLS Stats for AUG

	TIME--PERIOD	CPU HRS	CONNECT HRS	
				1
				2
				3
(BUCCIERO)	02AUG--06SEP	,00	,00	4
(DIMAGGIO)	02AUG--06SEP	,00	,00	5
(FEMIA)	02AUG--06SEP	,00	,00	6
(KESSELMAN)	02AUG--06SEP	,00	,00	7
(LOMBARDO)	02AUG--06SEP	,00	,00	8
(MCLEAN)	02AUG--06SEP	,00	,00	9
(NELSON)	02AUG--06SEP	,00	,00	10
(RUPLE)	02AUG--06SEP	,00	,00	11
(RZEPKA)	02AUG--06SEP	,00	,00	12
(VANALSTINE)	02AUG--06SEP	,00	,00	13
(CALICCHIA)	02AUG--06SEP	,00	,08	14
CALICCHIA	23-AUG-75	,00	,08	14a
(STINSON)	02AUG--06SEP	,02	,55	15
STINSON	30-AUG-75	,01	,24	15a
STINSON	23-AUG-75	,01	,23	15b
STINSON	9-AUG-75	,00	,05	15c
STINSON	2-AUG-75	,00	,03	15d
(PATTERSON)	02AUG--06SEP	,01	,62	16
PATTERSON	9-AUG-75	,01	,50	16a
PATTERSON	2-AUG-75	,00	,12	16b
(PETELL)	02AUG--06SEP	,03	1,03	17
PETELL	2-AUG-75	,03	1,03	17a

(WEBER)	02AUG--06SEP	.02	1.07	18
WEBER	2-AUG-75	.02	1.07	18a
(IUORNO)	02AUG--06SEP	.07	1.17	19
IUORNO	30-AUG-75	.06	1.00	19a
IUORNO	2-AUG-75	.01	.17	19b
(BARNUM)	02AUG--06SEP	.03	1.21	20
BARNUM	30-AUG-75	.02	.96	20a
BARNUM	16-AUG-75*	.01	.25	20b
(LORETO)	02AUG--06SEP	.10	1.42	21
LORETO	30-AUG-75	.02	.83	21a
LORETO	23-AUG-75	.01	.24	21b
LORETO	16-AUG-75*	.01	.15	21c
LORETO	9-AUG-75	.01	.20	21d
(SLIWA)	02AUG--06SEP	.06	1.51	22
SLIWA	30-AUG-75	.05	1.15	22a
SLIWA	23-AUG-75	.01	.36	22b
(DECONDE)	02AUG--06SEP	.07	2.09	23
DECONDE	16-AUG-75*	.07	2.09	23a
(LIUZZI)	02AUG--06SEP	.06	2.38	24
LIUZZI	16-AUG-75*	.00	.07	24a
LIUZZI	2-AUG-75	.06	2.31	24b
(KRUTZ)	02AUG--06SEP	.12	3.52	25
KRUTZ	30-AUG-75	.04	1.47	25a
KRUTZ	16-AUG-75*	.01	.30	25b
KRUTZ	9-AUG-75	.07	1.75	25c

RADC Weekly NLS Stats for AUG

(FMS)	02AUG--06SEP	,28	6,90	26
FMS	30-AUG-75	,25	6,02	26a
FMS	16-AUG-75*	,02	,30	26b
FMS	2-AUG-75	,01	,58	26c
(WWMCCs)	02AUG--06SEP	,09	7,59	27
WWMCCS	30-AUG-75	,01	,53	27a
WWMCCS	23-AUG-75	,02	1,24	27b
WWMCCS	16-AUG-75*	,02	1,04	27c
WWMCCS	9-AUG-75	,02	3,54	27d
WWMCCs	2-AUG-75	,02	1,24	27e
(HILBING)	02AUG--06SEP	,13	8,52	28
HILBING	30-AUG-75	,08	4,86	28a
HILBING	23-AUG-75	,02	,98	28b
HILBING	16-AUG-75*	,01	,17	28c
HILBING	9-AUG-75	,02	1,75	28d
HILBING	2-AUG-75	,00	,76	28e
(BERGSTROM)	02AUG--06SEP	,31	9,52	29
BERGSTROM	30-AUG-75	,09	3,20	29a
BERGSTROM	23-AUG-75	,17	4,85	29b
BERGSTROM	16-AUG-75*	,02	,44	29c
BERGSTROM	9-AUG-75	,03	1,03	29d
(LAWRENCE)	02AUG--06SEP	,31	9,64	30
LAWRENCE	30-AUG-75	,01	,33	30a
LAWRENCE	23-AUG-75	,10	2,26	30b
LAWRENCE	16-AUG-75*	,00	,11	30c

RADC Weekly NLS Stats for AUG

LAWRENCE	9-AUG-75	.01	.35	30d
LAWRENCE	2-AUG-75	.19	6.59	30e
(MCNAMARA)	02AUG--06SEP	.10	13.95	31
MCNAMARA	30-AUG-75	.03	3.47	31a
MCNAMARA	23-AUG-75	.03	3.45	31b
MCNAMARA	16-AUG-75*	.00	.35	31c
MCNAMARA	9-AUG-75	.04	6.29	31d
MCNAMARA	2-AUG-75	.00	.39	31e
(RWALKER)	02AUG--06SEP	.28	14.84	32
RWALKER	16-AUG-75*	.02	.70	32a
RWALKER	9-AUG-75	.00	.04	32b
RWALKER	2-AUG-75	.26	14.10	32c
(LAFORGE)	02AUG--06SEP	.77	19.12	33
LAFORGE	30-AUG-75	.12	2.07	33a
LAFORGE	23-AUG-75	.22	9.23	33b
LAFORGE	16-AUG-75*	.19	3.01	33c
LAFORGE	9-AUG-75	.14	3.16	33d
LAFORGE	2-AUG-75	.10	1.65	33e
(PANARA)	02AUG--06SEP	.75	22.04	34
PANARA	30-AUG-75	.39	9.51	34a
PANARA	23-AUG-75	.34	10.76	34b
PANARA	9-AUG-75	.02	1.77	34c
(LAMONICA)	02AUG--06SEP	.54	32.62	35
LAMONICA	16-AUG-75*	.23	9.85	35a
LAMONICA	9-AUG-75	.27	17.17	35b

LAMONICA	2-AUG-75	.04	5.60	35c
(KAUBISCH)	02AUG--06SEP	3.56	56.38	36
KAUBISCH	30-AUG-75	1.37	33.98	36a
KAUBISCH	23-AUG-75	.02	1.79	36b
KAUBISCH	16-AUG-75*	.01	1.40	36c
KAUBISCH	9-AUG-75	1.58	13.74	36d
KAUBISCH	2-AUG-75	.58	5.47	36e
(CAVANO)	02AUG--06SEP	3.58	62.45	37
CAVANO	30-AUG-75	.19	6.22	37a
CAVANO	23-AUG-75	.01	.14	37b
CAVANO	16-AUG-75*	.02	.61	37c
CAVANO	9-AUG-75	2.71	34.00	37d
CAVANO	2-AUG-75	.65	21.48	37e
(TOMAINI)	02AUG--06SEP	2.87	71.94	38
TOMAINI	30-AUG-75	1.38	25.79	38a
TOMAINI	23-AUG-75	1.23	38.68	38b
TOMAINI	16-AUG-75*	.18	5.94	38c
TOMAINI	9-AUG-75	.04	.82	38d
TOMAINI	2-AUG-75	.04	.71	38e
(WINGFIELD)	02AUG--06SEP	2.33	74.88	39
WINGFIELD	30-AUG-75	.53	15.17	39a
WINGFIELD	23-AUG-75	.83	24.59	39b
WINGFIELD	16-AUG-75*	.50	16.55	39c
WINGFIELD	9-AUG-75	.21	9.78	39d
WINGFIELD	2-AUG-75	.26	8.79	39e

RADC Weekly NLS Stats for AUG

(CARRIER)	02AUG--06SEP	3,38	82,40	40
CARRIER	30-AUG-75	,51	22,09	40a
CARRIER	23-AUG-75	1,02	22,11	40b
CARRIER	16-AUG-75*	,24	9,36	40c
CARRIER	9-AUG-75	1,57	26,94	40d
CARRIER	2-AUG-75	,04	1,90	40e
(STONE)	02AUG--06SEP	5,67	116,57	41
STONE	30-AUG-75	1,86	37,09	41a
STONE	23-AUG-75	1,15	17,36	41b
STONE	16-AUG-75*	,51	11,03	41c
STONE	9-AUG-75	1,02	25,73	41d
STONE	2-AUG-75	1,13	25,36	41e
(KENNEDY)	02AUG--06SEP	7,57	132,88	42
KENNEDY	30-AUG-75	1,27	22,10	42a
KENNEDY	23-AUG-75	,67	10,50	42b
KENNEDY	16-AUG-75*	1,18	22,14	42c
KENNEDY	9-AUG-75	2,96	51,33	42d
KENNEDY	2-AUG-75	1,49	26,81	42e
(RADC)	02AUG--06SEP	33,32	764,38	43
RADC	30-AUG-75	8,48	203,43	43a
RADC	23-AUG-75	5,88	148,87	43b
RADC	16-AUG-75*	3,24	85,85	43c
RADC	9-AUG-75	10,77	200,07	43d
RADC	2-AUG-75	4,95	126,16	43e

DLS 2-OCT-75 09:08 33622

RADC Weekly NLS Stats for AUG

(J33622) 2-OCT-75 09:08;;;; Title: Author(s): Duane L. Stone/DLS;
Sub-Collections: RADC; Clerk: DLS;

DLS 2-OCT-75 09:14 33625

Aug Summary of RADC Use of NLS

for weekly detail see (33622,)

DLS 2-OCT-75 09:14 33625

Aug Summary of RADC Use of NLS

	TIME--PERIOD	CPU HRS	CONNECT HRS	
				1
				2
				3
(BUCCIERO)	02AUG--06SEP	.00	.00	4
(DIMAGGIO)	02AUG--06SEP	.00	.00	5
(FEMIA)	02AUG--06SEP	.00	.00	6
(KESSELMAN)	02AUG--06SEP	.00	.00	7
(LOMBARDO)	02AUG--06SEP	.00	.00	8
(MCLEAN)	02AUG--06SEP	.00	.00	9
(NELSON)	02AUG--06SEP	.00	.00	10
(RUPLE)	02AUG--06SEP	.00	.00	11
(RZEPKA)	02AUG--06SEP	.00	.00	12
(VANALSTINE)	02AUG--06SEP	.00	.00	13
(CALICCHIA)	02AUG--06SEP	.00	.08	14
(STINSON)	02AUG--06SEP	.02	.55	15
(PATTERSON)	02AUG--06SEP	.01	.62	16
(PETELL)	02AUG--06SEP	.03	1.03	17
(WEBER)	02AUG--06SEP	.02	1.07	18
(IUORNO)	02AUG--06SEP	.07	1.17	19
(BARNUM)	02AUG--06SEP	.03	1.21	20
(LORETO)	02AUG--06SEP	.10	1.42	21
(SLIWA)	02AUG--06SEP	.06	1.51	22
(DECONDE)	02AUG--06SEP	.07	2.09	23
(LIUZZI)	02AUG--06SEP	.06	2.38	24
(KRUTZ)	02AUG--06SEP	.12	3.52	25

