WML 2-NOV-75 17:39 26831

another msg

another test message, 1

WML 2-NOV-75 17:39 26831

another msg

(J26831) 2-NOV-75 17:39;;;; Title: Author(s): Walter M. Lamia/WML;
Distribution: /WML([INFO-ONLY]) ; Sub-Collections: NIC; Clerk: WML;

26831 Distribution
Walter M. Lamia,

RLL 2-NOV-75 22:39 26832

SUG: A Newsletter from ARC to our Utility clients

comments, suggestions, etc. PLEASE Thanks

SUG: A Newsletter from ARC to our Utility clients

(SUG) 1

As has been suggested many times before, I urge that we create an AKW newsletter (or something to that effect). 1a

The purpose will be to disseminate information to all our clients and point to it as an example of what is going on (to potential clients). 1b

It should include sections that: 1c

tell tricks 1c1

give important bug fixes (this will show people we ARE doing things) 1c2

list interesting suggestions (to get better feedback on these ideas and test opinion of its need) 1c3

notices of important dates (such as KWAC and KWEC meetings, AKW seminars, training classes to be held, computer down time) 1c4

list official policies with regard to utility operation 1c5

reasons for certain computer down times 1c6

give statistics of interest to the community at large (feedback stats, usage stats) 1c7

describe applications of clients. 1c8

report minutes of KWAC, KWEC meetings 1c9

list new (and old) documentation when available and in the works 1c10

etc. 1c11

The cost of running this letter should be part of the utility since it is a very effective means of notifying our customers of what we have. It also can be supported by marketing overhead, since it is clearly a technique to increase usage by increasing interest in the system. 1d

Initially, we would only have it online, with hardcopy not readily available. The content would be written for OP but it will be up to the individual to print it out locally. 1e

Some hardcopy (from our Line printer) could be used for marketing

material (to be included in our package of documents we send to perspective clients). 1f

Eventually, it should be printed up neatly, via COM so that it becomes a bit better marketing document. 1g

This decision will be based on cost. 1g1

Overall we must make a decision as to its value versus the cost of this newsletter. 1h

I suggest it to be bi or tri-weekly and highly structured in order to lessen the work we must do for each issue. 1i

I will offer to get this going (subject to approval) or help in any way. Suggestions and comments please. 1j

I suggest that each of us submit info to be included whenever we can. 1k

Norton for policy and manager views 1k1

Pine for computer operations input 1k2

Bair for documentation and application descriptions 1k3

Roetter for training news 1k4

Johnson for important bugs and feedback info 1k5

Engelbart for what the future holds 1k6

Watson for the development scene 1k7

Everyone else for whatever you can contribute 1k8

Even the users can submit words for inclusion 1k9

(sample) outline of newsletter 2

Doug's corner 2a

Dates on the calendar (Schedule down time for next 30 days, meetings, training) 2b

Computer operations 2c

Stats on last period 2c1

report minutes of KWAC, KWEC meetings 2m9

list new (and old) documentation when available and in the works 2m10

etc. 2m11

RLL 2-NOV-75 22:39 26832

SUG: A Newsletter from ARC to our Utility clients

(J26832) 2-NOV-75 22:39;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /JCN([ACTION]) DCE([ACTION]) ARC-APP([ACTION]) RWW([ACTION]) JBP([ACTION]) EKM([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-APP; Clerk: RLL; Origin: < ARC-LOG, NEWSLETTER,NLS;4, >, 2-NOV-75 22:33 RLL ;;;;####;

26832 Distribution

James C. Norton, Douglas C. Engelbart, Israel A. Torres, Buddie J. Pine, Laura J. Metzger, Priscilla A. Wold, Pamela K. Allen, Jeffrey C. Peters, Marcia L. Keeney, Jeanne M. Beck, Rodney A. Bondurant, Douglas C. Engelbart, Jeanne M. Leavitt, Susan Gail Roetter, Raymond R. Panko, Adrian C. McGinnis, James C. Norton, J. D. Hopper, Elizabeth J. Feinler, James H. Bair, Robert N. Lieberman, N. Dean Meyer, Sandy L. Johnson, Martin E. Hardy, Richard W. Watson, Jonathan B. Postel, Elizabeth K. Michael,

Off the top of the head ideas about giving demos

In response to Postel's item <26747,>.

Off the top of the head ideas about giving demos

The most important part of a demo is to know to whom you are talking. 1

Their interest in NLS must be whetted and increased by appealling to their specific interest. 1a

I suggest the first 15 minutes or so must be spent talking to them or rather having them talk to you about their operation and interest. 2

It certainly is nice to have all the items you mention in your journal item <26747,> but much of it will come naturally or not at all. 3

The key is being able to switch in a demo to items that may catch the fancy of the people. Skip over items of non-interest, leave out technical things to non-technical people (it is often impossible to size them up until you actually beginning talking to them), and give specifics to those interested in NLS at that level. I guess you have to tell them what they want to hear. 4

Honesty seems to the best all around (e.g. response, reliability problems - but have the right backup for these toughies... cost decreasing, still good to get in earlier, etc.) 5

As far as number, three is already too much; two is not bad since one might be quite out things. Four is a limit (five is too many). 6

Have a very good broad background for all of NLS from LP, FE/BE, graphics, Output processor, operating system, L10, CML, psychological problems, business and financial matters, philosophy of AKW, etc. 7

This shows up as an excellent sales persuader. Even you don't have the exact answers the breadth usually impresses people. 7a

For highly technical types the best thing to do, of course is to match the person up with our ARC expect in the area. I think we really have great people and we should call upon them subject to their availability and the importance of the people. 7b

One should have some knowledge of other text editors and word processing systems as well as any other system that may be, in part, competing with NLS. 8

Display NLS has considerable advantage over TNLS for demonstrations. 9

It is extremely difficult to talk about may of the facililites without actually showing them. 10

If no console is available I would suggest sticking to applications with plenty of viewgraphs or slides. 10a

Off the top of the head ideas about giving demos

Avoid dwelling on the concepts but don't forget them. Try to talk specifics and in clear user-oriented language (not computerese). 11

Well, that is some thoughts on giving demo; use what you may and I will be glad to help if necessary. 12

Off the top of the head ideas about giving demos

(J26833) 2-NOV-75 23:02;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /JBP([ACTION]) JCN([INFO-ONLY]) JHB([INFO-ONLY]) SGR([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLL; Origin: < LIEBERMAN, FORDEMO,NLS;5, >, 2-NOV-75 22:58 RLL ;;;;####;

26833 Distribution
Jonathan B. Postel, James C. Norton, James H. Bair, Susan Gail Roetter,

SYCA

LAC 3-NOV-75 09:52 26834

Provided for your info, Hardcopy version on your desk, see also previous items on AKW and Timesharing/scheduler

Date and place visited,:
13-16 Oct 75; MIT Lincoln Labratory, Cambridge, Mass 1

Name of persons making the visit:
Lt, Lawrence Crain, Ms, Marilynne Sims 2

Purpose of the visit, 3

To attend KWAC meeting, 3a

To gather information on proposed pricing and new application features of NLS, 3b

Persons attending, 4

Defense Advanced Research Projects Agency
Connie McLindon 4a

Ballistic Research Laboratory (AMC)
Stan Taylor 4b

Bell Laboratory (Canada)
Inez Matiuz 4c

Educatioal Testing Service
Dave Potter 4d

Hudson Institute
Ruddy Ruggles 4e

Lincoln Laboratory
Bob Sheppard 4f

National Security Agency
Jack Gillikin 4g

Naval Ship Research and Development Center
Frank Brignoli 4h

Rome Air Development Center
Duane Stone 4i

Stanford Research Institute
Glen Sherwood 4j

Stanford Research Institute - ARC
Doug Engelbart
Jim Norton
Bud Pine
Jim Bair

Trip Report, boston KWAC

Bev Boli
Susan Roetter
Jeanne Beck
Pam Allen
Rita Hysmith
Priscilla Wold 4k

U.S. Army Materiel Command
Ron Uhlig
Ed Van Gehren 41

Discussion of significant events, 5

During the week of October 13 - 16, 1975, a meeting of the Knowledge Workshop Architects Community (KWAC) was held in Boston, The purpose of the meeting was to facilitate the interchange of ideas between the architects and the application staff of the Augmentation Research Center (ARC) at Stanford Research Institute, Several features which would increase efficency were discussed, as well as questions concerning the pricing structure, 5a

The discussion with the architects addressed: 5a1

the need for an efficient, high speed system for reading in cassette tapes across the Network, so that users can key in text in an offline mode, reserving on-line time for interactive tasks, and for the more efficient process of cassette-to-disk file transfers, 5a1a

the need for an ability to create batch processes for accomplishing certain non-interactive, high-load processing, Such tasks must now be done during the day; under such a system, they could be defered until after normal duty hours, freeing duty-hour processor power for more on-line users, 5a1b

a requirement to collect performance statistics which would be more reflective of user efficency and a procedure for more frequent distribution of these statistics, 5a1c

SRI personnel presented information on the following subjects: 5a2

the curent method of pricing services and computer

resources. See Attachment 1 for a detailed discussion of this topic. 5a2a

the algorithms used to allocate processor resources among users. See Attachment 2. 5a2b

the direction of SRI documentation for the near future. The documentation will be expanded to include procedural tutorials that would serve as advanced courses or stand alone references. 5a2c

future training. The training offered by SRI-ARC would continue to support new users but would also include new topics. 5a2d

Throughout the conference, there were informal discussions of applications and special systems being developed by the various organizations. NLS provides the ability to rapidly and easily develop such customized systems, and several discussed were of interest to the Center. Two of particular potential value are a Financial Management package being developed by the RADC architect, which allows better tracking and sumarization of contractual funding obligated and expended; and a scheduling system for executives' time being developed by Bell Canada, which allows semi-automatic scheduling of meetings to best fit each attendee's schedule. This office intends to evaluate these systems when completed to see how usefull they could be within the AFDSDC environment. 5b

The Architect Community scheduled a followup meeting to be held in Washington D.C. in the latter half of November to finalize a list of priorities for future development and enhancement to the NLS system to best support the need of the community. 5c

Conclusions And Recomendations. 6

An AFDSDC representative should attend the followup meeting to insure the final priorities list reflects the needs of the Center. 6a

Attachment 1 should be distributed to all AFDSDC managers to provide project visibility and reduce the misunderstanding currently existing about what this phase of the total ARPANET/NSW effort is providing, and what are the costing tradeoffs. It was quite surprising, even to the personnel attending the conference, to find out what we are paying for by

category, and especially, how much it would cost for equavalent service outside the community. 6b

Attachment 2 should be distributed to all AFDSDC users of the ARAPNET. Understanding the system will hopefully improve the work habits of these users, and thus improve the overall cost-effectiveness of the services we are purchasing. 6c

This meeting was of considerable value, both from a technical and a managerial viewpoint. Increased understanding of how the system works, and of new features and requirements, will be of great benefit in helping optimize AFDSDC use of this system. Costing, pricing, and development planning discussions held at the meeting have provided the basis for a better understanding of the breakdown of services we are recieving, and thus an ability to better manage, plan for, and justify these services. It is strongly recommended the Center send representatives to all future KWAC gatherings. These are user group meeting which the Center, as heavy user of this system, can ill afford to miss.

