Dear Jon,
I agree with your point about secretarial terminals and about choice of an editing language. We seem to have great (or at least reasonable) success getting our "Manpower" secretaries to use computer editing systems, but little luck with the permanent group; I think its a problem of psychology rather than ability.

One thing I think I forgot to mention when discussing outstanding protocol issues is the possibility of using the recently extended "link" field (RFC 533) for message sequencing in the Host-to-Host Protocol (RFC 534 and predecessors).

Regards,
Alex

19839 Distribution
Jonathan B. Postel,

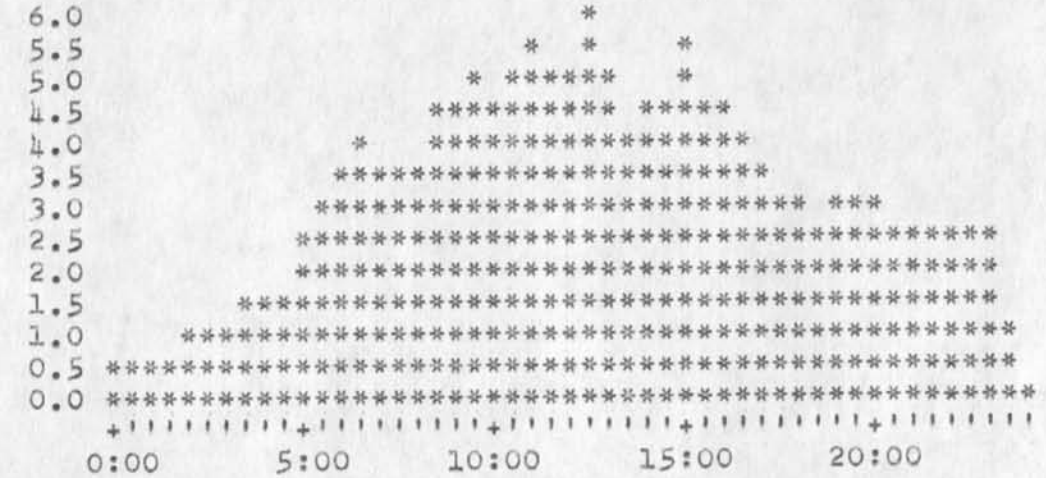
(J19839) 24-OCT-73 06:07; Title: Author(s): Alex A. McKenzie/AAM; Distribution: /JBP; Sub-Collections: NIC; Clerk: AAM;

Superwatch Average Graphs for Week of 10/15/73

The parameter used for network users has been changed from #nt which gives the number of network connections to #ntu which gives the number of network users. This should be more representative of actual network use and will explain the decrease in network users.

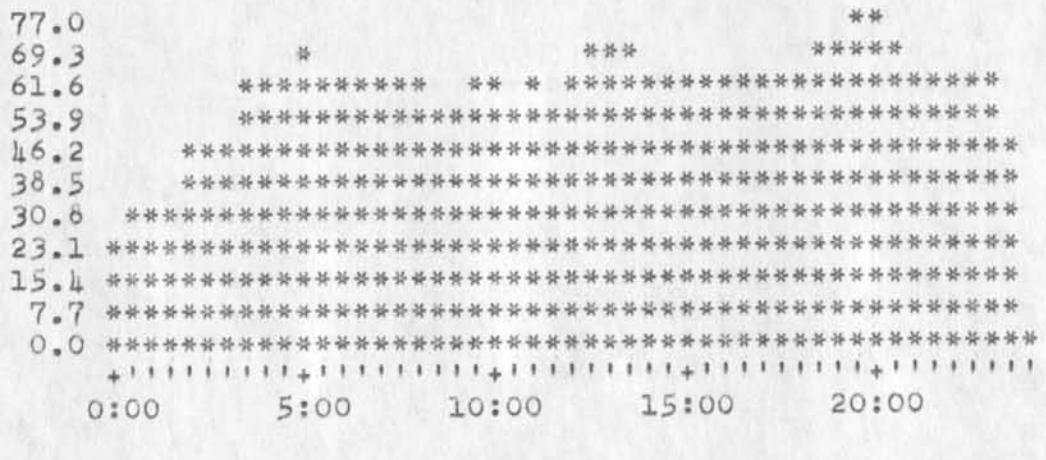
Superwatch Average Graphs for Week of 10/15/73