Aug Summary of RADC Use of NLS

(FMS)	02AUG--06SEP	.28	6.90	26
(WWMCCS)	02AUG--06SEP	.09	7.59	27
(HILBING)	02AUG--06SEP	.13	8.52	28
(BERGSTROM)	02AUG--06SEP	.31	9.52	29
(LAWRENCE)	02AUG--06SEP	.31	9.64	30
(MCNAMARA)	02AUG--06SEP	.10	13.95	31
(RWALKER)	02AUG--06SEP	.28	14.84	32
(LAFORGE)	02AUG--06SEP	.77	19.12	33
(PANARA)	02AUG--06SEP	.75	22.04	34
(LAMONICA)	02AUG--06SEP	.54	32.62	35
(KAUBISCH)	02AUG--06SEP	3.56	56.38	36
(CAVANO)	02AUG--06SEP	3.58	62.45	37
(TOMAINI)	02AUG--06SEP	2.87	71.94	38
(WINGFIELD)	02AUG--06SEP	2.33	74.88	39
(CARRIER)	02AUG--06SEP	3.38	82.40	40
(STONE)	02AUG--06SEP	5.67	116.57	41
(KENNEDY)	02AUG--06SEP	7.57	132.88	42
(RADC)	02AUG--06SEP	33.32	764.38	43

Aug Summary of RADC Use of NLS

(J33625) 2-OCT-75 09:14;;;; Title: Author(s): Duane L. Stone/DLS; Distribution: /RADC([INFO-ONLY]) ; Sub-Collections: RADC; Clerk: DLS;

33625 Distribution

Rocco F. Iuorno, Thomas J. Bucciero, Roger B. Panara, John L. McNamara, Joseph P. Cavano, Duane L. Stone, Marcelle D. Petell, Thomas F. Lawrence,
Wolf-Hasso Kaubisch, Kim Cynthia Carter, Samuel L. Ruple, Stephen P. Sutkowski, Richard Calicchia, William W. Patterson, Francis J. Hilbing, Robert K. Walker, Frank P. Sliwa, Joe F. Femia, Roger W. Weber, Melville J. Draper, Robert D. Krutz, James W. Hyde, David T. Craig, Fred N. Dimaggio, Robert E. Doane, Richard Nelson, William F. Stinson, Daniel R. Loreto, John B. McLean, Murray L. Kesselman, Edward F. LaForge, Agatha C. Deconde, Alan R. Barnum, Larry M. Lombardo, Roberta J. Carrier, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Raymond A. Liuzzi, Donald VanAlstine, Deane F. Bergstrom, Frank S. LaMonica, William E. Rzepka

SRI-ISG Writeup on Automated Document Production Capabilities

I. INTRODUCTION

The field of machine-aided document production is experiencing a period of chaotic growth. New hardware and systems ranging from typewriters with limited magnetic card memory to highly sophisticated systems such as SRI's NLS are flooding the marketplace. Often new products evolve with little semblance of order, preparation for equipment standardization, anticipation of system evolution, or orientation toward user-specific problems. Users report startling successes and failures, but more frequently report uncertain outcomes in a field where the real costs of the old procedures are difficult to measure and where organizational lines frequently inhibit change. Decision makers must anticipate cost and user adaptation to and acceptance of an unfamiliar medium thrust on an untested environment.

At the same time the conventional methods of publication are being challenged sharply on several fronts. Paper costs are becoming prohibitive, labor costs are rising, production schedules are becoming tighter, and the conventional storage of an ever increasing volume of material is becoming physically unmanageable.

The increasing cost of conventional processing and the promise of economy and efficiency of computerized document production have brought many organizations to alternative approaches to current equipment and procedures despite the seemingly equivocal results. With more organizations making such a transition, often with dramatic success, the competitive edge becomes a greater threat to the continued existence of many traditional publishing operations as their costs march on unabated. We believe growing technological pressures are accelerating the gradual transition to computer-aided document production systems. These pressures include:

* the rapid expansion of automated information storage and retrieval systems and abstracting services,

* the growing number of client requests for material to be submitted in machine readable form,

* the use of microfilm for document storage,

* the rapid transmission of documents and other textual material over large distances, as well as

* the parallel appearance on the technology front of a plethora of computer aids and services in both the highly specialized areas as well as the general purpose text processing field.

A large number of computer service bureaus, software editing packages, and specialized automated tools have been designed for or

adapted to the document publication industry. Thus the selection of equipment or services to fit the needs of the organization has become a complex task requiring extensive research on the part of the technical publisher, and education to facilitate interpreting the jargon. Coupling this with the predictable lack of objectivity on the part of potential vendors makes choosing wisely very difficult. 5

Other potential barriers, often technical, also contribute to these problems. The equipment specifications are expressed in terminology readily comprehensible only to computer systems experts. The economies of scale cannot readily be predicted at such an early stage. Potential incompatibilities between equipment capabilities and company needs can be elusive. Even just researching equipment with better or more suitable gear to satisfy requirements can be laborious and confusing. 6

Perhaps at the heart of much of this discussion is the implicit often dramatic change in procedures that attends incorporating new tools in the document preparation operation. Unless these are foreseen and prepared for, use of the tools will likely be abortive and result in extended deadlines rather than improved efficiency. 7

Finally, we should point out that some industrial sectors have realized extraordinary success in making the transition to automated publication aids. Examples are the newspaper publication industry, large book publishers, phone directory publishers, and others. These segments of the industry have met common problems with a strength gained from cooperation and pooled resources to meet their shared needs. The results have been commendable and attest to the cost savings and production streamlining that can be accomplished by procedure rationalization and judicious application of new technology tools. 8

II. BACKGROUND 9

SRI has actively participated in the evolution of document production automation and has also kept abreast of the developments both big and small in the industry growth. We have analyzed and rationalized client procedures to assist adjusting to the incorporation of new tools. 10

To focus more directly on these tasks, SRI has assembled a talented core of research staff with a long history of involvment in and dedication to the growth and adaptation of computer-aided text-processing systems to client needs. This team consists of systems analysts with expertise in a number of computer specialties, high technology computer system engineers with extensive system development experience in the text-processing field, and technical editors and staff from the SRI technical publications services who

lend production-oriented publications experience and insight to the effort as required.

This combination of skills from complementary text-processing oriented disciplines, with a long history of involvement in computer-aided text-processing and having as a primary goal the design and development of production-oriented automated text-processing systems, offers a uniquely qualified team for effectively coping with document production problems.

III. OBJECTIVES

We are offering services to potential clients with the following primary objectives:

* To assist the client in significantly reducing the costs of his document production activities.

* To define alternative approaches to achieving a rationalized cost-effective system, customized to the client's needs.

* To report on these alternative path options, and to work jointly with the client in selecting an acceptable approach.

* To develop a plan for realizing the transition to the revised technical publication system. This plan will be designed to have continuity in time and bridge the primary immediate requirements with the diverse long range needs of the client organization.

* In selected cases, as appropriate, to specify, design, and implement a production-oriented automated text-processing system tailored to the specific requirements of the client organization and to apply current technology tools in a total system approach to the application at hand.

IV. METHOD OF APPROACH

Our past and continuing dedication to the application of automated tools to the technical publication industry gives the SRI team a rare melding of both the maturity and wisdom derived from experience and a tempered perspective on the problems and their solutions. We are offering this expertise in a phased set of services typically consisting of the following steps:

Preliminary Phase - Problem Definition and Scope

* Survey the client's document production activities and review requirements to gain perspective on needs and goals and to assess the approach and scope. This requires access to and assistance

from the client organization's staff. (Usually one to two manweeks) 17a

* Prepare and submit a proposal for first phase tasks. 17b

First Phase - Analysis 18

* Analyze the technical publication operation to chart the system flow and the interaction of complementary facilities and understand the philosophy behind the current structure of the operation. 18a

* Identify the anticipated direction and growth of the client organization in publishing and word processing areas. 18b

* Invoke techniques that we have developed to establish a basis for quantifying the costs associated with their publishing operations. 18c

* Analyze the detailed document characteristics for format, class of material, rigidity of layout, type of character sets, complexicty of capture, publication schedules, etc. 18d

* Record the relevant statistics, such as the number of rewrite cycles, the delay times, document revisions, extent of editorial corrections, percentage of boilerplate material, format continuity within documents and degree of reuse of documents. 18e

* Identify functions characterized by inefficiences, operations that would benefit by procedural improvements or steps obviously amenable to automated techniques. 18f

* Given the publishing problems, determine in the abstract one or more desireable courses for achieving these requirements and goals. 18g

* Translate these courses into practical realizable goals within the current technology constraints. 18h

* Identify available or achievable systems support for these approaches from the complement of current equipment, services, and software. 18i

* Recommend and, if so desired, design and guide the implementation of a system suited to the client needs. 18j

Subsequent Phase - Detailed Design, Implementation, Further Consulting, ... 19

* As requested or indicated. 19a

V. QUALIFICATIONS OF SRI 20

A. Overview 21

SRI has been active in systems analysis, design and development of computer-aided systems for word processing and publication since 1962. This work encompasses federal government, local government, military and commercial clients, in addition to in-house applications. 22

* We have performed system analysis of machine-aided publication, considering in detail and choosing the most economical or efficient combination of procedures, hardware, and software, for a number of customers substantially committed to computer-based document production. 22a

* We have developed in-house a computer-based tool offering a complement of capabilities suitable as a prototype core of a full scale document production system. This system, the Machine Aided Editing (MAE) system, is a minicomputer-based interactive documentation production system that has been operational in a limited production environment for over 3 years. 22b

* Over a period of 12 years, we have developed NLS, a sophisticated on-line timesharing system widely accessed through computer networks. It is a highly interactive system which aides a wide variety of knowledge tasks, such as managment information support and software system development. A community of users for whom document production via this system is now a principal activity has been steadily growing. 22c

* As one aspect of our growing concern with this area, we have formed a community of NLS subscription members substantially engaged in document production. 22d

B. Project Experience 23

Work on text processing and documentation systems has ranged from simple, dedicated stand-alone systems to complex multi-terminal editorial production systems operating over a distributed computer network. These efforts have encompassed analyzing and rationalizing the steps involved with many facets of the process, including text capture, text processing, editing, formatting, and document output. 24

One notable project that has particular relevance here is the design of a complete editorial production system for the new edition of the Encyclopaedia Britannica. SRI documented the entire editorial

process for the Encyclopaedia Britannica, prepared a preliminary system design for a machine-aided editorial system and compared the economics of the proposed system to those of the manual system. SRI delivered a final system design that included software, detailed hardware and software specifications, personnel requirements, schedules, and milestones. SRI also assisted with the initial system implementation phase. 25

Other activities have included consulting services to clients desiring computer system or service bureau support and more effective use of text-handling systems through: 26