Lawrence A. Crain
1Lt, USAF 6d

LAC 3-NOV-75 09:52 26834

(J26834) 3-NOV-75 09:52;;;; Title: Author(s): Lawrence A. Crain/LAC;
Distribution: /KPH([ACTION]) MAS2([INFO-ONLY]) ;
Sub-Collections: NIC; Clerk: LAC; Origin: < CRAIN,
TRIPREPORT.NLS;16, >, 2-NOV-75 12:42 LAC ;;;;

26834 Distribution
Kenneth P. Hearn, Marilynne A. Sims,

test

this is to test your mailbox 1

(J26835) 3-NOV-75 09:55;;;; Title: Author(s): Lawrence A. Crain/LAC; Distribution: /WML([ACTION]) ; Sub-Collections: NIC; Clerk: LAC;

26835 Distribution
Walter M. Lamia,

RLL 3-NOV-75 16:31 26838

BIG week for ARC - AKW seminar and Gunter demo same week.

Jon: do u have any firm list of who will be involved in the GUNTER demo?

RLL 3-NOV-75 16:31 26838

BIG week for ARC - AKW seminar and Gunter demo same week.

It is nice to communicate, just found out the week of the AKW seminar is the same week of the BIG demo at Gunter, Probably wont cause any real problems,
But we should coordinate so that people like POOH and JCN (who most likely will be at Gunter) will have somone talking on their subjects at the seminar,
How about computer resources? Will the demo take away any after 5:00 PM Esastern time? (I guess not but lets make sure), 1

RLL 3-NOV-75 16:31 26838

BIG week for ARC - AKW seminar and Gunter demo same week.

(J26838) 3-NOV-75 16:31;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /JHB([ACTION]) JCN([INFO-ONLY]) JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLL;

26838 Distribution
James H. Bair, James C. Norton, Jonathan B. Postel,

Feedback on Training Session Questions

Some answers to some of the questions that came up during the training sessions.

Feedback on Training Session Questions

Wanted to get back to you with answers to some of the questions that came up during the training session. 1

In order to find out what programs are available on the computer in Boston (BBNB) type in TENEX (at the @) dir <sp> <subsys> CR, remember the angle brackets around subsys. In order to get an even more complete list type in TENEX (at the @) dir <sp> <netsys> CR. 2

If you you see a particular program at BBN that interests you, apparently you do have access to it. 2a

All hosts on the Arpanet do not have a TENEX operating system. If you look through the Arpanet Directory there is a listing of all the sites on the net along with a list of each host's operating system. 3

Anyone with a TENEX operating system can be linked to using RSEXEC, (directions given to Chuck Hall), unless the person you want to link to has a TENEX operating system linking is impossible. It is however possible to send a message to people who are not running on a TENEX. Almost all the operating systems associated with the Arpanet do have some kind of message handling program that follows somewhat the same format as sendmessage. You will need to find out how the person you would like to communicate with logs in to his host. Find out the person's username and host name. All hosts may have a little different way of logging in. A message can be sent using our sendmessage format. For example:
@sndmsg
To: username @MIT-MULTICS 3a

Essentially to send messages to others without a TENEX operating system you will need to find out their username and host... or in other words their sendmessage address. 3a1

The number of directories associated with each slot is not a fixed number. Usually ten directories per slot is the maximum. Of course often some of the directories will be group directories with a number of idents associated with each one. 3b

Qualifications a mini-computer should have in order to be considered a TIP. I was unable to get a satisfactory answer to this question but was able to get the names of the people you should contact in order to find out. 3c

If DMA is an Arpanet Contractor, get in touch with Steve Walker @ISI. (use sendmessage). If DMA is not an Arpanet Contractor get in touch with Robert Brownfield. To send a message to him use this username DCACODES535 @ISI. Either of these people should be contacted concerning Arpanet access and related

matters. 3c1

If you plan on hooking in to a TIP for your display terminal you will need some type of high speed lines to the TIP. You would have a modem at both ends, one at the TIP, the other at your terminal, (the modem typically being a VADAIC 1200 bod). 3d

Chuck- spoke with Jim Norton on Friday about the possibiluty of having you visit ARC. We are conducting a seminar the week of November 17th. Although we feel like it might be more valuable for you to come at another time when we could give you more individual time to really show you what NLS is all about. 3e

An operator here is getting a list of everyone who has a directory at RADC. He will put the list in the form of a TENEX file in my directory. Once it has been set up I will send you a message telling you how to access it. 3e1

Directions for using RSEXEC.
Type at the @ RSEXEC CR, then type either a who and hit the escape key or a where and the escape key. If you type who and the host it will tell you everyone who is logged in at that host. If you type where and the username it will tell you where that particular person is, logged in or not. When you are ready to link, type link, hit the escape key then type in the tty number and hit the escape again, then type in the host name hit the escape and the CR. You will get the tty number when you ask where the person is. 3e2

If you have any further questions don't hesitate to use linking, sndmessage, sendmail, or even the phone. 3f

Feedback on Training Session Questions

(J26839) 3-NOV-75 17:10;;;; Title: Author(s): Priscilla A. Wold/PAW2; Distribution: /DMAP([ACTION]) ; Sub-Collections: SRI-ARC DMAP; Clerk: PAW2; Origin: < WOLD, DMA,NLS;3, >, 3-NOV-75 16:49 PAW2 ;;;;####;

26839 Distribution
Defense Mapping Agency ,

DVN 3-NOV-75 17:45 26840

My Spot in AKW Seminar

I noted my spot and will be glad to be there. With any luck I will have put my outline online before that. I also note you've been looking at printout too long: my name is spelled van Nouhuys, not Vannouhuys. 1

DVN 3-NOV-75 17:45 26840

My Spot in AKW Seminar

(J26840) 3-NOV-75 17:45;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RLL([INFO-ONLY]) JHB([INFO-ONLY] I've been trying to get the guy from GTE on the phone, have failed so far) ; Sub-Collections: SRI-ARC; Clerk: DVN;

26840 Distribution
Robert N. Lieberman, James H. Bair,

Weekly Report

3-November-75 1

Last Week 1a

nsw management 1a1

-Meeting Report 1a1a

Review of up coming deadlines, and discussion of problem areas. 1a1a1

-Monthly report to RADC done (see -- 26807,). 1a1b

nsw protocols 1a2

-no activity 1a2a

dca consulting 1a3

-Spent 1 and 1/2 days reading and thinking about how to incorporate security and precedence into TCP. Sent a short note to DCA on my initial thoughts. 1a3a

arpa protocols 1a4

-no activity 1a4a

visitors 1a5

-no activity 1a5a

Next Week 1b

nsw management 1b1

-Prepare for "THE DEMO" at gunter scheduled for roughly 17-19 Nov. 1b1a

-Work on the "shopping list" of ideas for next proposal round. 1b1b

-Update milestones. 1b1c

-Work on final report for 74-75 contract. 1b1d

-Collect the set of design documents, transmit the table of contents to COMPASS. 1b1e

-Prepare a note relating project account numbers to contract work statement tasks, 1b1f

-Review spending on current contract, 1b1g

-Reallocate the funds among the project account numbers, 1b1h

nsw protocols 1b2

-no activity 1b2a

dca consulting 1b3

-Work on modifications to TCP specification for security and precedence arguments 1b3a

arpa protocols 1b4

-Read INWG notes 1b4a

-Write a chapter on protocols for the "arpa book" 1b4b

visitors 1b5

-no activity 1b5a

Weekly Report

(J26842) 3-NOV-75 18:54;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /ARC-DEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-DEV; Clerk: JBP;

26842 Distribution

Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Andy Poggio, David L. Retz, Jan A. Cornish, Larry L. Garlick, Delorse M. Brooks, Beverly Boli, James E. (Jim) White, Ann Weinberg, Kenneth E. (Ken) Victor, Dirk H. Van Nouhuys, Jonathan B. Postel, Elizabeth K. Michael, David S. Maynard, Karolyn J. Martin, Harvey G. Lehtman, Kirk E. Kelley, Charles H. Irby, Robert Louis Belleville, Don I. Andrews, Richard W. Watson, Douglas C. Engelbart,

JEW 3-NOV-75 19:18 26843

*** THIRD DRAFT ***
# A High-Level Framework For Network-Based Resource Sharing

31-OCT-75

James E. White
Augmentation Research Center

Stanford Research Institute
Menlo Park, California 94025

(415) 326-6200 x2960

This paper proposes a high-level, application-independent protocol and software framework that would extend the local programming environment to embrace modules in other computers within a resource sharing computer network, and thereby facilitate the construction of distributed systems and encourage the sharing of resources.

See (26771,) and (26513,) for previous drafts. Appendix D from draft two has been removed, and may become a separate, follow-up paper.

*** THIRD DRAFT *** 1

The Goal, Resource Sharing 2

The principal goal of all resource-sharing computer networks, including the now international ARPA Network, is to usefully interconnect geographically distributed hardware, software, and human resources [1]. Achieving this goal requires the design and implementation of various levels of support software within each constituent computer. This paper outlines an alternative to the approach that ARPA Network system builders have been taking since work in this area began in 1970, and suggests a strategy for modeling distributed systems within any large computer network. 2a

The first sections of this paper describe the prevailing ARPA Network protocol strategy, which involves specifying a family of application-dependent protocols with a network-wide inter-process communication facility as their common foundation. Next, the application-independent command/response discipline that can be seen to characterize this protocol family is identified. Its isolation as a separate protocol is then proposed as a basis for factoring the associated software out of each applications program; supplying it as a single, installation-maintained module; and thus reducing the work of the applications programmer. Finally, an extensible model for this class of network interaction is proposed that in itself would even further encourage the use of network resources. 2b

Function-Oriented Protocols, an Approach to Resource Sharing 3

The current ARPA Network software approach to facilitating resource sharing has been detailed elsewhere in the literature [2, 3, 4]. Briefly, it consists of defining first a Host-Host Protocol by which host operating systems cooperate to support a network-wide inter-process communication (IPC) facility, and then various function-oriented protocols by which resident "server processes" deliver specific services to "user processes" via the IPC facility. 3a

The current Host-Host Protocol has been in service since 1970 at, now, more than 75 host installations. Since its initial design and implementation, a variety of deficiencies have been recognized, and several alternative protocols suggested [5, 6]. Although improvements at this level would surely have a positive effect upon Network resource sharing, the present paper simply assumes the existence of some form of IPC and focuses attention upon higher-level protocol design issues. 3b

Experience With and Limitations of Hands-On Resource Sharing 4

The oldest and still by far the most heavily used function-oriented protocol is the Telecommunications Network protocol (TELNET) [7], which effectively attaches a terminal on one computer to an interactive time-sharing system on another, and allows a user to interact with the system via the terminal as if he were one of its local users. 4a

As depicted in Figure 1, TELNET specifies the means by which a user process monitoring the user's terminal and a server process with access to the target time-sharing system are interconnected via an IPC communication channel. It also legislates a standard character set in which the user's commands and the system's responses are to be represented in transmission between machines. The syntax and semantics of these interchanges, on the other hand, vary from one system to another, and are unregulated by the protocol; the user and server processes simply shuttle characters between the human user and the target system. 4b

Although the "hands-on" use of remote resources that TELNET makes possible is a natural and highly visible form of resource sharing, it has several limitations that severely limit its long-term utility: 4c

1) it forces upon the user all of the trappings of the resource's host system, 4c1

   To exploit a remote resource, the user must leave the familiar working environment provided by his local system and enter an alien one with its own peculiar system structure (login, logout, and subsystem entry and exit procedures) and command language discipline (command recognition and completion conventions, editing characters, etc). Hands-on resource sharing thus fails to provide the user with the kind of organized and consistent workshop he requires to work effectively [8].