TIME PLOT OF AVERAGE NUMBER OF GO JOBS FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 1



1a

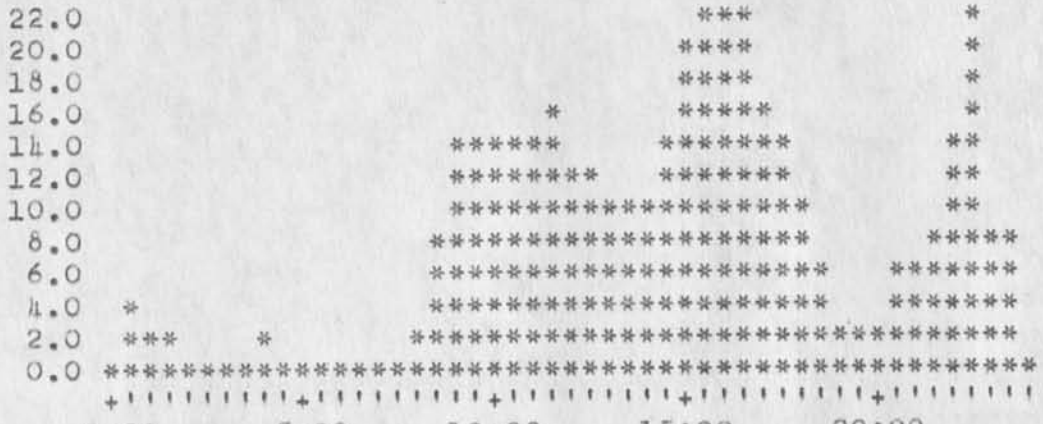
TIME PLOT OF AVERAGE PER CENT OF CPU TIME CHARGED TO USER ACCOUNTS
FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 2



2a

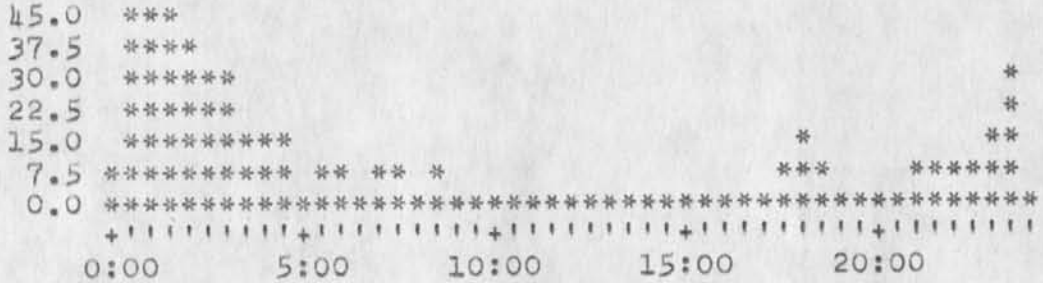
Superwatch Average Graphs for Week of 10/15/73

TIME PLOT OF AVERAGE PER CENT OF SYSTEM USED IN DNLS FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 3



3a

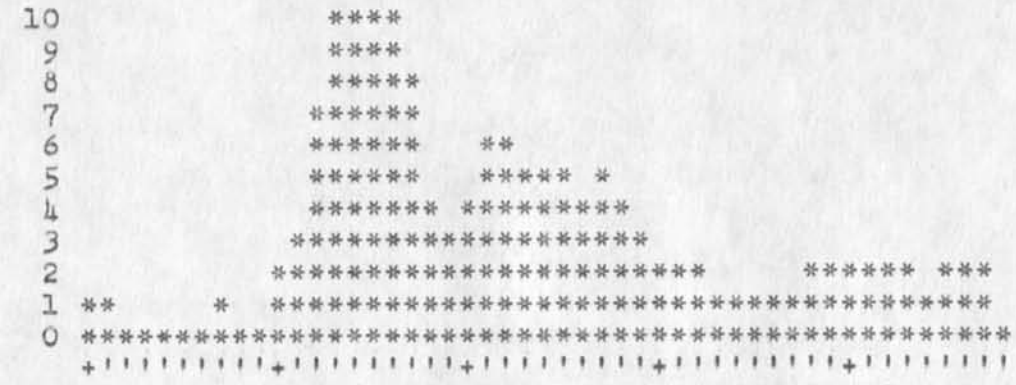
TIME PLOT OF AVERAGE IDLE TIME FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 4