* hardware acquisition 26a

* procedural analysis 26b

* software tool development 26c

* more effective use of the system software 26d

* the comparative merits and selection of available service bureau support. 26e

C. Machine Aided Editing (MAE) System 27

MAE is a minicomputer-based (PDP 11/20) text editing system developed by SRI staff. Its primary function is to provide an environment for the development of production-oriented text handling techniques and to demonstrate the application of these techniques to potential clients. A growing portion of MAE activity has been devoted to report preparation by SRI staff. For example, most reports generated by the Information Systems Group are processed through MAE, and groups such as Chemical Information Services are working with ISG personnel to use MAE for some of their production text handling requirements. 28

The off-line text capture activity is designed to enable secretarial personnel to enter text efficiently with minimal training and without transitional difficulties. The tutorial approach used in the online portion of MAE allows the novice user to accomplish his editorial goals with relative ease. Editing takes place on a screen displaying a full page of text formatted as it will appear when printed. MAE can direct output to a variety of hard copy output devices. 29

D. NLS 30

The Online System (NLS) is a wide ranging computer system developed at SRI to aid a variety of tasks dealing with textual and graphic information. Among other functions, NLS provides the basis for

flexibly creating, modifying, disseminating, and controlling documentation. NLS has particular advantages in easy modification of master copies, large-scale modification and reorganization of documents either as initial drafts or later for revision after publication, facile detailed editing, flexibility of printed output, including line drawings, and creation of special purpose subsystems. NLS is used as a medium to make printed or microfilm versions of documents that are primarily intended for reading online and to publish material that would not otherwise be online. 31

E. Documentation Development Community 32

SRI is also creating a community of organizations interested in sharing long-range development of computer-based document production. The community pools information, developments in procedures and software, and has access to NLS. The NLS system serves as a common medium for document production, for development of prototype software and procedures, and for information exchange among participants. The products of all development work within the community are shared freely by all, as well as technology breakthroughs as they occur in the field at large, but members may also arrange separate, specialized research and development activities with SRI staff outside the community. 33

PWO 2-OCT-75 09:41 33626

SRI-ISG Writeup on Automated Document Production Capabilities

(J33626) 2-OCT-75 09:41;;;; Title: Author(s): Pat Whiting O'Keefe/PWO; Distribution: /DPCS([INFO-ONLY]) DOCPLAN([INFO-ONLY]) ; Sub-Collections: NIC DPCS DOCPLAN; Clerk: PWO; Origin: < O'KEEFE, DRAFTB.NLS;9, >, 29-SEP-75 08:16 PWO ;;;;####;

33626 Distribution

Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys,
David A. Potter, Marilynne A. Sims, Delorse M. Brooks, Elizabeth F. Finney, Beverly Boli, Joseph L. Ehardt, James H. Bair, Robert N. Lieberman, Pat Whiting O'Keefe, James H. Bair, Robert Louis Belleville, Ann Weinberg, Thomas L. Humphrey, Jeanne M. Leavitt, Kirk E. Kelley, Duane L. Stone, Elizabeth J. Feinler, N. Dean Meyer, Dirk H. Van Nouhuys, Douglas C. Engelbart, James C. Norton, Richard W. Watson, Charles H. Irby, Joseph L. Ehardt, Raymond R. Panko, James H. Bair, David R. Brown, Glenn A. Sherwood, N. Dean Meyer, Kathey L. Mabrey, Norman R. Nielsen, Thomas L. Humphrey, Robert Louis Belleville, Elizabeth K. Michael, Richard W. Watson, James C. Norton

EJK 2-OCT-75 09:43 33627

Psuedo-Mouse

Mike, 1

I never got around to proposing this to you. Right now I don't know if you have completed your operation yet or not. 1a

BUT: 1b

Thinking about what you want to do with your pushbuttons and joystick I thought you should give some consideration to your own workhabits, handedness, frequency of use of the buttons, consequences of a wrong button push etc. 1b1

If I assume that you are right handed and work in a way at least similar to me, it would seem tht you want the buttons so that you can quickly and unambiguously get to the Control D. The Control X should be located where it can be gotten to easily but placed so as to avoid the risk of hitting it accidently. The Control A is used less frquently and the consequences of accidental use are not drastic so it should be seperated from the other two, easily gotten to, and with less consideration to placement to avoid accidental hits. 1b2

SUGGEST: 1c

1c1

1c2

'X 1c3

1c4

'D 1c5

1c6

1c7

JS 1c8

'A 1c9

1c10

1c11

1c12

1c13

I think the general idea is a useable one. If it doesn't fit you try adjusting by rotating the axis around the joystick. 1d

In any event, the human animal is almost infinitely adjustable so no matter what you do you'll be able to use it. 1e

Ed 1f

EJK 2-OCT-75 09:43 33627

Psuedo-Mouse

(J33627) 2-OCT-75 09:43;;;; Title: Author(s): Edmund J. Kennedy/EJK; Distribution: /MAW([ACTION]) ELF([INFO-ONLY]) DLS([INFO-ONLY]) ; Sub-Collections: RADC; Clerk: EJK;

33627 Distribution
Mike A. Wingfield, Edward F. LaForge, Duane L. Stone,

DLS 2-OCT-75 09:58 33628

He should have gotten an Advance!

Lifted from Bob Shepard, MIT...passed on for your enjoyment

He should have gotten an Advance!

In your travels to Boston I hope you encounter fewer problems then our local hero Paul Revere did when he filed his expense account of that very famous midnight trip. The untold story of the aftermath of his ride is related to you now. Thanks to the new "Freedom of Information Act" which took effect this week, the true story in now available.

1

SCENE: COLONY COUNTING HOUSE 1a

Clerk: (looking up from sheet of foolscap) A marvelous ride, Mr. Revere! Might I have your autograph for my lad? He's 1a1

Revere: Of course. (Scribbles with clerk's quill) Will it take long to process my expense account? 1a2

Clerk: Not at all, sir. A question or two and..... (Scans the sheet of foolscap, raises eyebrows at bottom line) Who Authorized this trip, incidentally? 1a3

Revere: The Sons of Liberty, Sam Adams and John Hancock. 1a4

Clerk: A copy of your travel orders should be attached, Mr. Revere, but we'll waive that. Was public transportation available? 1a5

Revere: At that hour? I was lucky I had my own horse. 1a6

Clerk: You didn't avail yourself of one of the official Post horses at the Green Dragon Tavern? 1a7

Revere: The Postmaster was a Tory. His suspicions..... 1a8

Clerk: Use of privately owned horse requires supervisory authorization, Mr. Revere. If John Hancock will sigh your..... 1a9

Revere: John Hancock will sigh anything. 1a10

Clerk: And this trip destination, "Every Middlesex village and farm." Couldn't you be more exact? 1a11

Revere: How about "Lexington-Concord and return"? 1a12

Clerk: Much better. Now, under "TIME", this "hour of darkness and peril and need" sounds .... well, inexact. 1a13

Revere: Late P.M. to early A.M.? 1a14

He should have gotten an Advance!

Clerk: Thats the ticket! Oh, and for "Purpose of Trip", might we say something less... literary than "the fate of a nation" ? 1a15

Revere: Dissemination of mobilization instructions ? 1a16

Clerk: Excellent, By the way, was any personal business conducted on route? 1a17

Revere: We took a 10 minute break--- but we're only asking straight time for the whole tour, even though it was after hours. 1a18

Clerk: Admirable. Now these "expenses for horse" break down to two shillings per day. Were you figuring the horse by the mile--- or per diem? 1a19

Revere: He eats either way. Two shillings daily. 1a20

Clerk: I take it, then you didn't employ a livery stable that offers government rates? And you didn't get three bids to ..... (Brushes aside question) Pshaw! Enough of these petty technicalities, Mr. Revere. You made a gallant ride, and you deserve your expenses, which come to.....(Runs quill deftly through several items and corrects bottom line figure) 13 shillings and sixpence in Contintental currency.. or one Spanish milled dollar. 1a21

Revere: (Clutching chit offered by clerk and staring in disbelief) Thirteen and six!! That won't even cover what the ride did to my suit! What are all these deductions? 1a22

Clerk: (Using feather end of quill to tick off items) There's your with-holding, of course. City tax. The horses pension. Wear and tear on the highway. 1a23

Revere: Thirteen and six! I could have stayed home and make teapots for thirteen and six! 1a24

Clerk: Well, Mr. Revere. For an unauthorized trip outside business hours on privately owned transportation you're doing pretty good. 1a25

Revere: Thirteen and six! I could have been soldering tankards at five times that rate! 1a26

Clerk: Yes. On your way home, could you drop this off with the sexton at the Old North Church? It's a summons for a fire code violation. Someone's reported two lanterns in the belfry. 1a27

DLS 2-OCT-75 09:58 33628

He should have gotten an Advance!

(J33628) 2-OCT-75 09:58;;;; Title: Author(s): Duane L. Stone/DLS; Distribution: /RADC([INFO-ONLY]) ; Sub-Collections: RADC; Clerk: DLS;

33628 Distribution
Rocco F. Iuorno, Thomas J. Bucciero, Roger B. Panara, John L. McNamara, Joseph P. Cavano, Duane L. Stone, Marcelle D. Petell, Thomas F. Lawrence,
Wolf-Hasso Kaubisch, Kim Cynthia Carter, Samuel L. Ruple, Stephen P. Sutkowski, Richard Calicchia, William W. Patterson, Francis J. Hilbing, Robert K. Walker, Frank P. Sliwa, Joe F. Femia, Roger W. Weber, Melville J. Draper, Robert D. Krutz, James W. Hyde, David T. Craig, Fred N. Dimaggio, Robert E. Doane, Richard Nelson, William F. Stinson, Daniel R. Loreto, John B. McLean, Murray L. Kesselman, Edward F. LaForge, Agatha C. Deconde, Alan R. Barnum, Larry M. Lombardo, Roberta J. Carrier, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Raymond A. Liuzzi, Donald VanAlstine, Deane F. Bergstrom, Frank S. LaMonica, William E. Rzepka

DCE 2-OCT-75 14:45 33629

To Bev, acknowledging 74 report checking process

Thanks, Bev (for response in -- JOURNAL, JRNL30, J26617,dd:lw). That will serve very well for what we had in mind. Regards, Doug 1

DCE 2-OCT-75 14:45 33629

To Bev, acknowledging 74 report checking process

(J33629) 2-OCT-75 14:45;;;; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: /BEV([ACTION]) JCN([INFO-ONLY]) RWW([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DCE;

33629 Distribution
Beverly Boli, James C. Norton, Richard W. Watson,

com 10/2/75

sent 7 files today. (bev)finalcom for proofs,
(feed)aaas,(feed)article,(feed)evaluationnls,(feed)lhdproduct,(feed)m
ike for kp5s, and morgantwo for kp5s. first comes back to sandy,
next 5 to inez, next to dick fortna at ets. tape no. 0005 mtao. 1

com 10/2/75

(J33630) 2-OCT-75 16:38;;;; Title: Author(s): Special Jhb Feedback/FEED; Distribution: /DMB([ACTION] dpcs notebook, please) &DPCS([INFO-ONLY]) FEED([INFO-ONLY]) ; Sub-Collections: SRI-ARC DPCS; Clerk: FEED;