2) it provides no basis for bootstrapping new composite resources from existing ones. 4c2

Because the network access discipline imposed by each resource is its own human-engineered command language, rather than a machine-oriented communication protocol, it is virtually impossible for one resource to programatically draw upon the services of others. Doing so would require that the program deal successfully with complicated echoing and feedback characteristics; unstructured, even unsolicited system responses, and so forth. Hands-on resource sharing thus does nothing to provide an environment in which existing resources can be used as building blocks to construct new, more powerful ones.

These inherent limitations of hands-on resource sharing are removed by a protocol that simplifies and standardizes the dialog between user and server processes. Given such a protocol, the various remote resources upon which a user might wish to draw can indeed be made to appear as a single, coherent workshop by interposing between him and them a command language interpreter that transforms commands into the appropriate protocol utterances [9]. The construction of composite resources is also made feasible, since the network interface to each resource becomes sufficiently simple that the user's command formulation expertise is no longer required and a program can be substituted for him. 4d

Standardizing the Inter-Machine Dialog in Specific Application Areas 5

After the TELNET protocol had been designed and widely implemented within the ARPA Network, work began on a family of function-oriented protocols that each seek to facilitate "program-controlled" resource sharing by standardizing dialog in a particular application area. While TELNET dictates only the manner in which user and server processes are interconnected via the IPC facility, and the character set in which the two processes communicate once connected, each member of this family specifies in addition the syntax and semantics of the commands and responses that comprise their dialog. 5a

Protocols within this family necessarily differ in substance, each specifying its own application-specific command set. The File Transfer Protocol (FTP) [10], for example, specifies commands for manipulating files, and the Remote Job Entry Protocol (RJE) [11] commands for manipulating batch jobs. Protocols throughout the family are, however, similar in form, each successive family member simply inheriting the physical features of its predecessors; thus FTP and RJE enforce the same conventions for formulating commands and responses. 5b

This common command/response discipline requires that commands and responses have the following respective formats: 5c

```
command,name     <SP> parameter <CRLF>                          5c1
response,number <SP> text       <CRLF>                          5c2
```

Each command invoked by the user process is identified by NAME and allowed a single PARAMETER. Each response generated by the server process contains a three-digit decimal response NUMBER (to be interpreted by the user process) and explanatary TEXT (for presentation to a human user). Response numbers are assigned in such a way that, for example, positive and negative acknowledgments can be easily distinguished by the user process. 5d

FTP contains, among others, the following commands (each listed with one of its possible responses) for retrieving, appending to, replacing, and deleting files within the server process' file system, respectively: 5e

```
RETR <SP> filename <CRLF>  250 <SP> Beginning transfer. <CRLF> 5e1
APPE <SP> filename <CRLF>  400 <SP> Not implemented.    <CRLF> 5e2
STOR <SP> filename <CRLF>  453 <SP> Directory overflow. <CRLF> 5e3
DELE <SP> filename <CRLF>  450 <SP> File not found.     <CRLF> 5e4
```

The first three commands serve to initiate the transfer of a file from one system to another; the transfer itself occurs on a separate IPC channel and is governed by what amounts to a separate protocol. 5f

Multi-parameter operations must be implemented as sequences of single-parameter commands. Thus two commands are required to rename a file: 5g

```
RNFR <SP> oldname  <CRLF>  200 <SP> Next parameter.     <CRLF> 5g1
RNTO <SP> newname  <CRLF>  253 <SP> File renamed.       <CRLF> 5g2
```

The Importance of Factoring Out the Command/Response Discipline 6

That FTP, RJE, and the other protocols within this family share a common command/response discipline is a fact not formally recognized within the protocol literature, and each new protocol document describes it in detail, as if for the first time. Nowhere are these conventions codified in isolation from the various contexts in which they find use, being viewed as a necessary but relatively unimportant facet of each function-oriented protocol. "This common command/response discipline has thus gone unrecognized as the important, application-independent protocol that it is." 6a

This oversight has had two important negative effects upon the growth of resource sharing within the ARPA network: 6b

1) it has allowed the command/response discipline to remain crude, 6b1

As already noted, operations that require more than a single parameter are consistently implemented as two or more separate commands, each of which requires a response and thus incurs the overhead of a full round-trip network delay. Furthermore, there are no standards for encoding parameter types other than character strings. Neither is there provision for returning results in a command response.

2) it has placed upon the applications programmer the burden of implementing the network "run-time environment (RTE)" that enables him to access remote processes at a functional level, 6b2

Before he can address remote processes in the fashion he desires, namely:

invoke function DELE with argument TEXTFILE at host X

the applications programmer must first construct (as he invariably does, in every program he writes) a module that provides the desired program interface while implementing the agreed upon command/response discipline. This module contains the code required to properly format outgoing commands, interface with the IPC facility, and parse incoming responses. Because the system provides only the IPC facility as a foundation, the applications programmer is deterred from using remote resources by the amount of specialized knowledge and software that must first be acquired.

If, on the other hand, the command/response discipline were formalized as a separate protocol, its use in subsequent function-oriented protocols could rightly be anticipated by the systems programmer, and a single RTE constructed for use throughout an installation (in the worst case, one implementation per programming language per host might be required). This module could then be placed in a library and link loaded (for example) into each new applications program, thereby greatly simplifying their use of remote resources.

The thesis of the present paper is that one of the keys to facilitating network resource sharing lies in isolating as a separate protocol the command/response discipline common to a large class of applications protocols; developing the protocol to make it flexible and efficient; and constructing at each installation a RTE that by means of the protocol provides the applications programmer with easy and high-level access to remote resources. 6c

Specifications for the Command/Response Protocol 7

Having argued the value of a command/response protocol as the foundation for a large class of applications protocols, there remains the task of suggesting the form that this Protocol might take. It must possess a number of characteristics, the first of which are those of the discipline that it replaces; the Protocol must therefore: 7a

1) permit invocation of arbitrary, named commands implemented by the remote process, and 7a1

2) permit command outcomes to be reported in a way that aids both the program invoking the commmand and the human user under whose control it may be executing, 7a2

Second, the Protocol should remove the known deficiencies of its predecessor, that is: 7b

3) allow an arbitrary number of parameters to be supplied as arguments to a single command, 7b1

4) provide representations for a variety of parameter types, including but not limited to character strings, and 7b2

5) permit commands to return parameters as results, as well as accept them as arguments, 7b3

And finally, the Protocol should provide whatever additional capabilities are required to facilitate construction of the more complex distributed systems whose creation one seeks by means of the Protocol to encourage. Although others may later be identified, the three capabilities below are recognized now to be important: 7c

6) permit the server process to invoke commands in the user process, i.e. eliminate entirely the often inappropriate user/server distinction, and allow each process to invoke commands in the other, 7c1

In the workshop environment alluded to earlier, for example, graphical text editors must invoke commands within the command language interpreter to manipulate the user's display screen.

7) permit a process to accept two or more commands for concurrrent execution, 7c2

The text editor may wish to permit the user to initiate a long formatting operation with one command and yet continue to issue additional, shorter commands before the first has been responded to.

8) allow the process issuing a command to decline response. 7c3

When a command returns no results (or none of current interest), the invoking process may consider an acknowledgment to be needless network traffic and therefore wish to suppress it.

A Formulation of the Protocol that Meets These Specifications 8

The eight requirements listed above are met by a protocol in which the following two messages are defined: 8a

```
message,type=COMMAND   [tid] command,name arguments          8a1
message,type=RESPONSE  tid   outcome      results            8a2
```

described here in purely symbolic form (Appendix C explores one possible encoding in detail). The first message invokes the command whose NAME is specified using the ARGUMENTS provided. The second is issued in eventual response to the first and returns the OUTCOME and RESULTS of the completed command. Whenever OUTCOME indicates that a command has failed, the RESULTS must be an error number and diagnostic message. 8b

There are several elements of the Protocol that are absent from the existing command/response discipline: 8c

1) RESULTS, in fulfillment of requirement five, 8c1

2) a MESSAGE TYPE that distinguishes commands from responses, arising from requirement six, 8c2

   In the existing discipline, this distinction is implicit, since user and server processes receive only responses and commands, respectively.

3) an optional transaction identifier TID by which a command and its response are associated, arising from requirements seven and eight. 8c3

   The presence of a transaction identifier in a command implies the necessity of a response echoing the identifier; and no two concurrently outstanding commands may bear the same identifier.

Requirements three and four -- the ability to transmit an arbitrary number of parameters, of various types, with each command or response -- are most economically and effectively met by defining a small set of primitive "data types" (e.g. booleans, integers, character strings) from which concrete parameters can be modeled, and a "transmission format" in which such parameters can be encoded. Appendix A suggests a set of data types suitable for a large lass of applications; Appendix B defines some possible transmission formats. 8d

Summarizing the Arguments Advanced So Far 9

The author trusts that little of what has been presented thus far will be considered controversial by the reader. The following principle arguments have been made: 9a

1) the more effective forms of resource sharing depend upon remote resources being usefully accessible to other programs, not just to human users, 9a1

2) application-dependent protocols providing such access leave to the applications programmer the task of constructing the additional layer of software (above the IPC facility provided by the system) required to make remote resources accessible at the functional level, thus discouraging their use, 9a2

3) a single, resource-independent protocol providing flexible and efficient access at the functional level to arbitrary remote resources can be devised, and finally 9a3

4) this protocol would make possible the construction at each installation of an application-independent network run-time environment making remote resources accessible at the functional level and thus encouraging their use by the applications programmer. 9a4

A protocol as simple as that suggested here has great potential for stimulating the sharing of resources within a computer network. First, it would reduce the cost of adapting existing resources for network use by eliminating the need for the design, documentation, and implementation of specialized delivery protocols. Second, it would encourage the use of remote resources by eliminating the need for application-specific interface software. And finally, it would encourage the construction of new resources built expressly for remote access, because of the ease with which they could be offered and used within the network software marketplace. 9b

The Importance of the Model Imposed by the Protocol 10

The Protocol proposed above imposes upon the applications programmer a particular model of the network environment. In a heterogeneous computer network, nearly every protocol intended for general implementation has this effect, since it idealizes a class of operations that have concrete but slightly different equivalents in each host machine. Thus the TELNET Protocol described earlier, for example, specifies a Network Virtual Terminal that attempts to provide a best fit to the many real terminals in use around the ARPA Network. 10a

As presently formulated, the Protocol models a remote resource as an interactive program with a simple, rigidly-specified command language. This model follows naturally from the fact that the function-oriented protocols from which the Protocol was extracted were necessitated by the complexity and diversity of user-oriented command languages. The Protocol may thus legitimately be viewed as a vehicle for regularizing and simplifying command languages so they can be employed by programs. 10b

While the command/response model is a natural one, others are possible. A remote resource might also be modeled as a process that services and replies to requests it receives from other computer processes. This request/reply model would emphasize the fact that the Protocol is a vehicle for inter-process communication and that no human user is directly involved. 10c

Substituting the request/reply model for the command/response model requires only cosmetic changes to the Protocol: 10d

```
message,type=REQUEST [tid] op,code arguments        10d1
message,type=REPLY     tid  outcome results        10d2
```

In the formulation above, the terms "REQUEST", "REPLY", and "op.code" have simply been substituted for "COMMAND", "RESPONSE", and "command.name", respectively. 10e

The choice of model need affect neither the content of the Protocol nor the behavior of the local or remote processes that it interfaces. Use of the word "command" in the command/response model, for example, is not meant to imply that the remote process can be coerced into action. Whatever model is adopted, a process has complete freedom to reject an incoming remote request that it is incapable of or unwilling to fulfill. 10f