4a

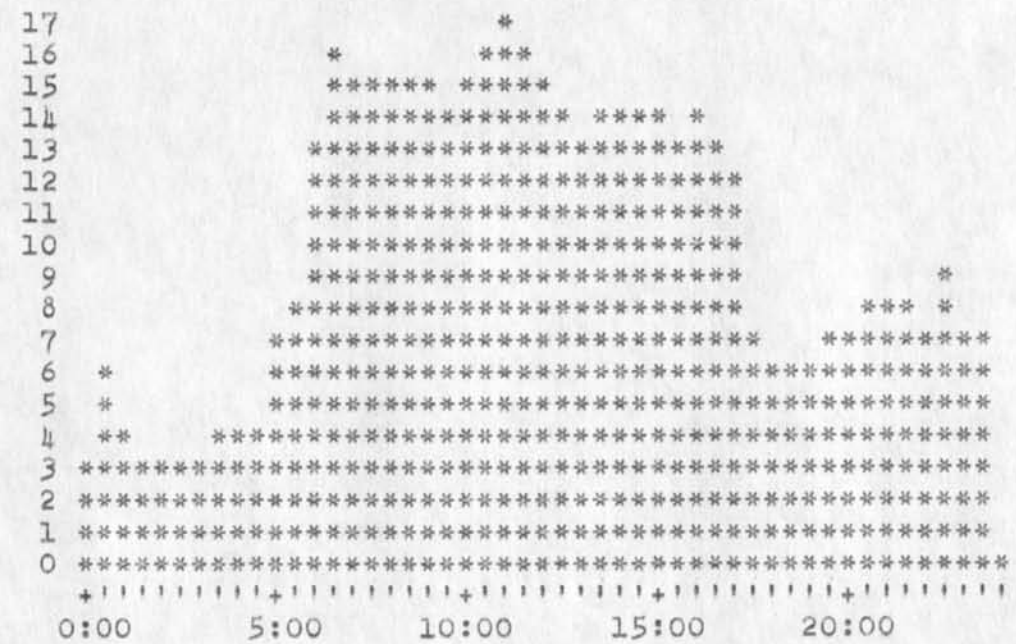
Superwatch Average Graphs for Week of 10/15/73

TIME PLOT OF AVERAGE NUMBER OF NETWORK USERS FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 5



5a

TIME PLOT OF AVERAGE NUMBER OF USERS FOR WEEK OF 10/15/73
x axis labeled in units of hr:min, xunit = 30 minutes 6



6a

19840 Distribution

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

Superwatch Average Graphs for Week of 10/15/73

(J19840) 24-OCT-73 10:13; Title: Author(s): Susan R. Lee/SRL;
Distribution: /JCN RWW DCE PR DCW JCP DVN JAKE CFD KIRK DLS BAH;
Sub-Collections: SRI-ARC; Clerk: SRL;
Origin: <LEE>WEEK10/15GRAPHS.NLS;1, 24-OCT-73 09:32 SRL ;

ARH 16-OCT-73 06:24 19843

FTPIG

Abhay,

I would be most appreciative if you could add my ident to the FTPIG. I am at SDAC-tip and am currently working on our own version of an FTP server. If you see fit to add my name the following should be of help. Alan R. Hill ARH

SDAC-TIP
314 Montgomery St.
Alexandria, Va. 22314
Teledyne - Geotech
(703) 836-3882 ext 294

Thanks.

19843 Distribution
Abhay K. Bhushan,

FTPIG

(J19843) 16-OCT-73 06:24; Title: Author(s): Alan R. Hill/ARH;
Distribution: /AKB; Sub-Collections: NIC; Clerk: ARH;

JHB 24-OCT-73 14:36 19845

Line width greater than 72.