33630 Distribution
Delorse M, Brooks, Documentation Production and Control System Interest Group , Special Jhb Feedback,

KPH 3-OCT-75 06:00 33631

Request for Study information

In the process of preparing the Data Project Directive and anticipating questions that will inevitably arise, if they haven't already, we need a ball park idea of the relative cost of producing a document by various means. Recognize there may be many possible configurations and permutations of how to get the job done, ranging from the pure typing-draft-typing method to some very exotic computer based applications. 1

We are particularly interested in determining if studies exist that provide cost comparisons between conventional and computerized systems. 2

Terms in which costs are expressed are not critical, just so some handle can be attached. 3

If any one knows of such a study, would appreciate the info. 4

Also, if anyone knows of a library (e.g., mitre, rand, etc) where such studies reside, and that individual has the authority to direct (or request) a search for studies of this type, would appreciate it. 5

While I'm asking for help, ... I am aware of two studies that compare batch versus interactive programming - one by SDC circa 1968, and one by Integrated Systems Support, Inc., done for the Army Computer Systems Command dated Dec74. If you know of others, please send references. 6

Thanks, 7

Ken. 8

KPH 3-OCT-75 06:00 33631

Request for Study information

(J33631) 3-OCT-75 06:00;;;; Title: Author(s): Kenneth P. Hearn/KPH;
Distribution: /WEC([ACTION]) DLS([ACTION]) GEH([ACTION])
MAW([ACTION]) ; Sub-Collections: NIC; Clerk: KPH; Origin: <
HEARN, DOCSTUDY.NLS;1, >, 3-OCT-75 05:16 KPH ;;;;####;

33631 Distribution
William E. Carlson, Duane L. Stone, Gary E. Hignett, Mike A. Wingfield,

Techniques for Dealing with Form Letters

follow-up on (33622,), and an answer to (26338,)...even if it a month late Dave.

Techniques for Dealing with Form Letters

(prog) 1

```
set vie wvhj                    1a
upd fil old                     1b
rep sta 3a2a                    1c
   rep sta 3b2a1                1c1
   del bra 2a                   1c2
   cop bra 3 3                  1c3
   pro bra 1c                   1c4
```

(add) 2

David A. Potter
Educational Testing Service
Rosedale Road
Princeton, New Jersey 08540 2a

Dear Dave; 2a1

Roberta J. Carrier
Rome Air Development Center
(ISI)
Griffiss Air Force Base
New York 13441 2b

My Dearest Bobbie: 2b1

Edward F. LaForge
Rome Air Development Center (ISIM)
Griffiss Air Force Base
New York 13441 2c

Ed Ol' Buddy... 2c1

Joseph P. Cavano
Rome Air Development Center
(ISIM)
Griffiss Air Force Base
New York 13441 2d

Joe, You SOB!! 2d1

Duane L. Stone

DLS 3-OCT-75 08:05 33632

Techniques for Dealing with Form Letters

Info Mang Sci Sec
Rome Air Development Center
Griffiss Air Force Base
New York 13441

2e

DLS on NLS;

2e1

DLS 3-OCT-75 08:05 33632

Your Name
Your Organization
Your Street
Town State Zip
3 OCT 75

Dummy Address

Dummy Salutation

This file is an example of how one can create a form letter and have different addressees and salutations automatically inserted. There are at least 50 different versions of this approach.

The basic procedure is to to create a file with the body of the letter and the directives controlling its format. I have used some here that might be typical. Replace branch 3 in this file with the letter, making sure that the address and salutation statement numbers agree with the ones in the (prog) branch.

If you want the statements to be numbered, you will have to explicitly type in the numbers as part of the body of the letter.

Create another file with addresses and salutations in the form indicated in the (add) branch. Replace branch 2 in this file with your list.

With the salutations down a level from the addresses, you should also be able to use the address file (with viewspec d and directives like TM=0 BM=8 PFIT FSW=Off) for creating mailing labels or typing on envelopes.

Update File, Process (commands from) Branch (at) prog and go have some coffee.

The final pass through the commands branch will throw you into TENEX will an error message. Just reset and reenter NLS. Load the file and Output Terminal with a y y y, or output Remote to a line printer if you have one. When finished, you can Delete Modifications and you'll be left with the address list and one copy of the letter.

A test run with this file and 50 addressees used 41 TENEX pages. Using the TI, it took 10 minutes to cycle through the commands branch 50 times on a lightly loaded system. In this instance the time was probably limited by the 300 baud speed of the terminal, as it never stopped printing. It consummed 1 1/2 minutes of CPU time. The prog branch also works with a DNLS terminal.

Its probably better to test it out with 2-3 addresses before going

into a production run, You may also want to adjust the page breaks so that you don't get just the signature on the last page. For those of you who have this kind of application, we can talk more about it at the KWAC meeting.

Your Closing,

YOUR NAME

Techniques for Dealing with Form Letters

(J33632) 3-OCT-75 08:05;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /AID([INFO-ONLY]) RADC([INFO-ONLY]) JHB([
INFO-ONLY]) ; Sub-Collections: RADC AID; Clerk: DLS;

33632 Distribution

Larry M. Lombardo, Roberta J. Carrier, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Raymond A. Liuzzi, Donald VanAlstine, Deane F. Bergstrom, Frank S. LaMonica, William E. Rzepka, Rocco F. Iuorno, Thomas J. Bucciero, Roger B. Panara, John L. McNamara, Joseph P. Cavano, Duane L. Stone, Marcelle D. Petell, Thomas F. Lawrence, James H. Bair, Frank G. Brignoli, Inez M. Mattiuz, Connie K. McLindon, Michael A. Placko, David A. Potter, Terry H. Proch, Rudy L. Ruggles, Robert M. Sheppard, Duane L. Stone, Stanley M. (Stan) Taylor, Ronald P. Uhlig, Wolf-Hasso Kaubisch, Kim Cynthia Carter, Samuel L. Ruple, Stephen P. Sutkowski, Richard Calicchia, William W. Patterson, Francis J. Hilbing, Robert K. Walker, Frank P. Sliwa, Joe F. Femia, Roger W. Weber, Melville J. Draper, Robert D. Krutz, James W. Hyde, David T. Craig, Fred N. Dimaggio, Robert E. Doane, Richard Nelson, William F. Stinson, Daniel R. Loreto, John B. McLean, Murray L. Kesselman, Edward F. LaForge, Agatha C. Deconde, Alan R. Barnum

LINKS&STUFF

Up to now, I have done the following: 1

Taken one of my existing files EFF-SYSANALSUPP and created a named branch B8660101 for my Job Order Number. 1a

To this I have appended the directives that control the printing of the viewgraph file. 1b

I have copied my viewgraph branch from the PETELL,AUGVG file to follow the named branch B8660101 one level down. 1c

I have appended text in the form of a link <KENNEDY, EFF-SYSANALSUPP, B8660101: nwD> to the statement in the CARRIER,PRFILE that contains the content B8660101. 1d

This provides the following capability. 2

You can load the file CARRIER,PRFILE and print it at your leisure. When you find you are interested in a particular JONO, you can, for example, use the command Jump to Content First T: B8660101. You can then use the command Jump to Link A: +e 2a

Or if you already know the statement number that contains B8660101 you can use the command Jump to Link A: 5e4 +e 2b

After getting to the link, your viewspecs are already set, all you need do is use the command Output to Terminal<cr> followed by yes no yes. 2c

What has to be looked at: 3

I have created the link <LAMONICA, EFF-TOOL-INTEGRATION-STUDIES, C0950101: nwD> for one of Frank LaMonica's Efforts. 3a

The links can be created easily in Bobbie's file by copying most of the info, with no typing errors etc., thus retainig the exact numbers and names of the efforts. 3b

What needs To be done is to create the appropriate files in each of the PE's directory. 3c

One way is to create the files somewhere aand then have the pE copy it. 3d

I want to think a bit about the problems of replacing branches between files and easy ways to do it. 3e

The sheer mechanics of maintaining these files. This has two aspects: 3f

First the technical capability to edit. Not easy on the IMLAC, almost impossible on the TTY's. 3f1

second the discipline and the rules and conventions. When two versions of the viewgraphs differ which supersedes? 3f2

I'd like to have you and Stoney to think about this a little to see if anything has been overlooked. Then, unless everything is quite clearcut, we ought to get together. 4

EJK 3-OCT-75 09:52 33634

LINKS&STUFF

(J33634) 3-OCT-75 09:52;;;; Title: Author(s): Edmund J. Kennedy/EJK;
Sub-Collections: RADC; Clerk: EJK;

SAI-VISIT

PRESENTATION BY SCIENCE APPLICATIONS, INC. (SAI)

COLORADO SPRINGS OFFICE

7-OCT-75 (TUES) AT 1330

BUILDING THREE - CONFERENCE ROOM ONE

The presentation will last for about an hour and one half plus 30-40 minutes for discussion.

TOPICS WILL INCLUDE:

* VERIFICATION AND VALIDATION,
* SIMULATION AND MODELING,
* INTERACTIVE GRAPHICS,
* AND COST ANALYSIS.

In addition, I indicated that I am especially interested in the Evaluation And Implementation Of Modern Programming Practices.

You will be notified if there is any change in plans.

RADC Point of Contact - Ed Kennedy x3857 (call between 0915 and 1800)

EJK 3-OCT-75 10:11 33635

SAI-VISIT

SAI Point of Contact - Ron May of SAI in Colo. Springs. 576-0786, go through ENT AFB switch Autovon 692-0001. 17

EJK 3-OCT-75 10:11 33635

SAI-VISIT

(J33635) 3-OCT-75 10:11;;;; Title: Author(s): Edmund J. Kennedy/EJK; Distribution: /RADC([ACTION]) LSB([INFO-ONLY]) ; Sub-Collections: RADC; Clerk: EJK;

33635 Distribution

Rocco F. Iucrno, Thomas J. Bucciero, Roger B. Panara, John L. McNamara, Joseph P. Cavano, Duane L. Stone, Marcelle D. Petell, Thomas F. Lawrence, Lee S. Bauman, Wolf-Hasso Kaubisch, Kim Cynthia Carter, Samuel L. Ruple, Stephen P. Sutkowski, Richard Calicchia, William W. Patterson, Francis J. Hilbing, Robert K. Walker, Frank P. Sliwa, Joe F. Femia, Roger W. Weber, Melville J. Draper, Robert D. Krutz, James W. Hyde, David T. Craig, Fred N. Dimaggio, Robert E. Doane, Richard Nelson, William F. Stinson, Daniel R. Loreto, John B. McLean, Murray L. Kesselman, Edward F. LaForge, Agatha C. Deconde, Alan R. Barnum, Larry M. Lombardo, Roberta J. Carrier, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Raymond A. Liuzzi, Donald VanAlstine, Deane F. Bergstrom, Frank S. LaMonica, William E. Rzepka

DLS 3-OCT-75 14:50 33636

Computer Based Text Editing Systems Compendium

This is my response to a proposal from Fred Dyer at RADC who is on a NATO pannel interested in sponsoring an effort on 'word processing' systems. The problem is he only has 10K to spend. Perhaps others interested in a similar effort, such as Dave in (26625,) and Pat in a more general way in (33626,) could join forces to support a decent effort. Dirk is aware of this particular effort from RADC. I will recontact Fred, to see if he still has money available. Anyone else out there who might be interested in contributing...feel free. Afterall, its United Fund weeK, and this seems to be a worthy charity!