But even though it has no substantive effect upon the Protocol, the selection of a model is an important task because it determines the way in which both the applications and systems programmer perceive the network environment. If the network environment is made to appear foreign to him, the applications programmer may be discouraged from using it. The choice of model also constrains the kind and range of protocol extensions that are likely to occur to the systems programmer; one model may suggest a rich set of useful extensions, another lead nowhere (or worse still, in the wrong direction). 10g

In the following sections, the author suggests a network model that he believes will both encourage the use of remote resources by the applications programmer and suggest to the systems programmer a wide variety of useful Protocol extensions. Unlike the substance of the Protocol, however, this Model has already proven quite controversial within the ARPA Network community. 10h

Modeling Resources as Collections of Procedures 11

Ideally, the goal of both the Protocol and its accompanying RTE is to make remote resources as easy to use as local ones. Since local resources usually take the form of resident and/or library subroutines, the possibility of modeling remote commands as "procedures" immediately suggests itself. This Model is further confirmed by the similarity that exists between local procedures and the remote operations to which the Protocol provides access. Both carry out arbitrarily complex, named operations on behalf of the requesting program (the caller); are governed by arguments supplied by the caller; and return to the caller results that reflect the outcome of the operation. The procedure call model thus acknowledges that, in a network environment, programs must sometimes call subroutines in machines other than their own. 11a

Like the request/reply model already described, the procedure call model requires only cosmetic changes to the Protocol: 11b

```
message,type=CALL    [tid] procedure.name arguments          11b1
message,type=RETURN  tid   outcome        results            11b2
```

In this new formulation, the terms "CALL", "RETURN", and "procedure.name" have been substituted for "COMMAND, "RESPONSE", and "command.name", respectively. And in this form, the Protocol might aptly be designated a "Procedure Call Protocol (PCP)". 11c

"The procedure call model would elevate the task of creating applications protocols to that of defining procedures and their calling sequences. It would also provide the foundation for a true distributed programming system (DPS) that encourages and facilitates the work of the applications programmer by gracefully extending the local programming environment, via the RTE, to embrace modules on other machines." This integration of local and network programming environments can even be carried as far as modifying compilers to provide minor variants of their normal procedure calling constructs for addressing remote procedures (for which calls to the appropriate RTE primitives would be dropped out). 11d

Finally, the Model is one that can be naturally extended in a variety of ways (e.g. coroutine linkages, signals) to further enhance the distributed programming environment. 11e

Limitations of the Procedure Call Model 12

Although in many respects it accurately portrays the class of network interactions with which this paper deals, the Model suggested above may in others tend to mislead the applications programmer. The limitations of the Model must, therefore, be clearly understood: 12a

1) local procedure calls are cheap; remote procedure calls are not, 12a1

   Local procedure calls are often effected by means of a single machine instruction and are therefore relatively inexpensive. Remote procedure calls, on the other hand, would be effected by means of a primitive provided by the local RTE and require an exchange of messages via IPC.

Because of this vast cost differential, the applications programmer must exercise discernment in his use of remote resources, even though the mechanics of their use will have been greatly simplified by the RTE. Like virtual memory, the procedure call model offers great convenience and therefore power in exchange for reasonable alertness to the possibilities of abuse.

2) conventional programs usually have a single locus of control; distributed programs need not. 12a2

Conventional programs are usually implemented as a single process with exactly one locus of control; a procedure call, therefore, traditionally implies a transfer of control from caller to callee. Distributed systems, on the other hand, are implemented as two or more processes, each of which is capable of independent execution. In this new environment, a remote procedure call need not necessarily suspend the caller's process, which is capable of continuing execution in parallel with the called procedure.

The RTE can therefore be expected to provide, for convenience, two modes of remote procedure invokation: an "in-line" mode that suspends the caller until the procedure returns; and an "out-of-line" mode that releases the caller as soon as the CALL message has been sent or queued. For this second case, the RTE must either provide an additional primitive by which the applications program can test for completion of the out-of-line call, or arrange to asynchronously notify the program using the appropriate facility of the local operating system.

Finally, the applications programmer must recognize that by no means all useful forms of network communication are effectively modeled as procedure calls. The lower-level IPC facility that remains directly accessible to him must therefore be employed in those applications for which the procedure call model is inappropriate and RTE-provided primitives simply will not do. 12b

Some Expectations 13

Both the Procedure Call Protocol and its associated run-time environment have great potential for facilitating the work of the network programmer; only a small percentage of that potential has been discussed in the present paper. Upon the foundation provided by PCP will be erected higher-level application-independent protocol layers that further enhance the distributed programming environment by providing even more powerful capabilities. And as the importance of the RTE becomes fully evident, additional tasks will gradually be assigned to it, including perhaps those of: 13a

1) converting parameters between the format employed internally by the applications program, and that imposed by the Protocol, 13a1

2) automatically selecting the most appropriate inter-process transmission format on the basis of the two machines' word sizes, and 13a2

3) automatically substituting for network IPC a more efficient form of communication when both processes reside on the same host, 13a3

The RTE will eventually offer the programmer a wide variety of application-independent, network-programming conveniences, and so, by means of the Protocol, become an increasingly powerful distributed-system-building tool. 13b

Acknowledgments 14

Many individuals within both SRI's Augmentation Research Center (ARC) and the larger ARPA Network community have contributed their time and ideas to the development of the Protocol and Model described in this paper, and to the design of a prototype run-time environment. The contributions of the following individuals are expressly acknowledged: Dick Watson, Jon Postel, Charles Irby, Ken Victor, Dave Maynard, and Larry Garlick of ARC; and Bob Thomas and Rick Schantz of Bolt, Beranek, and Newman, Inc. 14a

The work reported here was supported by the Advanced Research Projects Agency of the Department of Defense, and by the Rome Air Development Center of the Air Force. 14b

APPENDIX A -- Suggested Data Types 15

The Protocol requires that every parameter or "data object" be represented using one of several primitive data types defined by the Model. The set of data types below is sufficient to conveniently model a large class of data objects, but since the need for additional data types (e.g. floating-point numbers) will surely arise, the set must remain open-ended. Throughout the descriptions below, N is confined to the range [0, 2**15-1]: 15a

LIST A list is an ordered sequence of N data objects called "elements". A LIST may contain other LISTs as elements, and can therefore be employed to construct arbitrarily complex composite data objects. 15a1

CHARSTR A character string is an ordered sequence of N ASCII characters, and conveniently models a variety of textual entities, from short user names to whole paragraphs of text. 15a2

BITSTR A bit string is an ordered sequence of N bits and, therefore, provides a means for representing arbitrary binary data (e.g. the contents of a word of memory). 15a3

INTEGER An integer is a fixed-point number in the range [-2**31, 2**31-1], and conveniently models various kinds of numerical data, including time intervals, distances, etc. 15a4

INDEX An index is an integer in the range [1, 2**15-1]. As its name and value range suggest, an INDEX can be used to address a particular bit or character within a string, or element within a list. INDEXes have other uses as well, including the modeling of handles or identifiers for open files, created processes, etc. Because of their restricted range, INDEXes are more compact in transmission than INTEGERs (see Appendix B). 15a5

BOOLEAN A boolean represents a single bit of information, and has either the value true or false. 15a6

EMPTY An empty is a valueless place holder within a LIST or parameter list. 15a7

APPENDIX B -- Suggested Transmission Formats 16

Parameters must be encoded in a standard transmission format before they can be sent from one process to another via the Protocol. An effective strategy is to define several formats and select the most appropriate one at run-time, adding a format negotiation mechanism to the Protocol. Format negotiation would be another responsibility of the RTE and could thus be made completely invisible to the applications program. 16a

Suggested below are two transmission formats. The first is a 36-bit binary format for use between 36-bit machines, the second an 8-bit binary, "universal" format for use between dissimilar machines. Data objects are fully typed in each format to enable the RTE to automatically decode and internalize incoming parameters, should it care to provide this service to the applications program. 16b

PCPB36, For Use Between 36-Bit Machines 16c

Bits 0-13 Unused (zero) 16c1
Bits 14-17 Data type 16c2

EMPTY	=1	INTEGER=4	LIST=7
BOOLEAN	=2	BITSTR =5	
INDEX	=3	CHARSTR=6	

Bits 18-20 Unused (zero) 16c3
Bits 21-35 Value or length N 16c4

EMPTY	unused (zero)
BOOLEAN	14 zero-bits + 1-bit value (TRUE=1/FALSE=0)
INDEX	unsigned value
INTEGER	unused (zero)
BITSTR	unsigned bit count N
CHARSTR	unsigned character count N
LIST	unsigned element count N

Bits 36- Value 16c5

EMPTY	unused (nonexistent)
BOOLEAN	unused (nonexistent)
INDEX	unused (nonexistent)
INTEGER	two's complement full-word value
BITSTR	bit string + zero padding to word boundary
CHARSTR	ASCII string + zero padding to word boundary
LIST	element data objects

PCPB8, For Use Between Dissimilar Machines 16d

Byte 0 Data type 16d1

```
    EMPTY  =1  INTEGER=4  LIST=7
    BOOLEAN=2  BITSTR =5
    INDEX  =3  CHARSTR=6
Bytes 1-   Value                                                    16d2
    EMPTY      unused (nonexistent)
    BOOLEAN    7 zero-bits + 1-bit value (TRUE=1/FALSE=0)
    INDEX      2-byte unsigned value
    INTEGER    4-byte two's complement value
    BITSTR     2-byte unsigned bit count N + bit string
                + zero padding to byte boundary
    CHARSTR    2-byte unsigned character count N + ASCII string
    LIST       2-byte element count N + element data objects
```

APPENDIX C -- A Detailed Encoding of the Procedure Call Protocol 17

Although the data types and transmission formats detailed in the previous appendices serve primarily as vehicles for representing the arguments and results of remote procedures, they can just as readily and effectively be employed to represent the commands and responses by which those parameters are transmitted, 17a

Taking this approach, one might model each of the two Protocol messages as a PCP data object, specifically a LIST whose first element is an INDEX message type. The following concise statement of the Protocol then results: 17b

```
LIST (CALL,   tid,  procedure, arguments)
      INDEX=1 INDEX CHARSTR    LIST                    17b1
LIST (RETURN, tid,  outcome,   results)
      INDEX=2 INDEX BOOLEAN    LIST                    17b2
```

with the RESULTS of an unsuccessful procedure represented as follows: 17c

```
LIST (error, diagnostic)
      INDEX  CHARSTR                                   17c1
```

REFERENCES 18

1. Kahn, R. E. Resource-Sharing Computer Communications Networks. Proc. IEEE, Vol. 60, No. 11, 1397-1407 (Nov. 1972). 18a

2. Crocker, S. D., Heafner, J. F., Metcalfe, R. M. and Postel, J. B. Function-oriented Protocols for the ARPA Computer Network. AFIPS Conf. Proc., SJCC, Vol. 40, 271-9 (1972). 18b

3. Carr, C. S., Crocker, S. D. and Cerf, V. G. Host-Host Communication Protocol in the ARPA Network. AFIPS Conf. Proc., SJCC, Vol. 36, 589-597 (1970). 18c

4. Mc Kenzie, A. A. Host/Host Protocol for the ARPA Network, Bolt Beranek and Newman Inc., Cambridge, Mass., Jan. 1972. (NIC 8246) 18d

5. Walden, D. C. A System for Interprocess Communication in a Resource Sharing Computer Network. Commun. ACM, Vol. 15, No. 4, 221-30 (Apr. 1972). 18e

6. Cerf, V. G. and Kahn, R. E. A Protocol for Packet Network Intercommunication, IEEE Trans. Commun., Vol. Com-22, No. 5, 637-48 (May 1974). 18f

7. TELNET Protocol Specification, Stanford Research Institute, Menlo Park, Calif., Aug. 1973. (NIC 18639) 18g

8. Engelbart, D. C., Watson, R. W. and Norton, J. C. The Augmented Knowledge Workshop. AFIPS Conf. Proc., NCC, Vol. xx, 9-21 (1973). 18h

9. CLI 18i

10. Neigus, N. J. File Transfer Protocol, RFC 542, Bolt Beranek and Newman, Inc., Cambridge, Mass., Jul. 1973. (NIC 17759) 18j

11. Bressler, R. D., Guida, R. and Mc Kenzie, A. A. Remote Job Entry Protocol, RFC 360, Dynamic Modeling Group, Massachusetts Inst. Technol., Cambridge, Mass., n.d. (NIC 12112) 18k

FIGURES 19

(J26843) 3-NOV-75 19:18;;;; Title: Author(s): James E. (Jim)
White/JEW; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections:
SRI-ARC; Clerk: JEW; Origin: < JWHITE, DPSPROPER,NLS;5, >,
3-NOV-75 19:17 JEW ;;;; ####;

DAV 3-NOV-75 16:39 26844

Hyphenation lives!