Computer Based Text Editing Systems Compendium

A survey of computer-aided writing and editing systems can yield a range of end-products depending on the resources available and the approach taken. At the lower end of the spectrum, it can be a tutorial on the various classes of thesee systems, with illustrative examples. At the upper end of the spectrum, it can be a continually updated compendium, where "exhaustive" listings of systems; their attributes, cost, performance and availability are described. 1

I favor the upper end of the spectrum, for several reasons: 2

A compendium provides a useful service to those considering purchasing, implementing or upgrading systems of this kind. A tutorial serves only as an introductory dissertation for those who are unfamiliar with the topic. 2a

A compendium tends to act as an automatic data collection device, if it is widely circulated and has a stated objective of remaining current. 2b

A tutorial is a "snapshot", a picture of the state-of-the-art at a moment in time. By the time it is published this picture is generally 2 years old, and may not reflect the current technology. 2c

An effort of this type will require more manpower than we have available in-house. Even though contractual services will be required, I feel that a very respectable first cut at such a compendium can be made within 6 months from the start date for the following reasons: 3

There have been surveys of this nature conducted in the past, which can be used as a starting point. 3a

We have a model, in the Modern Data series of Tech Files, for the format of a compendium. 3b

We can use the Commerce Daily Bulletin to announce our intentions to the world. 3c

We have access to a number of computer based document retrieval systems, which can be searched to augment the initial data collection mechanism. 3d

We have existing contracts which could be used to avoid the usual contractual delays. 3e

We have access to a document production system, which can reduced much of the time, expense and drudgery of preparing and publishing the final product. 3f

The end product should contain the following 6 sections, if it is to be of practical use to those who wish to acquire systems: 4

BASIC REVIEW 4a

This section serves the purpose of a tutorial and defines the several classes of systems detailed later in the report. A glossary of terms used throughout the rest of the report may be required in this section. 4a1

CHARACTERISTICS 4b

This section is a detailed listing of important system attributes, including cost. 4b1

DEVELOPMENTS 4c

This section covers some of the newer more "exotic" systems, which are not yet commercially available, but which have reached a stage of development sufficient to allow demonstration. 4c1

LITERATURE 4d

This section contains a brief abstract of each manufacturer's product literature with references to documentation numbers etc. 4d1

DIRECTORY 4e

This section is an alphabetic listing of manufacturers, addresses, telephone numbers, points of contact, etc 4e1

INDEX 4f

This section is a subject index of keyword terms used throughout the compendium, cross indexed to the page on which they occur 4f1

The above represents a fairly ambitious undertaking, but I believe it can be accomplished at a modest cost if an advanced documentation system is used to support the people involved in the project. We have access to such a system, and have a number of highly trained people who can operate it. The use of such a system would not only lower the overall cost of the project, but should allow data to be added and modified up until a week before the final report is published. 5

Assuming that the project is supported by 1 professionsal and 1

clerical person under contract the cost would be roughly 50K for a 6 month effort, including computer time and publication costs. Limited manpower from RADC could also be applied to gathering, analyzing and documenting various systems with which we are familiar. 6

Computer Based Text Editing Systems Compendium

(J33636) 3-OCT-75 14:50;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /DPCS([INFO-ONLY]) KWAC([INFO-ONLY]) EJK([
INFO-ONLY]) JLM([INFO-ONLY]) FJT([INFO-ONLY]) ;
Sub-Collections: RADC DPCS KWAC; Clerk: DLS;

33636 Distribution

Michael A. Placko, Stanley M. (Stan) Taylor, Elizabeth J. Feinler, Rudy L. Ruggles, Frank G. Brignoli, Robert M. Sheppard, Richard W. Watson, Douglas C. Engelbart, James C. Norton, James H. Bair, Duane L. Stone, Inez M. Mattiuz, Connie K. McLindon, Edmund J. Kennedy, John L. McNamara, Frank J. Tomaini,
David A. Potter, Marilynne A. Sims, Delorse M. Brooks, Elizabeth F. Finney, Beverly Boli, Joseph L. Ehardt, James H. Bair, Robert N. Lieberman, Pat Whiting O'Keefe, James H. Bair, Robert Louis Belleville, Ann Weinberg, Thomas L. Humphrey, Jeanne M. Leavitt, Kirk E. Kelley, Duane L. Stone, Elizabeth J. Feinler, N. Dean Meyer, Dirk H. Van Nouhuys, Douglas C. Engelbart, James C. Norton, Richard W. Watson, Charles H. Irby, Joseph L. Ehardt, Marilynne A. Sims, Elizabeth F. Finney, Lawrence A. Crain, E. S. VonGehren, Glenn A. Sherwood, Kathey L. Mabrey, Jeanne M. Beck, David A. Potter, Robert N. Lieberman, Terry H. Proch, Ronald P. Uhlig, Susan Gail Roetter

&ARC-ADG 15-OCT-75 10:19 33637

Journal Accession Number: 33637

INTRODUCTION TO DNLS

ARC-ADG

15 OCT 75

Applications Development

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

Preliminary Edition of 'Introduction to DNLS Course Outline'

(J33637) 15-OCT-75 10:19;;;; Title: Author(s): ARC Applications Development Group /&ARC-ADG; Distribution: /KWAC([INFO-ONLY]) SRI-ARC([INFO-ONLY]) MIKE([INFO-ONLY]) FEEDBACK([INFO-ONLY]) MAS2([INFO-ONLY]) US([INFO-ONLY]) ; Sub-Collections: NIC KWAC SRI-ARC FEEDBACK US; Clerk: LJM; Origin: < METZGER, BASICDNLS.NLS;17, >, 7-OCT-75 14:33 LJM ;;;;####;

Preliminary Edition of 'Introduction to DNLS Course Outline'

This course outline is intended to introduce an introductory level TNLS user to DNLS. It is designed to enable trainers to give all the needed information to effectively use DNLS in one to two days. Users may continue their advancement through NLS by receiving more advanced instruction through the TNLS course series. (Course 3, Intermediate TNLS, would logically follow.)
This particular edition will be revised following the course presently being given at RADC. Input from the trainer will be reviewed for making changes for a final edition, which will be available in approximately one month.

Preliminary Edition of 'Introduction to DNLS Course Outline'

<BAIR>COURSE.NLS;18, 3-JUL-74 09:33 JHB ; (jhb,) \ ;

%Filters at (filters);

INTRODUCTION TO NLS

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

DNLS = Display 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 course levels for ease of learning. Five concern TNLS (typewriter version) and four relate to DNLS. Each level corresponds to what can be covered at one time. The information introduced at each level is determined by difficulty, usefulness, complexity, and quantity (i.e., so that there is not an excessive amount to cover at any one time and to provide an opportunity for practice between courses.).

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 (see -- Journal, 32609,).

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

*INTRODUCTION TO DNLS
This is the first course dealing with the display verison of NLS. It introduces the equipment and its use, and deals with the commands necessary to edit, view, address and communicate in DNLS. It is assumed that Course 1 and 2 described above have been taken prior to this course, and that there has been time to sufficiently practice the concepts dealt with in these courses.

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., "editing" includes commands that allow text to be changed in various ways. Certain headings are introduced in later courses.

COURSE HEADINGS:

1. WORKSTATION
2. GETTING TO NLS
3. STRUCTURE
4. ADDRESSING AND VIEWING
5. EDITING
6. COMMUNICATING
7. LEAVING NLS
8. TROUBLE SHOOTING AND HELP

* 1, WORKSTATION

*LINEPROCESSOR (See Lineprocessor Users' Guide)

Microcomputer which processes coordinates of the location of each character on the screen

Enables the display to run in DNLS

*THE DISPLAY

See Figure 1

*Feedback Area [top one or two inches of screen, divided into 3 areas]

*Viewspec Window

Indicates current status of certain viewspecs, flash or are underlined when they can be changed

Displayed viewspecs: [The default settings indicatethat nothing is filtered or left out]

Number of lines and levels
h - show all branches
j - don't filter statements
u - recreate display after each change
C - show statement names
P - user sequence generator off

*TTY Lines
Provides temporary feedback, and interaction with TENEX. Used for error messages, system messages and name of file being loaded. Remains empty if no information. If Tenex is called with a <CTRL-C>, interaction is shown here.

*Subsystem Name: Displays name of subsystem being used

*Command Feedback Line
Displays current command sentence with noise words and prompts
A: Address
C: Command word
T: Text
L: Level
V: Viewspecs
OK: Command Accept
Y/N: Yes or No
B: Bug [point with mouse and press OK]
...>: Executing command

*Typein Echo Lines
Displays the typein as it will be inserted after an OK

*Display Area
Displays text - can be pointed to with mouse

*Moving bug or cursor
traveling mark on screen controlled with the mouse

*Bug mark
A blot-out, circle, underline, or character inversion to mark what was bugged.

*KEYBOARD

like a typewriter

OK or CA (Command Accept): Terminate typein and viewspecs, to bug something, or give a confirmation

CD (Command Delete): Abort a command sentence

BC (Backspace Character): One character deleted from input

BW (Backspace Word): One word deleted from input

MOUSE

(See Figure 2)

*One Button Alone

Right button alone - CA or Bugging

Center button alone - CD (<CTRL-X>)

Left button alone - BC (<CTRL-A>)

*Buttons Used in Combination

Right and center buttons - OK/REPEAT

Left and center buttons - BW (<CTRL-W>)

Right and left buttons - ALTMODE or ESCAPE

*Buttons for Viewspec Change

Left and center button while typing character
- lowercase viewspec
[Type a viewspec "f" to recreate screen or the view will not change until after the next command is completed,]

All three buttons while tying a character
- capital viewspec

*KEYSET (OPTIONAL)

Alternative to keyboard when used in conjunction with mouse

See viewspec card for key code [Key codes follow a logical order according to the alphabet]

*Mouse buttons used with Keyset Characters

Center button while giving keyset code- capital letter

Left button while giving keyset code - number

2. GETTING TO NLS [See the Lineprocessor Users Guide for more detailed instructions]

*THE DISPLAY AND USE

Turn display to online mode, full duplex. Be sure the silver toggles are down on the lineprocessor.