Finally got ahold of John Olney today. He had some good news and some bad news. First the good news. He has a dictionary with hyphenation in it (plus lots of other goodies). I think he said 175,000 words. It is on line and we can have it. Now the bad news. He wants money for it. He was not specific how much, but he is basically a reasonable guy. He is sending me a detailed specification of the dictionary, descriptions of some data bases that have been derived from it, work has done with it, is doing, and would like to do, and cost figures. He wants consulting money, I think, but I told him we like to do our own research. So, we will see what's up when his papers arrive. -- Dave

1

DAV 3-NOV-75 16:39 26844

Hyphenation lives!

(J26844) 3-NOV-75 16:39;;;; Title: Author(s): David C. Smith/DAV;
Distribution: /EKM([ACTION]) ; Sub-Collections: SRI-ARC; Clerk:
DAV;

26844 Distribution
Elizabeth K. Michael,

LAC 3-NOV-75 17:26 26845

Answer to SRI demo questionaire (proposed)

This is proposed answer to Postel's questionair, I suspect we should send it out to all contractors, or atleast something similiar, have you had any contact with milstein regarding coordinating what will actually happen at the demo? Bob seems the reasonable candidate for this job, as he has the best feel for where everything is and will be at demo time,

LAC 3-NOV-75 17:26 26845

Answer to SRI demo questionaire (proposed)

We need certain information in planning for any demonstration of NLS. 1

The more time we have for planning the better the demonstration will be. We can only do a reasonable job if we have some information about the following: 2

Who will be present 2a

>there will be two distinct demonstrations: 2a1

>>>>>The first (#1) will be to the STEERING COMMITTEE, other CONTRACTORS, posibly an occasional KIP (VIP, only just "Kinda"). The purpose of this demonstration is to show 2a1a

>>>>>a) NLS (BASE) working within the NSW environment 2a1a1

>>>>>b) any new deveopments made to NLS as part of the NSW effort; Graphics, proofing,tables, Cobol come to mind, if there are others, please nclude, 2a1a2

>>>>>c) discuss anything still being done, level of success so far, identified problems, estimated completion date, 2a1a3

>>>>>The whole idea here is that we have paid a considerable chunk of money for development of NLS, and want to see what this money has bought us. 2a1a4

>>>>>The second demo will be to a general audience of potential center users. The purpose of this demo is to get these people thinking that NLS might be able to support their documentation workload, as such, it should address: 2a1b

>>>>>Initial entry, (cassette?)
>>>>>Updating /correcting
>>>>>Getting hardcopy for proofing text, format
>>>>>Storing the file off until next time around (archive/journal)
>>>>>Privacy/protection capabilities (people are very paranoid that someone is going to didle with their file)
>>>>>Flowchart generation and modification
>>>>>capture of files from external sources(tape, net,cards)
>>>>>Formatting for publication
>>>>>ability to generate page changes (this is a biggie- if you have to go into TECO, you should probably still do it,) 2a1b1

>>>>>This group does not want to hear about AKWs, L-10

programming, or anything else that makes NLS so wonderful. The basic problem is that you are competing with MagCard typewriters, and that any thing you try to do to show how NLS will revolutionize the office environment will turn them OFF. Basically what you need to show is how smooth, quick and easy NLS works for 66-1 types of things, and contrast this with how much trouble it would be if you were using one of the 'cheap' systems such as MC2. 2a1b2

How many will attend and in what sized groups 2a2

>>>>[1] probably 10-15 important people, plus as many hangers-on as show up.
[2] upwards of 50-100 is possible. 2a2a

When is the demo 2b

>>>>[1] we are currently aiming for the afternoon of 18 nov
[2]19 nov AM, possible encore in the afternoon 2b1

Where will it be 2c

>>>[1] Training room, 2nd floor of blockhouse, gafs, ala,us,earth,,,.(don't bother with WUC)
[2] at present, not yet fixed, strong possibility of base theatre. 2c1

What is the room(s) like 2d

Size (number of people it holds, physical dimensions), 2d1

>>>[1] aprox 20x20, holds 20 people or so, more in a pinch 2d1a

>>>[2] if theatre, looks like any old theatre in the world, capacity about 300, if we end up elsewhere, will be room which will hold at least 75-100 2d1b

Furnishing (tables, chairs, carprts, windows) 2d2

>>>>[1] two tables (aprox 3x5), 18 bodies worth of snitched theatre seats, more chairs (up to 10 or so) can comfortably be brought in, at least 1 telephone (jack for a second), blackboard, pull-down movie screen, concrete block walls (a sickly yellow), tile floor, suspended ceiling. 2d2a

>>>>[2] see previous remark, a theatre by any other name... 2d2b

What audio visual equipment is available 2e

Answer to SRI demo questionaire (proposed)

how many NLS work stations 2e1

>>>[1] one 2e1a

>>>[2] none 2e1b

slide projector and screen (size) 2e2

>>>>[1] yes, screen is fairly large, (too big for room really) 2e2a

>>>>[2] yes, 2e2b

movie projector 2e3

>>>[1,2] let us know what you need, and we can get it 2e3a

video monitors slaved to NLS work stations 2e4

>>>>[1] I plan to have at least 1, maybe 2. Note you can't slave a monitor to Tektronix, without a camera-amp-monitor seup, and am not sure i will be able to grab one of those. 2e4a

Which computers will be available 2f

>>>as far as i know, all three systems will be up during the period,if possible, isic would be the preferable primary location. 2f1

What Work Station equipment can we count on 2g

>>>1 graphic lineprocessor, a tektronix 4014, and 2 datamedia 2500's are on site and working. 2g1

How much time is allotted to NLS-8, Graphics, NLS-9 2h

>>>make me an offer... 2h1

Are hard copy displays desired 2i

>>>displays of the hardcopy available at various stage would be useful, i suspect the best solution would be to grab samples of ti output, raw (quickprint) printer output, formatted printer output, graphics hardcopy, com proofs, masters, fiche, and the published product. 2i1

Will we have a dress rehearsal with other contactors 2j

>>>If you desire, you can have a dress rehersal monday

afternoon, I feel this would probably be a good idea, the steering committee will probably be meeting in closed session during that period, so it would be a good time to get all the final kinks ironed out of the demo. 2j1

Who is coordinating the effort 2k

>>>I am coordinating the arrangements for the meeting and demo, However, the various contractors should get together to make any necessary plans for demonstrating their individual portions of the system in a coherent manner. 2k1

------- 3

Answer to SRI demo questionaire (proposed)

(J26845) 3-NOV-75 17:26;;;; Title: Author(s): Lawrence A. Crain/LAC; Distribution: /KPH([ACTION]) WML([INFO-ONLY]) MAS2([INFO-ONLY]) ; Sub-Collections: NIC; Clerk: LAC; Origin: < CRAIN, JBP-QST,NLS;8, >, 3-NOV-75 17:20 LAC ;;;;####;

26845 Distribution
Kenneth P. Hearn, Walter M. Lamia, Marilynne A. Sims,

JBP 4-NOV-75 10:35 26846

msg from watson

3-NOV-75 18:46:55-EST,1165;000000000000
Date: 3 NOV 1975 1846-EST
From: WATSON
Subject: NLS on Tops 10
To: michael
cc: postel, engelbart at OFFICE-1, watson 1

Elizabeth, I am still a little shaky but feeling better daily and expect to be in for at least part of the day on Wed and would like to discuss the estimate of NLS on Tops 10 more then, 3 man years has been my rough number of effort to move NLS to another machine and so 3 man year estimate does not surprise me, but I would guess moving NLS to another 10 operating system would be easier than to a 370 etc if that operating system supports random files as L 10 would not have to be moved, we would have to modularize NLS to work with an operating sytem interface and write the operating system interface, Getting NLS set up with an operating system interface is what is needed to move NLS to other machines generally and so is interesting to ARC, writing a particular operating system interface is not very interesting and might be farmed out, I do not understand the 500K dollr figure, 3 man years is about 250K including machine time, Hope to see you soon, I don't have the right personality to enjoy being sick, Dick ------- 2

JBP 4-NOV-75 10:35 26846

msg from watson

(J26846) 4-NOV-75 10:35;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP;

26846 Distribution
Jonathan B, Postel,

DVN 4-NOV-75 11:25 26847

Dirk Questions

Let me know about conciousness, it is important to novels. We knoq power corrups. Does acess then corrupt? I think not and that is a diference betseen access and power. 1

DVN 4-NOV-75 11:25 26847

Dirk Questions

(J26847) 4-NOV-75 11:25;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /KIRK([ACTION]) BEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: DVN;

26847 Distribution
Kirk E. Kelley, Beverly Boli,

SGR 4-NOV-75 12:11 26848

Comments on (26754,) - Ideas on Help

I finally got around to reading your ideas on help. Two comments: I thoroughly agree with your comment in (5c) that the biggest problem is that help doesn't go far enough in telling the user WHAT information is available. I'm not sure how the best way is to remedy that but that definitely is a problem I've heard many times. Also, people have commented several times that better than a command summary would be an annotated command summary. I wondered if that might be a fallout from the Woolley thing where there is a hierarchy of commands with functions etc. Seems like a subset of that would be an annotated command summary. There are a few architect's that are very interested in where the system is going - they might have some interesting comments on your proposal too. I don't know if you want to open it up that wide or if there would be objection to doing so from someone - just a thought. 1

Comments on (26754,) - Ideas on Help

(J26848) 4-NOV-75 12:11;;;; Title: Author(s): Susan Gail Roetter/SGR; Distribution: /DAV([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: SGR;

26848 Distribution
David C. Smith,

JEW 4-NOV-75 13:31 26849

Some Questions/Thoughts on NSWizing the Journal

Fifteen minutes free association at the blackboard.