*USING DISPLAY CONNECTED TO A TIP

@I <SP> 25 CR

[changes TIP intercept character from @ to <CTRL-Y> unless it has already been changed]

<CTRL-Y> O <SP> 43 CR [for Office-1, <CTRL-Y> O <SP> 49 for BBNB]

USERNAME <SP> PASSWORD <SP> CR

NO RAISE CR [for BBNB]

TER <SP> LIN <SP> CR [allows work in DNLS]

NLS CR

*USING DISPLAY CONNECTED TO AN ELF

<CTRL-C> [to get ELF's attention]

Log <SP> USERNAME <SP> PASSWORD CR

TELNET CR

ESC<ESC>ape character = <CTRL-Y> CR

[changes telnet intercept character from <CTRL-Z> to <CTRL-Y>]

Office-1 CR

USERNAME <SP> PASSWORD <SP> CR

TER <SP> LIN <SP> CR

NLS CR

3. ORGANIZATION OF THE SYSTEM

FILES & DIRECTORIES

Information in the origin ("parent") statement of a file
[not numbered, contains filename, etc., do not edit]

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

User creation of files

<SP>CReate File FILENAME OK

To see a list of all your files:
<SP>SHow Directory (of) OK OK

*Copy Directory (of) CONTENT (to follow) BUG/ADDRESS
LEVELADJUST OK

[will allow you to copy your directory into NLS and
to link to files by bugging each filename link.]

FILE STRUCTURE

STATEMENT: The basic element of structure in a file

Relationships between statements:

STRUCTURES made up of statements:

BRANCH: a statement plus substructure (if any)

GROUP: set of contiguous branches with same source

*PLEX: complete list of branches at the same level
with the same source, i.e., all the branches
in the source branch

*OTHER RELATIONSHIPS BETWEEN STATEMENTS:

*END: last statement of branch

*UP: one level up from current statement

*DOWN: one level down from current statement

*BACK: immediately preceeding statement regardless of level

*NEXT: next statement regardless of level

*TAIL: last statement of plex at the level pointed to

*HEAD: first statement of plex

*SUCCESSOR: statement immediately succeeding current statement at same level with same source

*PREDECESSOR: statement immediately preceding current statement at same level with same source

4, ADDRESSING and VIEWING: [to control the view of stored information]

VIEWSPECS: to specify what you see, use the characters below when prompted with a V:

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

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
*f - recreates display screen
g/h - show branch only/show all branches
*o/p - frozen statement on/frozen statements off
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

*If viewspecs are set using the mouse an "f" must be typed before releasing the mouse buttons, Viewspec "n" should be on for most work in DNLS.

*Bugging

Using the mouse for addressing--Instead of typing in an address, the mouse can be used to point to a specific location on the display, Right-most mouse button is depressed, followed by an OK and a bugmark shows what was pointed to,

*JUMP COMMANDS (changing what is being seen)

MOST COMMONLY USED JUMP COMMANDS:

*Jump (to) BUG VIEWSPECS OK

[Positions statement pointed at to top of screen]

*Jump (to) Item BUG/ADDRESS VIEWSPECS OK

[Positions statement addressed or pointed at to top of screen]

*Jump (to) Back BUG/ADDRESS VIEWSPECS OK

[Positions the statement immediatly preceding statement pointed at regardless of level or source to top of screen]

*Jump (to) <SP> Next BUG/ADDRESS VIEWSPECS OK

[Positions statement immediatly following statement pointed at regardless of level or source to top of screen]

Jump (to) Origin BUG/ADDRESS VIEWSPECS OK

[Positions statement 0 to top of screen]

Jump (to) Return OK ANSWER OK

[Positions a previous statement within the current file to top of screen; type an N for ANSWER next flashback in stack will be echoed]

LESS USED JUMP COMMANDS (OPTIONAL)

*Jump (to) Successor BUG/ADDRESS VIEWSPECS OK

[Positions next statement at same level and same source to top of screen]

*Jump (to) Predecessor BUG/ADDRESS VIEWSPECS OK

[Positions statement preceding statement pointed to at same level and same source to top of screen]

*Jump (to) Head BUG/ADDRESS VIEWSPECS OK

[Positions first statement at same level as statement pointed at to top of screen]

*Jump (to) Tail BUG/ADDRESS VIEWSPECS OK

[Positions last statement at same level as statement pointed at to top of screen]

Jump (to) End (of branch) BUG/ADDRESS VIEWSPECS OK

[Positions the last statement in the branch pointed at to top of screen]

*Jump (to) Up BUG/ADDRESS VIEWSPECS OK

[Positions statement on level up from statement pointed at to top of screen]

*Jump (to) Down BUG/ADDRESS VIEWSPECS OK

[moves statement one level down from statement pointed at to top of screen]

*Jump (to) Address (relative to) BUG/ADDRESS
ADDRESS VIEWSPECS OK

(Positions a specific "bugged" statement to top of screen]

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
search for same thing]

TO JUMP USING A LINK:

Jump (to) Link BUG/TYPEIN OK

[Note: The Jump to Link command uses the prompt B/T:
which means that you may alternatively type in a link
rather than pointing to it in the text of a
statement.]

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

-- must be in one of the following forms:

<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>

[or:] <:VIEWSPECS> [only the viewspecs will be changed]

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]

JUMPING BETWEEN FILES AND DIRECTORIES:

To address another file in your directory you need to add the FILENAME to the address 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.

To address another file:

FILENAME, IN-FILE-ADDRESS OK

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

To address another user's file:

DIRECTORY, FILENAME, IN-FILE-ADDRESS OK

[e.g., Copy Branch (from BAIR,JHB,1 OK (to) 3a OK]

TO GO BACK TO PREVIOUS FILES:

Jump (to) File Return OK ANSWER OK

[If you type an N for ANSWER - next filename in stack will be echoed, repeat for file before that]

*EDGES (OPTIONAL)

[Imaginary lines dividing display into as many as 8 parts so something different can be viewed or edited in each part]

*Insert Edge (perpendicular to) MARGIN EDGE OK

*Move Edge (from) BUG/ADDRESS (to) BUG/ADDRESS OK

*Delete Edge (at) BUG/ADDRESS OK

*FROZEN STATEMENTS (OPTIONAL)

[keeps statement at specified destination on upper part of screen with viewspec o, viewspec p will make your frozen statements invisible]

*Freeze Statement (at) BUG/ADDRESS VIEWSPECS OK

*Release Frozen (statement at) BUG/ADDRESS OK

*Release All (frozen statements) OK

6, EDITING
[Changes occur on screen as you execute commands]

Syntax: VERB NOUN A: BUG/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 bug marks/addresses necessary]

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

Statement

Branch

Group [two bug marks/addresses necessary]

*Plex

EDITING COMMANDS = "verbs":

[Note that in DNLS you bug items instead of typing in an address. The commands are the same as in the Second TNLS course.]

LEVEL-ADJUST determines the level of a statement at a new location -- it must be 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

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

Insert STRING (to follow) BUG/ADDRESS CONTENT OK

continue to insert: <CTRL-E> instead of CA puts you in the Enter statement mode, CD to get out. Some terminals have an insert key which can be used.

[Each statement will be inserted onto the display area after an OK. The next statement will follow it at the level specified.]

DELETE

Delete File CONTENT OK

[The display will clear, deleted filename(s) will appear. Type an OK to continue. When you return to NLS (after an OK) the deleted file will still be loaded, but can not be addressed.]

Delete STRUCTURE (at) BUG/ADDRESS OK

Delete STRING (at) BUG/ADDRESS OK

MOVE

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

Move STRING (from) BUG/ADDRESS (to follow) BUG/ADDRESS OK

COPY

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

Copy STRING (from) BUG/ADDRESS (to follow) BUG/ADDRESS OK

*Copy Directory (of) CONTENT OK (to follow) BUG/ADDRESS LEVELADJUST OK

REPLACE

Replace STRUCTURE (at) BUG/ADDRESS (by) CONTENT OK

*Replace STRING (at) BUG/ADDRESS (by) CONTENT OK

TRANSPOSE

Transpose STRUCTURE (at) BUG/ADDRESS (and) BUG/ADDRESS OK

*Transpose STRING (at) BUG/ADDRESS (and) BUG/ADDRESS OK

*BREAK

*Break Statement (at) BUG/ADDRESS LEVEL-ADJUST OK

[to break a statement into two statements after the visible you point to, use if statement is longer than fits on a display]

*APPEND

*Append Statement (at) BUG/ADDRESS (to) BUG/ADDRESS (join with) CONTENT OK

[CONTENT is text that will be added where the old and new statements join.]

[joins two statements together to form one statement]

SUBSTITUTE

Substitute STRING in STRUCTURE (at) BUG/ADDRESS OK
(New STRING) T: TYPEIN OK
(Old STRING) T: TYPEIN OK 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. If you type S for Show, the screen will recreate to show the substitutions made. A CA will return you to your previous view.]

UPDATE FILE [not imperative, but good practice]

Update File Compact OK

Update File OK

7. COMMUNICATING with other users

SENDMAIL SUBSYSTEM and the Journal

*You are informed of new journal mail in TTY simulation window

Journal file automatically loaded when enter NLS

*You can load a file where information is contained, Goto Sendmail and bug in the text of all of the below [up to 6 bug marks maximum]. The currently loaded file will stay on the screen while in Sendmail.

Goto (subsystem) Sendmail OK

Interrogate Command

(distribute the mail now?) ANSWER
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
[Will recreate screen, type OK to continue in NLS]
(distribute the mail now?) ANSWER

Individual commands: instead of Interrogate, specify by using the following:

Title CONTENT OK

Distribute (for) Information (Only) (to)
IDENT/,LASTNAME OK

Distribute (for) Action (to) IDENT/,LASTNAME OK

Comment CONTENT OK

To send a message or statement:

Message CONTENT OK

<SP>STatement (at) BUG/ADDRESS OK

To send a structure or file:

<SP>Group (at) BUG/ADDRESS OK

Branch (at) BUG/ADDRESS OK

File BUG/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

[When receiving reply, the entire display area of screen used to show the message. Other work will reappear when OK is typed signifying the end of the command.]

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]

CALLING TENEX

*1. Goto (Subsystem) Tenex OK
[Entire screen for TTY simulation]

QUIT CR
[Returns you to NLS]

*2. Quit Nls OK
[Clears screen and gives entire screen for TTY simulation]

CONTINUE CR
[Returns you to where you were]

```
    *3,  <CTRL-C>
         [Gives 2-line TTY simulation window at top of screen]

         CONTINUE CR
         [Return to where you were, no prompt given]

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
   *<CTRL-S>     [Allows you to see the message before
                  sending it, Optional]
   <CRTL-Z> CR      [to terminate and send the message]
   QU CR  [to return to NLS]

 Linking (Tenex)
   first: Goto (subsystem) Tenex OK, Quit OK or <CTRL-C>
     [Can use either entire screen or TTY simulation window]
   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]
```

8. LEAVING NLS

If Using a TIP

<SP> Logout OK

<CTRL-Y> c
[closes TIP connection]

If Using an ELF

<SP> Logout OK

<CTRL-Y>
[calls telnet]

Quit CR

LOGO CR

9. TROUBLE SHOOTING AND HELP
See the Lineprocessor Users Guide for more detailed instruction

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). The Display will recreate to show help. <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. Will appear in TTY simulation window.]