JEW 4-NOV-75 13:31 26849

Some Questions/Thoughts on NSWizing the Journal

1) How thoroughly is the Journal to be installed in NSW, and what are the down-stream consequences of that decision? 1

2) What's our time frame? How much support do we require of MCA? 2

3) Is the NSW Journal to be logically distinct from the existing ARC/Utility Journal, or are we simply providing an NSW window to the existing Journal? 3

Logically distinct. 3a

a) Will the NSW Journal rely upon a WM-provided Ident System, rather than the existing NLS Ident System? 3a1

WM-provided. 3a1a

i) The interface between the Journal and Ident Systems must be switch-controlled so that remote calls to the WM are made when tthe Journal runs as part of NSW, and local calls to NLS made when the Journal runs outside of NSW. 3a1a1

ii) The interface must (I would guess) be reorganized for efficiency, i.e, to minimize the number of remote procedure calls, 3a1a2

iii) Will the syntax of idents -- 1$(LD/'-) -- change? If so, all related FIND statements must be changed. 3a1a3

NLS-provided. 3a1b

b) Is there any value to keeping the catalog name spaces distinct, or do we recycle to catalog number 1? 3a2

c) What person will be allocated and trained to maintain the NSW Journal, i.e, do the work of Dave Hopper and Jeff Peters? 3a3

"Nobody" is not an acceptable answer. 3a3a

d) Do we need a priviledged Journal maintenance tool (or priviledged commands)? 3a4

e) Will NSW and non-NSW Journals ever be run on the same Tenex? 3a5

Yes. 3a5a

i) Directory and/or file names will conflict and must therefore be placed under control of a NSW-or-not switch. 3a5a1

No. 3a5b

f) Must Development begin using the NSW Journal? 3a6

Yes, 3a6a

i) How do we communicate with the larger ARC/Utility community? 3a6a1

No, 3a6b

g) Is there any need for an import/export mechanism for accessing other documents/users in other journal/ident systems? 3a7

One in the same, 3b

4) What kinds of delivery modes will be supported? 4

a) Can non-NLS-users receive mail? 4a

b) Can non-NSW-users receive mail? 4b

c) How can background process access user's initial file? Will the WM deal with tools running on their own, rather than under FE control? 4c

5) Are Journal numbers to be allowed anywhere an (NSW) filename is allowed, as in the present system? 5

Yes, 5a

a) This seems very unclean, since it requires the WM to be aware of the Journal's special role, 5a1

No, 5b

a) The NSW Journal must then provide an explicit means for retrieving Journal documents and making NSW files of them, 5b1

6) The NSW Journal tool must provide a retrieve-from-archive command, since the Tenex EXEC will not be accessible, 6

7) How does the Sendmail tool determine the logged-in user's ident for insertion in the CLERK field and use in privacy checks? 7

8) Will the NSW Journal support private documents, as the existing Journal does? 8

Yes, 8a

a) Is it a sound idea to impose this separate access control mechanism in addition to that imposed by the WM? 8a1

No. 8b

9) The NSW Journal can be offered as a tool on at most two TBHs (dual-site journal, you know). 9

Some Questions/Thoughts on NSWizing the Journal

(J26849) 4-NOV-75 13:31;;;; Title: Author(s): James E. (Jim) White/JEW; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JEW; Origin: < JWHITE, NSWJRNL,NLS;2, >, 4-NOV-75 13:26 JEW ;;;;####;

26849 Distribution

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

HGL 4-NOV-75 11:18 26850

DEX Change recommended by DCE (33785,) implemented

I have modified the DEX program as recommended by Doug in (33785,). Documentation should be changed accordingly. After the program has been tested (by me? Jeanne Beck? someone else?) at ISIC, it should be FTP'd over to BBNB and OFFICE-1 after notifying our users. Applications should advise me about the necessary coordination. 1

HGL 4-NOV-75 11:18 26850

DEX Change recommended by DCE (33785,) implemented

(J26850) 4-NOV-75 11:18;;;; Title: Author(s): Harvey G. Lehtman/HGL; Distribution: /JCN([ACTION]) DCE([ACTION]) JMB([ACTION]) JHB([ACTION]) JDH([ACTION]) SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: HGL;

26850 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,
James C. Norton, Douglas C. Engelbart, Jeanne M. Beck, James H. Bair, J. D. Hopper, Bonny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, Sandy L. Johnson, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney

NLS on TOPS 10

Further discussion of putting NLS on a TOPS 10 system leads us to believe we grossly underestimated the resources required. Ken Victor has done considerable thinking about the problem and feels that to do the job properly, writing a general operating system interface for NLS, would take 6 man years. 1

Keep in mind that TOPS 10 is not a random file system and offers nothing but sequential file access. Also the L10 compiler will not just run under TOPS 10 and could require upwards of 3 man months to get running. The middle end also is operating system dependent. Every line of code in the middle and back ends would have to be examined. This is a much more detailed scrutiny than what was required for the frontend backend split. 2

In addition to the design and implementation work, the problems of implementing a system that requires operating system additions or changes on somebody else's computer are horrendous. 3

NLS on TOPS 10

(J26851) 4-NOV-75 14:07;;;; Title: Author(s): Elizabeth K. Michael/EKM; Distribution: /RWW([ACTION]) JBP([ACTION]) DCE([ACTION]) SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: EKM;

26851 Distribution

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,

Richard W. Watson, Jonathan B. Postel, Douglas C. Engelbart, Bonny Mosher, Israel A. Torres, Jan H. Kremers, Susan K. Ocken, Raphael Rom, David C. Smith, Buddie J. Pine, Andy Poggio, David L. Retz, Laura J. Metzger, Karolyn J. Martin, Jan A. Cornish, Larry L. Garlick, Priscilla A. Wold, Pamela K. Allen, Delorse M. Brooks, Beverly Boli, Rita Hysmith, Log Augmentation, Raymond R. Panko, Susan Gail Roetter, Robert Louis Belleville, Ann Weinberg, Adrian C. McGinnis, Robert S. Ratner, David S. Maynard, Robert N. Lieberman, Sandy L. Johnson, James H. Bair, Jeanne M. Leavitt, Rodney A. Bondurant, Jeanne M. Beck, Marcia L. Keeney, Elizabeth K. Michael

BEV 4-NOV-75 14:43 26852

Procedures for Pursuing Single Source (Online/Hardcopy)NLS Documentation (DRAFT)

The file is somewhat self-explanatory. I think we should at least begin to work on the goal of single sources. Please let me hear from you as soon as possible. Bev

Procedures for Pursuing Single Source (Online/Hardcopy)NLS Documentation (DRAFT)

After reviewing the recent dialogue concerning online/hardcopy conversion of NLS documentation, I feel that we should begin to work out procedures to make this the common practice. I've outlined four basic steps to be taken. I don't know how far we can get right now, but at least this gives me a sense that the issue is managable and creates the feeling that we are acting rationally. Please regard this as simply a point from which to depart, and make all the modifictions to it you wish. 1

STEPS FOR MAKING HELP THE SOURCE OF ONLINE AND HARDCOPY DOCUMENTATION 2

1. Develop methods, formats for converting hardcopy to online and online to hardcopy. Assess the time required to do each. 2a

2. Choose two documents with which to begin. Assess time required per document. (If we could do the conversion formatting (I don't know quite what to call that!) on two documents (e.g.readmail, lineprocessors guide) in a short period, then we could use them in the next step as examples.) 2b

3. Make presentation to Dick. Get his approval for the manpower required, and his support to tackle the next step. 2c

4. Establish procedures with Applications' Documentation. Main issues are: 2d

   a. Will all documentation be made available through Help? --If not, who decides what will be incorporated? 2d1

   b. Who will maintain content of each online/hardcopy document? 2d2

   c. Will Development be responsible for initial formatting of all documents to make them readily convertible to hardcopy or online? If so, can Applications agree to some tampering with format where necessary? And where will Documentation get the manpower to incorporate the already existing Applications' documentation? 2d3

BEV 4-NOV-75 14:43 26852

Procedures for Pursuing Single Source (Online/Hardcopy)NLS Documentation (DRAFT)

(J26852) 4-NOV-75 14:43;;;; Title: Author(s): Beverly Boli/BEV; Distribution: /KIRK([ACTION]) DVN([ACTION]) POOH([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: BEV; Origin: < BOLI, CONVERSION.NLS;2, >, 4-NOV-75 14:36 BEV ;;;;####;

26852 Distribution
Kirk E. Kelley, Dirk H. Van Nouhuys, Ann Weinberg,

DVN 4-NOV-75 14:58 26853

Request for New NSW Charge Number

Dick sent me this snmssage, I am asking, Thanks

Request for New NSW Charge Number

4-NOV-75 1203-EST WATSON: RADC and DPCS Meeting
Distribution: MICHAEL, BELLEVILLE, VANNOUHUYS, watson
Received at: 4-NOV-75 12:11:02-EST 1

I am planning to come in tomorrow afternoon and would like to get together with you at 2:00 if convenient to talk about the planning needed for the DPCS work for RADC. When we weere at RADC I got permission to beging the planning now and charge it to NSW and later get it paid back when Duane gets the dollars together. Dirk could you ask Jon and Ray to get a NSW number we can use to charge and keep track of this work?
See you tomorrow, Dick 1a

DVN 4-NOV-75 14:58 26853

Request for New NSW Charge Number

(J26853) 4-NOV-75 14:58;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RA3Y([ACTION]) JBP([ACTION]) DRB([INFO-ONLY]) NRN([INFO-ONLY]) KLM([INFO-ONLY] kathy, would you print a copy of this and give it to Norm?) ; Sub-Collections: SRI-ARC; Clerk: DVN;

26853 Distribution
Raymond R. Panko, Jonathan B. Postel, David R. Brown, Norman R. Nielsen, Kathey L. Mabrey,

Sorry

it should have been JHB ETS application. Sorry Bare. 1

Sorry

(J26854) 4-NOV-75 15:10;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /JHB([ACTION] alias JCN) ; Sub-Collections: SRI-ARC; Clerk: RLL;

26854 Distribution
James H. Bair,

DVN 4-NOV-75 15:13 26855

Tom Humphrey's Particiapation in DPCS Planning

Dick,..I will be glad to be at the 2:00 meeting tomorrow. One of the upshots of a recent meeting among Doug, Norm, Dave, and me on the Nucleation stuation was that Tom might be free and interested in this work. I brought the matter up with Duane who seemed open (33809,). I talked to Tom and he was quite enthusiastic. He is a good planner and I think he should be brought into the picture as soon as possible, like say at tomorrows's meeting. 1

DVN 4-NOV-75 15:13 26855

Tom Humphrey's Particiapation in DPCS Planning

(J26855) 4-NOV-75 15:13;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /RWW([ACTION]) &DOCPLAN([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26855 Distribution
Richard W. Watson, Documentation Development Production and Control
Community Planning Group ,

DVN 4-NOV-75 15:29 26856

GE's Initial Response to SRI's Proposal for a Text Processing System (26673,)

This morning Doug asked me to call GE to ascertain their continued interest before SRI put more effort into the Business Plan (26728,) and (26783,). I spoke with Stu Stedwell. He assured me of their continued interest and went out of his way to say they were "highly pleased with your presentation". Stedwell is not given to loose talk and I found his remarks quite encouraging. 1

DVN 4-NOV-75 15:29 26856

GE's Initial Response to SRI's Proposal for a Text Processing System
(26673,)

(J26856) 4-NOV-75 15:29;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /DOCPLAN([INFO-ONLY]) DLS([INFO-ONLY]) BEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC DOCPLAN; Clerk: DVN;

26856 Distribution

Beverly Boli, 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, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys, Duane L. Stone, Beverly Boli,

RLL 4-NOV-75 16:07 26857

POLICY SUG: ARCer visit to each new site before training.

suggestions, comments welcomd. Thanks Rob

RLL 4-NOV-75 16:07 26857

POLICY SUG: ARCer visit to each new site before training.

I urge the policy that each new client organization should: 1

have a visit by someone as soon as they have access to the computer (or even before) to discuss with them SRI/ARC organization, overview of system, and their applications. 1a

I believe we have such an implicit policy; I ask we formalize it. Clearly we have tried but this has not been the case in several instances. 2

Either the trainer is the first person seen or heard from or/and no one comes for several weeks. 2a

They are paying for each day of service and I think it good policy to be there immediately after they start paying for it. 3

The visit would include a lecture to several layers of management and personnel who will be involved with NLS. No training. 4

It is possible to have a trainer begin courses soon after this initial visit but NOT until the general lecture. 4a

I personally feel the training should come at least the week after this visit not during it. 4b

Time should go bye before actual training commences. The architect must decide who should be trained based on the talk with our consultant. 4b1

As to the question who should give this lecture and talk about applications --- I can think of three or four names. We can talk about this later. 4c

In summary, I feel we must look and act professional in how we deal with our clients. 5

RLL 4-NOV-75 16:07 26857

POLICY SUG: ARCer visit to each new site before training.

(J26857) 4-NOV-75 16:07;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /JCN([ACTION]) JHB([INFO-ONLY]) BJP([INFO-ONLY]) RA3Y([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLL; Origin: < ARC-LOG, POLICY,NLS;1, >, 4-NOV-75 15:41 RLL ;;;;####;

26857 Distribution
James C. Norton, James H. Bair, Buddie J. Pine, Raymond R. Panko,

Contact Report: Ed Housman of GTE Laboratories

(GTE) Contact report 1

(DATE) 10/4/75 1a

(BY) Dirk van Nouhuys 1b

(ATTENDEES) 1c

Ed Housman
GTE Laboratories--Technical Information Services
40 Sylvan Road
Waltham Mass, 02154
(617)890-8460 1c1

(MEDIUM) PHONE 1d

(WHERE) my office 1e

(ACTION-ITEMS) 1f

paper mailed, we should get in touch with Bob Shepard about the possibility of a demo in Boston. 1f1

(DISTRIBUTION) ARC-LOG DCE JCN RLL DOCPLAN BEV 1g

(REFERENCES) 1h

(DOCUMENTS) Hard copy given 1i

(GIVEN) Automation in Technical Documentation
The Augmented Knowledge Workshop (14724,)
Coordinated Information Services (12445,)
SRI Utility Services
SRI-ARC Systems Capabilities
Seminar on the Augmented Knowledge Workshop
TNLS-8 Quick Reference (25765,)
Format Library (25764,)
Output Processor Users' Guide (32812,)
NLS-8 Glossary
Background from the Text Processing System Proposal to GE (26673,6) 1i1

1J (REMARKS)Jim Bair ran into Ed Housman at a meeting and learned that his group was interested in aids to manual production for itself and for other parts of GTE. The Technical Information Services group is an extremely sophisticated supplier of information to GTE researchers, tying into Chemical abstracts, INSPEC, MEDLARS... you name it. They appear to be an attractive customer for SRI...wealthy, sophisticated, with a problem of

distributed writing, and within telephone distance of BBN. When I phoned Housman he sounded quite interested in NLS,both as slots and as an inhouse system, and also interested in the possiblity of analytical work from ISG following a meeting which was comming up shortly in which they would decide if they wanted to to analysis work inhouse. He asked for lots of information and you can see I sent it. He also asked for a demonstration in the Boston area. I reported we have users in the Boston area but no installation of our own, I would look into the possibility. 1j

DVN 4-NOV-75 16:10 26858

Contact Report: Ed Housman of GTE Laboratories

(J26858) 4-NOV-75 16:10;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /JHB([INFO-ONLY] thanks again) ARC-LOG([INFO-ONLY]) DOCPLAN([INFO-ONLY]) BEV([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-LOG DOCPLAN; Clerk: DVN;

26858 Distribution

James H. Bair, James C. Norton, Log Augmentation, Beverly Boli, 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, Robert N. Lieberman, Pat Whiting O'Keefe, Douglas C. Engelbart, Dirk H. Van Nouhuys, Beverly Boli,

JBP 4-NOV-75 16:35 26859

Demo at Gunter

A message from Larry Crain abot the demo of NSW at Gunter.

JBP 4-NOV-75 16:35 26859

Demo at Gunter

4-NOV-75 14:28:25-EST,7564;000000000000
Mail from OFFICE-1 rcvd at 4-NOV-75 1426-EST
Date: 4 NOV 1975 1130-PST
From: CRAIN at OFFICE-1
Subject: Answer to jon's questions on demo
To: postel at BBNB
cc: [BBNB]<POSTEL>NSW-STEERING-COMMITTEE.LIST:,
cc: [BBNB]<POSTEL>NSW-PRINCIPAL-INVESTIGATORS.LIST:,
cc: [BBNB]<POSTEL>NSW-Implementers.List: 1

(The information re demo room, scheduling, and desired stuff to see might be usefull to others besides Jon,)
*****
Jon, in answer to your questionnaire: 2

Who will be present 2a

>there will be two distinct demonstrations: 2a1

>>>>>The first (#1) will be to the STEERING COMMITTEE, other CONTRACTORS, posibly an occasional VIP. The purpose of this demonstration is to show 2a1a

>>>>>a) NLS (BASE) working within the NSW environment 2a1a1

>>>>>b) any new developments made to NLS as part of the NSW effort; Graphics, proofing,tables, Cobol come to mind. If there are others, please include. 2a1a2

>>>>c) the FrontEnd system working in TENEX, providing clean interface and help functions. 2a1a3

>>>>>d) discuss anything still being done, level of success so far, identified problems, estimated completion date. 2a1a4

>>>The whole idea here is that we have paid a considerable chunk of money for development of NLS and for other NSW work, and want to see what this money has bought us. 2a1a5

>>>>>The second demo ([2]) (actually given two or three times perhaps) will be to a general audience of potential center users. The purpose of this demo is to get these people thinking that NLS might be able to support their documentation workload, as such, it should address: 2a1b

>>>>>Initial entry, (cassette, communicating mag card?)
>>>>>Updating /correcting

>>>>>Getting hardcopy for proofing text, format
>>>>>Storing the file off until next time around (archive/journal)
>>>>>Privacy/protection capabilities (people are very paranoid that someone is going to didle with their file)
>>>>>Flowchart generation and modification
>>>>>capture of files from external sources(tape, net,cards) >>>>>Formatting for publication
>>>>>ability to generate page changes (this is a biggie- even if you have to go into TECO, you should probably still do it.) 2a1b1

>>This group does not want to hear about AKWs, L-10 programming, or anything else that makes NLS so wonderful. The basic problem is that you are competing (in their minds) with MagCard typewriters (which they mistakenly think will do the job as easily and cheaper), and so any thing you try to do to show how NLS will revolutionize the office environment will turn them OFF. Basically what you need to show is how smooth, quick and easy NLS works for 66-1 types of things, and contrast this with how much trouble it would be if you were using one of the 'cheap' systems such as MC2. The big thing to stress is naturalness of command language, ease of handling large and fluid documents, ease of making broadcast changes, cost of cards for 100k pages (buck a card is hairy!), dificulty of controling that kind and scale of database without computer assistance. 2a1b2

How many will attend and in what sized groups 2a2

>>>>[1] probably 10-15 important people, plus as many rubbernecks as can crowd their bods into the standing room available.
[2] upwards of 50-100 per session is possible. 2a2a

When is the demo 2b

>>>>[1] we are currently aiming for the afternoon of 18 nov
[2]19 nov AM, possible encore in the afternoon 2b1

Where will it be 2c

>>>[1] Training room, 2nd floor of blockhouse, gafs, ala,us,earth,,,,(don't bother with WUC)
[2] at present, not yet fixed, strong possibility of base theatre. 2c1

What is the room(s) like 2d

Size (number of people it holds, physical dimensions), 2d1

>>>[1] aprox 20x20, holds 20 people or so, more in a pinch 2d1a

>>>[2] if theatre, looks like any old theatre in the world, capacity about 300, if we end up elsewhere, will be room which will hold at least 75-100 2d1b

Furnishing (tables, chairs, carprts, windows) 2d2

>>>>[1] two tables (aprox 3x5), 18 bodies worth of snitched theatre seats, more chairs (up to 10 or so) can comfortably be brought in, at least 1 telephone (jack for a second), blackboard, pull-down movie screen, concrete block walls (a sickly yellow), tile floor, suspended ceiling, 2d2a

>>>>[2] see previous remark, a theatre by any other name... 2d2b

What audio visual equipment is available 2e

how many NLS work stations 2e1

>>>[1] one 2e1a

>>>[2] none 2e1b

slide projector and screen (size) 2e2

>>>>[1] yes, screen is fairly large, (too big for room really) 2e2a

>>>>[2] yes, 2e2b

movie projector 2e3

>>>[1,2] let us know what you need, and we can get it 2e3a

video monitors slaved to NLS work stations 2e4

>>>>[1] I plan to have at least 1, maybe 2, Note you can't slave a monitor to Tektronix, without a camera-amp-monitor setup, and am not sure i will be able to grab one of those, 2e4a

>>>not applicable, If desired, we will probably be able to supply monitors and perhaps a video-tape recorder and player, I think this is probably the best bet for this session, Let me know what your requirements are, 2e4b

Which computers will be available 2f

Demo at Gunter

>>>as far as i know, all three systems will be up during the period,if possible, isic would be the preferable primary location. 2f1

What Work Station equipment can we count on 2g

>>>1 graphic lineprocessor, a tektronix 4014, and 2 datamedia 2500's are on site and working. 2g1

How much time is allotted to NLS-8, Graphics, NLS-9 2h

>>>[1]make me an offer...
[2]I would suspect 30-45 minutes would be about right, with maybe 3 tatal demos starting on the hour at 9,10,11? 2h1

Are hard copy displays desired 2i

>>>displays of the hardcopy available at various stage would be useful, i suspect the best solution would be to grab samples of ti output, raw (quickprint) printer output, formatted printer output, graphics hardcopy, com proofs, masters, fiche, and the published product. 2i1

Will we have a dress rehearsal with other contactors 2j

>>>If you desire, you can have a dress rehersal monday afternoon, I feel this would probably be a good idea, the steering committee will probably be meeting in closed session during part of that period, so it would be a good time to get all the final kinks ironed out of the demo. 2j1

Who is coordinating the effort 2k

>>>I am coordinating the arrangements for the meeting and demo. However, the various contractors should get together to make any necessary plans for demonstrating their individual portions of the system in a coherent manner. 2k1

%Larry 3

------- 4

JBP 4-NOV-75 16:35 26859

Demo at Gunter

(J26859) 4-NOV-75 16:35;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /SRI-ARC([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: JBP;

26859 Distribution

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

DLS 4-NOV-75 17:53 26860

Using NLS at BBNB

Undoubtedly more to come once I get into it.