<SP>SHow <SP>Disk (space status) OK

Send a message or sendmail item to: FEEDBACK

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

Link to FEEDBACK

Remedies:

<CTRL-C>
RESET CR
NLS CR

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

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

If your connection is broken:

Repeat login procedure to get to your host
To check if you are detached, use the where command:
WHERE <SP> USERNAME CR
If you are detached, instead of logging in, type:
ATI <SP> USERNAME <SP> PASSWORD <SP> CR
<CTRL-C>
NLS CR [to start over again]

Line Processor Trouble

*If the Error Light on the lineprocessor is flashing

Indicates hardware problems

Push left button to reset, and continue working

*Halts

Indicate transmission error or program error,
Shows as flashing status lights,

If in DNLS when reset (2 lights on)
[Wait for LPR light on EP connection to stop flashing]
[Push in System Reset]

If only 1 light is on you are not in DNLS when reset

*Host Crashes

TIP sends message HOST NOT RESPONDING

Type <CTRL-C> perodically
[TIP stays open but doesn't tell when system back]

When get an @ from Tenex

Repeat Login to TENEX and NLS

PRACTICE [printed copies available from Feedback]

TNLS-8 Primer, (Journal Accession number -- 23911,)

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

OTHER AVAILABLE COURSES:

3, INTERMEDIATE TNLS
This is the third 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,

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
```

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.

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

OK, B, or CA = you type a Command Accept.

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

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

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

EDGE: Imaginary lines which can divide the display into as many as 8 parts, allowing a different view in each part.

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

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

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

BUG: hit OK on mouse when cursor is positioned. Prompted by B:

CURSOR: The moving dash on display when in DNLS

CONTENT: A string of characters from the keyboard, keyset, or pointed to with the mouse, ended by an OK, prompted by B/T.

Journal Accession Number: 33637

TITLE PAGE

RADC's use since July 1

RADC 13-SEP-75 thru 5-JUL-75		70.24	1776.84	3.95%	1
RADC (400)	13-SEP-75	5.07	148.98	3.40%	1a
CARRIER	13-SEP-75	.41	12.09	3.41%	1a1
CAVANO	13-SEP-75	.86	20.36	4.20%	1a2
DIMAGGIO	13-SEP-75	.00	.28	1.49%	1a3
FMS	13-SEP-75	.01	.19	6.56%	1a4
HILBING	13-SEP-75	.01	.19	6.11%	1a5
IUORNO	13-SEP-75	.01	.12	5.17%	1a6
KAUBISCH	13-SEP-75	.56	18.00	3.10%	1a7
KENNEDY	13-SEP-75	1.13	28.66	3.96%	1a8
LAFORGE	13-SEP-75	.18	5.40	3.41%	1a9
LAMONICA	13-SEP-75	.23	6.56	3.55%	1a10
LAWRENCE	13-SEP-75	.01	.21	3.43%	1a11
LIUZZI	13-SEP-75	.04	3.29	1.18%	1a12
LORETO	13-SEP-75	.04	1.87	1.96%	1a13
MCNAMARA	13-SEP-75	.02	1.28	1.74%	1a14
PANARA	13-SEP-75	.45	13.57	3.33%	1a15
RUPLE	13-SEP-75	.00	.50	.67%	1a16
RZEPKA	13-SEP-75	.13	5.18	2.51%	1a17
SLIWA	13-SEP-75	.01	1.05	.66%	1a18
STONE	13-SEP-75	.75	19.89	3.76%	1a19
TOMAINI	13-SEP-75	.06	2.06	2.85%	1a20
WINGFIELD	13-SEP-75	.11	4.23	2.70%	1a21
WWMCCS	13-SEP-75	.04	4.01	1.07%	1a22
RADC (400)	6-SEP-75	3.96	133.64	2.96%	1b

RADC's use since July 1

BERGSTROM	6-SEP-75	.05	3.34	1.56%	1b1
CARRIER	6-SEP-75	.51	13.48	3.76%	1b2
CAVANO	6-SEP-75	.13	6.83	1.94%	1b3
FMS	6-SEP-75	.03	.86	3.06%	1b4
HILBING	6-SEP-75	.02	.68	2.95%	1b5
IUORNO	6-SEP-75	.01	.13	5.39%	1b6
KAUBISCH	6-SEP-75	.44	16.46	2.70%	1b7
KENNEDY	6-SEP-75	.63	16.31	3.84%	1b8
LAFORGE	6-SEP-75	.10	1.90	5.45%	1b9
LAMONICA	6-SEP-75	.16	8.40	1.93%	1b10
LAWRENCE	6-SEP-75	.05	2.22	2.29%	1b11
LIUZZI	6-SEP-75	.04	3.13	1.19%	1b12
LORETO	6-SEP-75	.01	.16	6.21%	1b13
MCNAMARA	6-SEP-75	.10	15.84	.64%	1b14
PANARA	6-SEP-75	.10	2.04	5.00%	1b15
RWALKER	6-SEP-75	.02	2.46	.72%	1b16
SLIWA	6-SEP-75	.03	2.07	1.62%	1b17
STONE	6-SEP-75	1.01	19.99	5.03%	1b18
TOMAINI	6-SEP-75	.01	.11	5.47%	1b19
WINGFIELD	6-SEP-75	.50	16.68	3.02%	1b20
WWMCCS	6-SEP-75	.01	.55	1.81%	1b21
RADC (400)	30-AUG-75	8.48	203.43	4.17%	1c
BARNUM	30-AUG-75	.02	.96	2.56%	1c1
BERGSTROM	30-AUG-75	.09	3.20	2.84%	1c2
CARRIER	30-AUG-75	.51	22.09	2.32%	1c3

RADC's use since July 1

CAVANO	30-AUG-75	.19	6.22	3.02%	1c4
FMS	30-AUG-75	.25	6.02	4.20%	1c5
HILBING	30-AUG-75	.08	4.86	1.54%	1c6
IUORNO	30-AUG-75	.06	1.00	5.90%	1c7
KAUBISCH	30-AUG-75	1.37	33.98	4.03%	1c8
KENNEDY	30-AUG-75	1.27	22.10	5.76%	1c9
KRUTZ	30-AUG-75	.04	1.47	2.86%	1c10
LAFORGE	30-AUG-75	.12	2.07	5.72%	1c11
LAWRENCE	30-AUG-75	.01	.33	1.75%	1c12
LORETO	30-AUG-75	.02	.83	1.88%	1c13
MCNAMARA	30-AUG-75	.03	3.47	.86%	1c14
PANARA	30-AUG-75	.39	9.51	4.14%	1c15
PETELL	30-AUG-75	.19	5.33	3.61%	1c16
SLIWA	30-AUG-75	.05	1.15	4.18%	1c17
STINSON	30-AUG-75	.01	.24	4.21%	1c18
STONE	30-AUG-75	1.86	37.09	5.02%	1c19
TOMAINI	30-AUG-75	1.38	25.79	5.36%	1c20
WINGFIELD	30-AUG-75	.53	15.17	3.49%	1c21
WWMCCS	30-AUG-75	.01	.53	1.48%	1c22
RADC (400)	23-AUG-75	5.88	148.87	3.95%	1d
BERGSTROM	23-AUG-75	.17	4.85	3.42%	1d1
CALICCHIA	23-AUG-75	.00	.08	2.85%	1d2
CARRIER	23-AUG-75	1.02	22.11	4.63%	1d3
CAVANO	23-AUG-75	.01	.14	6.76%	1d4
HILBING	23-AUG-75	.02	.98	2.37%	1d5

KAUBISCH	23-AUG-75	.02	1.79	1.03%	1d6
KENNEDY	23-AUG-75	.67	10.50	6.39%	1d7
LAFORGE	23-AUG-75	.22	9.23	2.42%	1d8
LAWRENCE	23-AUG-75	.10	2.26	4.60%	1d9
LORETO	23-AUG-75	.01	.24	5.85%	1d10
MCNAMARA	23-AUG-75	.03	3.45	.75%	1d11
PANARA	23-AUG-75	.34	10.76	3.13%	1d12
SLIWA	23-AUG-75	.01	.36	2.64%	1d13
STINSON	23-AUG-75	.01	.23	2.86%	1d14
STONE	23-AUG-75	1.15	17.36	6.64%	1d15
TOMAINI	23-AUG-75	1.23	38.68	3.19%	1d16
WINGFIELD	23-AUG-75	.83	24.59	3.39%	1d17
WWMCCS	23-AUG-75	.02	1.24	1.97%	1d18
RADC (400)	16-AUG-75*	3.24	85.85	3.77%	1e
BARNUM	16-AUG-75*	.01	.25	3.27%	1e1
BERGSTROM	16-AUG-75*	.02	.44	3.65%	1e2
CARRIER	16-AUG-75*	.24	9.36	2.54%	1e3
CAVANO	16-AUG-75*	.02	.61	3.31%	1e4
DECONDE	16-AUG-75*	.07	2.09	3.26%	1e5
FMS	16-AUG-75*	.02	.30	5.53%	1e6
HILBING	16-AUG-75*	.01	.17	5.51%	1e7
KAUBISCH	16-AUG-75*	.01	1.40	.75%	1e8
KENNEDY	16-AUG-75*	1.18	22.14	5.33%	1e9
KRUTZ	16-AUG-75*	.01	.30	2.14%	1e10
LAFORGE	16-AUG-75*	.19	3.01	6.42%	1e11

RADC's use since July 1

LAMONICA	16-AUG-75*	.23	9.85	2.37%	1e12
LAWRENCE	16-AUG-75*	.00	.11	3.68%	1e13
LIUZZI	16-AUG-75*	.00	.07	3.25%	1e14
LORETO	16-AUG-75*	.01	.15	6.19%	1e15
MCNAMARA	16-AUG-75*	.00	.35	.55%	1e16
RWALKER	16-AUG-75*	.02	.70	2.27%	1e17
STONE	16-AUG-75*	.51	11.03	4.60%	1e18
TOMAINI	16-AUG-75*	.18	5.94	3.07%	1e19
WINGFIELD	16-AUG-75*	.50	16.55	3.00%	1e20
WWMCCS	16-AUG-75*	.02	1.04	1.50%	1e21
RADC (400)	9-AUG-75	10.77	200.07	5.38%	1f
BERGSTROM	9-AUG-75	.03	1.03	3.14%	1f1
CARRIER	9-AUG-75	1.57	26.94	5.84%	1f2
CAVANO	9-AUG-75	2.71	34.00	7.96%	1f3
HILBING	9-AUG-75	.02	1.75	1.13%	1f4
KAUBISCH	9-AUG-75	1.58	13.74	11.53%	1f5
KENNEDY	9-AUG-75	2.96	51.33	5.78%	1f6
KRUTZ	9-AUG-75	.07	1.75	4.23%	1f7
LAFORGE	9-AUG-75	.14	3.16	4.53%	1f8
LAMONICA	9-AUG-75	.27	17.17	1.59%	1f9
LAWRENCE	9-AUG-75	.01	.35	2.36%	1f10
LORETO	9-AUG-75	.01	.20	4.82%	1f11
MCNAMARA	9-AUG-75	.04	6.29	.62%	1f12
PANARA	9-AUG-75	.02	1.77	.88%	1f13
PATTERSON	9-AUG-75	.01	.50	1.85%	1f14

RWALKER	9-AUG-75	.00	.04	5.48%	1f15
STINSON	9-AUG-75	.00	.05	4.55%	1f16
STONE	9-AUG-75	1.02	25.73	3.98%	1f17
THAYER	9-AUG-75	.01	.13	5.96%	1f18
TOMAINI	9-AUG-75	.04	.82	5.51%	1f19
WINGFIELD	9-AUG-75	.21	9.78	2.18%	1f20
WWMCCS	9-AUG-75	.02	3.54	.55%	1f21
RADC (400)	2-AUG-75	4.95	126.16	3.92%	1g
CARRIER	2-AUG-75	.04	1.90	2.28%	1g1
CAVANO	2-AUG-75	.65	21.48	3.03%	1g2
FMS	2-AUG-75	.01	.58	2.25%	1g3
HILBING	2-AUG-75	.00	.76	.11%	1g4
IUORNO	2-AUG-75	.01	.17	5.60%	1g5
KAUBISCH	2-AUG-75	.58	5.47	10.68%	1g6
KENNEDY	2-AUG-75	1.49	26.81	5.57%	1g7
LAFORGE	2-AUG-75	.10	1.65	6.03%	1g8
LAMONICA	2-AUG-75	.04	5.60	.78%	1g9
LAWRENCE	2-AUG-75	.19	6.59	2.85%	1g10
LIUZZI	2-AUG-75	.06	2.31	2.49%	1g11
MCNAMARA	2-AUG-75	.00	.39	.29%	1g12
PATTERSON	2-AUG-75	.00	.12	3.85%	1g13
PETELL	2-AUG-75	.03	1.03	2.72%	1g14
RWALKER	2-AUG-75	.26	14.10	1.82%	1g15
STINSON	2-AUG-75	.00	.03	4.67%	1g16
STONE	2-AUG-75	1.13	25.36	4.47%	1g17

RADC's use since July 1

TOMAINI	2-AUG-75	.04	.71	5.01%	1g18
WEBER	2-AUG-75	.02	1.07	1.48%	1g19
WINGFIELD	2-AUG-75	.26	8.79	3.00%	1g20
WWMCCS	2-AUG-75	.02	1.24	1.74%	1g21
RADC (400)	26-JUL-75	7.54	163.57	4.61%	1h
BARNUM	26-JUL-75	.00	.06	7.02%	1h1
BERGSTROM	26-JUL-75	.06	1.21	4.62%	1h2
CARRIER	26-JUL-75	.36	11.15	3.27%	1h3
CAVANO	26-JUL-75	.81	20.16	4.04%	1h4
FMS	26-JUL-75	.13	3.19	3.99%	1h5
HILBING	26-JUL-75	.00	.49	1.02%	1h6
KAUBISCH	26-JUL-75	1.54	12.69	12.14%	1h7
KENNEDY	26-JUL-75	1.72	35.85	4.79%	1h8
KRUTZ	26-JUL-75	.02	.53	3.84%	1h9
LAFORGE	26-JUL-75	.88	18.70	4.72%	1h10
LAWRENCE	26-JUL-75	.01	.16	4.12%	1h11
LIUZZI	26-JUL-75	.01	.55	1.11%	1h12
LORETO	26-JUL-75	.00	.06	6.58%	1h13
MCNAMARA	26-JUL-75	.01	1.61	.83%	1h14
NELSON	26-JUL-75	.25	9.98	2.52%	1h15
PATTERSON	26-JUL-75	.01	.14	3.64%	1h16
PETELL	26-JUL-75	.32	7.99	3.99%	1h17
SLIWA	26-JUL-75	.03	.57	4.37%	1h18
STINSON	26-JUL-75	.01	.22	4.45%	1h19
STONE	26-JUL-75	1.16	24.00	4.82%	1h20

RADC's use since July 1

TOMAINI	26-JUL-75	.06	1.56	3.86%	1h21
WINGFIELD	26-JUL-75	.11	5.94	1.84%	1h22
WWMCCS	26-JUL-75	.04	6.74	.64%	1h23
RADC (400)	19-JUL-75	6.53	229.16	2.85%	11
BARNUM	19-JUL-75	.02	.90	2.00%	111
BERGSTROM	19-JUL-75	.11	3.55	3.19%	112
CARRIER	19-JUL-75	.28	8.41	3.31%	113
CAVANO	19-JUL-75	.89	30.15	2.94%	114
FMS	19-JUL-75	.01	.62	2.28%	115
HILBING	19-JUL-75	.05	2.22	2.41%	116
IUORNO	19-JUL-75	.35	10.71	3.31%	117
KAUBISCH	19-JUL-75	.00	.02	13.89%	118
KENNEDY	19-JUL-75	1.32	44.27	2.99%	119
KRUTZ	19-JUL-75	.01	.33	1.83%	1110
LAFORGE	19-JUL-75	.54	17.40	3.09%	1111
LAWRENCE	19-JUL-75	.13	4.88	2.64%	1112
LIUZZI	19-JUL-75	.03	3.55	.95%	1113
LORETO	19-JUL-75	.01	.25	5.15%	1114
MCNAMARA	19-JUL-75	.02	1.73	.96%	1115
NELSON	19-JUL-75	.36	20.04	1.81%	1116
PANARA	19-JUL-75	.18	6.22	2.92%	1117
PATTERSON	19-JUL-75	.01	.18	4.23%	1118
RZEPKA	19-JUL-75	.11	5.34	2.02%	1119
SLIWA	19-JUL-75	.05	2.24	2.06%	1120
STINSON	19-JUL-75	.02	.74	2.30%	1121

RADC's use since July 1

STONE	19-JUL-75	1.58	51.15	3.09%	1122
TOMAINI	19-JUL-75	.15	4.23	3.44%	1123
VANALSTINE	19-JUL-75	.17	4.32	4.03%	1124
WEBER	19-JUL-75	.01	.47	2.19%	1125
WINGFIELD	19-JUL-75	.08	2.19	3.52%	1126
WWMCCS	19-JUL-75	.04	3.07	1.32%	1127
RADC (400)	12-JUL-75	9.59	209.41	4.58%	11
BARNUM	12-JUL-75	.00	.10	2.98%	111
BERGSTROM	12-JUL-75	.19	6.29	3.09%	112
BUCCIERO	12-JUL-75	.03	1.30	2.68%	113
CARRIER	12-JUL-75	.01	.15	4.25%	114
CARRIER	12-JUL-75	.32	13.42	2.41%	115
CAVANO	12-JUL-75	.10	2.50	3.90%	116
CAVANO	12-JUL-75	.22	5.08	4.26%	117
FMS	12-JUL-75	.00	.03	9.48%	118
HILBING	12-JUL-75	.08	4.56	1.86%	119
IUORNO	12-JUL-75	.09	3.20	2.77%	1110
IUORNO	12-JUL-75	.79	26.83	2.94%	1111
KENNEDY	12-JUL-75	.11	1.95	5.75%	1112
KENNEDY	12-JUL-75	1.30	24.50	5.29%	1113
KRUTZ	12-JUL-75	.02	.92	2.68%	1114
LAFORGE	12-JUL-75	.32	4.87	6.52%	1115
LAMONICA	12-JUL-75	.01	.94	1.06%	1116
LAMONICA	12-JUL-75	.03	1.48	2.08%	1117
LAWRENCE	12-JUL-75	.11	2.31	4.58%	1118

LAWRENCE	12-JUL-75	.11	4.41	2.51%	1j19
LIUZZI	12-JUL-75	.03	1.74	1.79%	1j20
LORETO	12-JUL-75	.03	.65	4.30%	1j21
PANARA	12-JUL-75	.08	3.40	2.37%	1j22
PANARA	12-JUL-75	.09	2.54	3.47%	1j23
PATTERSON	12-JUL-75	.01	.14	3.82%	1j24
RUPLE	12-JUL-75	.01	.37	3.34%	1j25
RWALKER	12-JUL-75	.08	6.42	1.31%	1j26
RZEPKA	12-JUL-75	.33	14.16	2.30%	1j27
SLIWA	12-JUL-75	.07	2.47	2.90%	1j28
STONE	12-JUL-75	.40	8.26	4.79%	1j29
STONE	12-JUL-75	4.32	47.62	9.07%	1j30
TOMAINI	12-JUL-75	.01	.22	3.76%	1j31
TOMAINI	12-JUL-75	.04	2.46	1.56%	1j32
WEBER	12-JUL-75	.01	.17	6.89%	1j33
WEBER	12-JUL-75	.06	2.74	2.08%	1j34
WINGFIELD	12-JUL-75	.02	1.10	1.94%	1j35
WINGFIELD	12-JUL-75	.13	6.28	2.02%	1j36
WWMCCS	12-JUL-75	.00	.03	2.94%	1j37
WWMCCS	12-JUL-75	.03	3.80	.88%	1j38
RADC (400)	5-JUL-75	4.23	127.70	3.31%	1k
BARNUM	5-JUL-75	.01	.23	3.26%	1k1
BERGSTROM	5-JUL-75	.05	2.34	1.95%	1k2
CARRIER	5-JUL-75	.08	2.41	3.47%	1k3
CAVANO	5-JUL-75	.12	4.74	2.55%	1k4

RADC's use since July 1

DIMAGGIO	5-JUL-75	.01	.39	2.62%	1k5
FMS	5-JUL-75	.31	5.03	6.22%	1k6
HILBING	5-JUL-75	.04	2.68	1.48%	1k7
IUORNO	5-JUL-75	.21	9.22	2.28%	1k8
KENNEDY	5-JUL-75	.93	19.70	4.73%	1k9
KRUTZ	5-JUL-75	.02	1.69	.95%	1k10
LAFORGE	5-JUL-75	.22	8.51	2.61%	1k11
LAWRENCE	5-JUL-75	.09	3.74	2.38%	1k12
LORETO	5-JUL-75	.01	.07	9.17%	1k13
NELSON	5-JUL-75	.01	.60	2.18%	1k14
PANARA	5-JUL-75	.37	10.43	3.53%	1k15
PATTERSON	5-JUL-75	.02	.87	1.95%	1k16
RUPLE	5-JUL-75	.01	.18	3.80%	1k17
RWALKER	5-JUL-75	.01	1.60	.54%	1k18
SLIWA	5-JUL-75	.26	8.51	3.04%	1k19
STINSON	5-JUL-75	.00	.08	5.42%	1k20
STONE	5-JUL-75	1.08	27.17	3.99%	1k21
TOMAINI	5-JUL-75	.07	2.43	3.01%	1k22
WEBER	5-JUL-75	.19	6.35	2.98%	1k23
WINGFIELD	5-JUL-75	.08	4.07	1.84%	1k24
WWMCCS	5-JUL-75	.04	4.67	.81%	1k25

RADC's use since July 1

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RA3Y;

33638 Distribution
Joseph P. Cavano,