DLS 4-NOV-75 17:53 26860

Using NLS at BBNB

This message, if it reaches you, will have come from BBNB via both Journal and SNDMSG. There are now directories set up for everyone in the Networking group (RROBINSON, LPANAS, WINGFIELD, STONE), plus DMETZGER and HILBING, plus CARRIER and CAVANO. There are a few things that one has to relearn in using NLS at BBNB. 1

BBNB does not know about IMLACs, so don't try to use one until I can get that fixed...if that is possible. 1a

The BBNB site is host 49, rather than 43 for OFFICE-1. 1b

When loging in you must type 1c

LOG DIRECTORYNAME PASSWORD... if you don't type the LOG, you get nowhere fast. 1c1

You then must type NO RAISE to get lower case characters. Without lowercase characters, NLS is pretty tricky to use. Among other things it doesn't listen to control characters from the keyboard. There is a command at tenex that reads LOWERCASE. This unfortunately does not do anything, so ignore it. 1d

There is no MESSAGE Subsystem under TENEX at BBNB. Instead use the
MSG subsystem, which has a bunch of commands to read messages. MSG is also available at Office-1. To use it type: 1e

MSG<CR>
ta (for Type All) and you can see your TENEX messages. 1e1

Unfortunately, once you have read your message.txt file with the MSG commands above, it changes the format somewhat. This is no problem, unless you use the MESSAGE subsystem under NLS to Move Message into your initials file. It will bring them into NLS in a form that is different than the one you are used to on Office-1. 1f

If you would like to copy files from Office-1 to BBNB and are not familiar with the FTP (File Transfer Protocol) then see me for details. 1g

Once in NLS, you will have to set up your Useroptions with the Programs and subsystems that you are familiar with on Office-1. 1h

Using NLS at BBNB

(J26860) 4-NOV-75 17:53;;;; Title: Author(s): Duane L. Stone/DLS;
Distribution: /MAW([INFO-ONLY]) TFL([INFO-ONLY]) FJH([
INFO-ONLY]) JPC([INFO-ONLY]) RJC([INFO-ONLY]) ;
Sub-Collections: RADC; Clerk: DLS;

26860 Distribution
Mike A. Wingfield, Thomas F. Lawrence, Francis J. Hilbing, Joseph P. Cavano, Roberta J. Carrier,

SGR 4-NOV-75 18:16 26861

Uniformity in Trip Reports

I'd like to suggest that we all make an attempt to be a little more uniform in our course reports. Titles should read: USER SERVICES REPORT: Clients name - date of training. See (26790,) and (26806,) fr examples. Also, unless there are complaints the distribution should be SRI-ARC. Privacy should be up to the author. Consistent titles will make retrieval easier. I'm open to suggestions on changes to the format but until I hear some let's stick with this. 1

SGR 4-NOV-75 18:16 26861

Uniformity in Trip Reports

(J26861) 4-NOV-75 18:16;;;; Title: Author(s): Susan Gail Roetter/SGR; Distribution: /US([ACTION]) ; Sub-Collections: SRI-ARC US; Clerk: SGR;

26861 Distribution
Susan Gail Roetter, Priscilla A. Wold, Jeanne M. Beck, Pamela K. Allen, Rita Hysmith, Sandy L. Johnson,

BEV 4-NOV-75 19:02 26862

Fix in Base and Core of File node and lexicon entry

Kirk: As per your suggestion in <J26829> I fixed up the problem in Core lexicon by deleting the branch named file. This meant some rewriting of File Structures node. And it led to the discovery of some duplication and confusion between Base, Writing,. branch and Core, handling whole files branch. (See the branch from Hellnotes I am sending you here). Rather than tear into both of these branches, I am suggesting what looks like a good re-organization of each to me. If you concur, I will do the work in fixing them up. The distinction I am thinking of between the two branches is 'handling' concerns whole file, 'writing' concernsinfo, within file. Fuzzy, but something to work on. Bev

BEV 4-NOV-75 19:02 26862

Fix in Base and Core of File node and lexicon entry

Suggested reorganization of Core, handling whole files branch; and
Base, writing, creating, and modifying information branch: 1

<core, handling>
same top description, menu changed as follows:
creating
writing, creating, modifying...
modification file
(link to info on sending files)
(link to info on transferring files)
return ring
name:fileaddressing
status:show file status
Base file-handling commands
Base modifying-commands 1a

<base, writing>
same top description, change menu to:
Use Insert to...
creating new files
modifying-commands
updating
correcting errors
privacy 1b

BEV 4-NOV-75 19:02 26862

Fix in Base and Core of File node and lexicon entry

(J26862) 4-NOV-75 19:02;;;; Title: Author(s): Beverly Boli/BEV; Distribution: /KIRK([ACTION]) ; Sub-Collections: SRI-ARC; Clerk: BEV;

26862 Distribution
Kirk E. Kelley,

JBP 4-NOV-75 20:39 26863

Re: Newsletter

I agree with robert that a newsletter would be a useful tool for communicating with our workshop community. i suggest that monthly is often enough. We might look into the "ARPANET NEWS" for some ideas on how ro do an online newsletter
(14797,),(15337,),(17920,),(17921,),(17922,),(18253,),(18748,),(19050,),(19720,),(20479,),(21212,),(21646,),(22039,). --jon. 1

JBP 4-NOV-75 20:39 26863

Re: Newsletter

(J26863) 4-NOV-75 20:39;;;; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /RLL([ACTION]) DCE([INFO-ONLY]) JCN([INFO-ONLY]) RWW([INFO-ONLY]) EKM([INFO-ONLY]) ARC-APP([INFO-ONLY]) ; Sub-Collections: SRI-ARC ARC-APP; Clerk: JBP;

26863 Distribution

Robert N. Lieberman, Douglas C. Engelbart, James C. Norton, Richard W. Watson, Elizabeth K. Michael, Bonny Mosher, Israel A. Torres, Buddie J. Pine, Laura J. Metzger, Priscilla A. Wold, Pamela K. Allen, Jeffrey C. Peters, Marcia L. Keeney, Jeanne M. Beck, Rodney A. Bondurant, Douglas C. Engelbart, Jeanne M. Leavitt, Susan Gail Roetter, Raymond R. Panko, Adrian C. McGinnis, James C. Norton, J. D. Hopper, Elizabeth J. Feinler, James H. Bair, Robert N. Lieberman, N. Dean Meyer, Sandy L. Johnson, Martin E. Hardy,

DVN 5-NOV-75 11:31 26864

'Output' in Xhelp

In response to (26830,) I changed the node under 'output' in base to read as shown in the message. This change accomplishes everything I want to happen.

'Output' in Xhelp

Output:
In general, Output means copying an NLS file to some printed form or to a computer file in a sequential form. The following Output commands are available in the Base subsystem. See also: sequential file, publication, Print. 1

DVN 5-NOV-75 11:31 26864

'Output' in Xhelp

(J26864) 5-NOV-75 11:31;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /HELP([INFO-ONLY]) ; Sub-Collections: SRI-ARC HELP; Clerk: DVN;

26864 Distribution

Jeanne M. Beck, David C. Smith, Beverly Boli, David C. Smith, Jonathan B. Postel, Priscilla A. Wold, Rita Hysmith, Pamela K. Allen, Delorse M. Brooks, Elizabeth F. Finney, Beverly Boli, Lawrence A. Crain, Kirk Sattley, Susan Gail Roetter, Robert N. Lieberman, Ann Weinberg, Kenneth E. (Ken) Victor, Douglas C. Engelbart, James H. Bair, Elizabeth K. Michael, Richard W. Watson, Elizabeth J. Feinler, Harvey G. Lehtman, Kirk E. Kelley, Laura E. Gould, Jeanne M. Beck, Dirk H. Van Nouhuys, James C. Norton, Dirk H. Van Nouhuys, Ann Weinberg, Kirk E. Kelley,

DVN 5-NOV-75 11:36 26865

M#A#R#K#E#R#S

In <rel-nls>gnls at BBNB if you hold down the right-hand mourse button the system does not recognize the input as markers, rather takes it as ordinary characters. 1

DVN 5-NOV-75 11:36 26865

M#A#R#K#E#R#S

(J26865) 5-NOV-75 11:36;;;; Title: Author(s): Dirk H. Van Nouhuys/DVN; Distribution: /KLM([ACTION]) FEEDBACK([ACTION]) ; Sub-Collections: SRI-ARC FEEDBACK; Clerk: DVN;

26865 Distribution
Kathey L. Mabrey, Special Jhb Feedback,

RLL 5-NOV-75 13:52 26866

Man years effort required for general operating system interface to NLS: clarification and ideas

re EKM 4-Nov-75 <journal,jrn131,j26851;gw>

RLL 5-NOV-75 13:52 26866

Man years effort required for general operating system interface to NLS: clarification and ideas

Am I to understand from <26851,> that it wold take 6 man years to write an interface for an arbitrary OS? Does that mean we could interface NLS to TOPS10, OS360, etc, for some where in the neighborhood of (6man years + n*e) where n is thenumber of operatigng systems and e is a small number, say man month? Perhaps we could get support for m several sources in this case, NBS for TOPS10, AF for Borroughs machine, army for IBM, the Navy for CDC6000 series.... 1

RLL 5-NOV-75 13:52 26866

Man years effort required for general operating system interface to NLS: clarification and ideas

(J26866) 5-NOV-75 13:52;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /EKM([ACTION]) KEV([INFO-ONLY]) JHB([INFO-ONLY]) JCN([INFO-ONLY]) RA3Y([INFO-ONLY]) DCE([INFO-ONLY]) RWW([INFO-ONLY]) JBP([INFO-ONLY]) ; Sub-Collections: SRI-ARC; Clerk: RLL;

26866 Distribution
Elizabeth K. Michael, Kenneth E. (Ken) Victor, James H. Bair, James C. Norton, Raymond R. Panko, Douglas C. Engelbart, Richard W. Watson, Jonathan B. Postel,

RLL 5-NOV-75 15:09 26867

SUG: several ideas on the Sendmail/Journal system

May I suggest what I thought was obvious (at least to DNLS users): Please do NOT put links or any parentheses in the Journal title. 1

Also make use of keywords to relate all items pertaining to a particular subject or issue. Subcollections also work very well but only for those group idents identified with a particular interest or subject. 2

SUG: could we change sendmail so that it verifies the existance of a title when sending mail? If none given then offer the option to the author to give one; if he still does not wish to give a title, ok send the mail. 3

Use the COMMENTS for references and all links. 4

Keep the number of characters short for a message and length of statements down also. 5

RLL 5-NOV-75 15:09 26867

SUG: several ideas on the Sendmail/Journal system

(J26867) 5-NOV-75 15:09;;;; Title: Author(s): Robert N. Lieberman/RLL; Distribution: /FEED([ACTION]) SRI-ARC([INFO-ONLY]) ; Keywords: sendmail journal suggestion; Sub-Collections: SRI-ARC; Clerk: RLL;

26867 Distribution

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

BEV 5-NOV-75 15:26 26868

Proposed Compromise for Location of Hellnotes in Relation to Helpd

If you both agree to the following, I will do the work necessary.

Proposed Compromise for Location of Hellnotes in Relation to Helpd

I would like to propose the following for how to handle Hellnotes:
1. Move Hellnotes into Helpd as a top-level branch named Hellnotes (I suppose soon I could even give up its present name and call it Helpnotes).
2. Maintain branches in Hellnotes for each data base (e.g., Core, Base). Then put two branches under each: do and done. When one of us finds a problem in a file we are not fixing at the time (and want to note it for later), we describe the problem under the do branch. When one of us fixes a problem in the do branch, we move it to the done branch. (If we need to make a note of some sort about our fix, that shd be a substatement under the original problem statement). This is more satisfactory to me than using the tasks branches, because I often find myself wanting to glance through the problems listed and or solved. It also keeps all of our fixes in a single place. For me, the classifications important here are not who is doing or has done something, but what needs to be done or is done.

BEV 5-NOV-75 15:26 26868
Proposed Compromise for Location of Hellnotes in Relation to Helpd

(J26868) 5-NOV-75 15:26;;;; Title: Author(s): Beverly Boli/BEV;
Distribution: /DVN([ACTION]) KIRK([ACTION]) ; Sub-Collections:
SRI-ARC; Clerk: BEV;

26868 Distribution
Dirk H. Van Nouhuys, Kirk E. Kelley,