I tried to answer your question last week but the sndmsg got hung up. It stayed unsent in my directory until yesterday, when I was notified that the system gave up trying to send it. The problem seems to be that the net was down when I initially tried to send it last week. You probably have already found an answer to your question, but in case you haven't... To adjust the line width, set the TENEX width to n: WIDTH (of line is) n CR, and then use the processor dirrectives to set the right margin: .RM=n;. That should do it . I would appreciate knowing how things worked out. Jim Bair, SRI-ARC. 1

19845 Distribution
Ira W. Cotton,

Line width greater than 72.

(J19845) 24-OCT-73 14:36; Title: Author(s): James H. Bair/JHB;
Distribution: /IWC; Sub-Collections: SRI-ARC; Clerk: JHB;

Interrogate Requires More Typing Before Beginning Dialog

The interrogate command will no longer ask you if you want to retrieve a file from the archives unless you have spelled out the complete file name. 1

Thus if you have archived three files, <user>grunt.nls;1 , <user>grunt.nls;77 , and <user>grunt.groan;1 and use altmode to elicit TENEX starred fields, the archive system will offer you a list of the files but not ask if you want one retrieved viz: 2

If you type, 2a

int<alt>grunt<alt> 2a1

You should see: 2b

```
@intTERROGATE grunt.*;*
 <USER>GRUNT.>NLS;1 IS ARCHIVED ON TAPES 123 AND 145
 <USER>GRUNT.NLS;77 IS ARCHIVED ON TAPES 157 AND 169
 <USER>GRUNT.GROAN;1 IS ARCHIVED ON TAPES 181 AND 202
```
2b1

A similar situation arises if you have archived a file by the same name, extension, and version more than once, say <user>preciouswords.NLS;4 on June first and again on Auust 6t, viz: 3

If you type, 3a

int<alt>preciouswords<alt> 3a1

You should see: 3b

```
@intTERROGATE preciouswords.*;*
 <USER>PRECIOUSWORDS.NLS;4 IS ARCHIVED ON TAPES 123 AND 134
 <USER>PRECIOUSWORDS.NLS;4 IS ARCHIVED ON TAPES 145 AND 156
```
3b1

In either case you can enter dialog with the archive system by spellin out the name of the file you want, viz: 4

If you type, 4a

@int<alt>grunt.nls;1 <cr> 4a1

you should see: 4b

```
@intTERROGATE grunt.nls;1 <cr>
 <USER>GRUNT.>NLS;1 IS ARCHIVED ON TAPES 123 AND 145
 Do you want it retrieved (Y or N) Yes (Confirm) <cr>
You will be notified when your file is returned.
```
4b1

Interrogate Requires More Typing Before Beginning Dialog

In the case of two files with the same name, the system will give you the version archived most recently. If you should want the older version, sen a message or phone Jeff Peters at ARC (PETERS@NIC, 415-329-0740) 5

In the past older version with the same complete name have been utterly lost. One of the reasons for these changes is to make it possible to retrieve them . 6

If you have archived only one file with a given name, you may use altmod to save typing out the full name as you nave in the past. 7

19846 Distribution

Richard C. Roistacher, Ferg R. Ferguson, Ernest H. Forman, Douglas C. Engelbart, Jeanne B. North, John W. McConnell, L. Peter Deutsch, James G. Mitchell, Alan C. Kay, Martin E. Hardy, Charles H. Irby, Mil E. Jernigan, Jeanne B. North, James C. Norton, Richard W. Watson, Steve D. Crocker, Thomas F. Lawrence, John F. Heafner, Dan L. Murphy, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Abhay K. Bhushan, Peggy M. Karp, Nancy J. Neigus, B. Michael Wilber, Edward A. Feigenbaum, Robert T. Braden, James M. Pepin, John T. Melvin, David H. Crocker, Mario C. Grignetti, Diana L. Jones, Susan R. Lee, James M. Madden, A. Wayne Hathaway, Barbara Barnett, Elizabeth K. Michael, Julie B. Moore, Marcelle D. Petell, Duane L. Stone, Joan E. Slottow, Jeffrey C. Peters, William P. Jones, Elizabeth J. (Jake) Feinler, Kirk E. Kelley, Ralph Prather, Kay F. Byrd, Gino Pucine, Thomas B. Gray, Raynor K. Rosich, Prentiss H. Knowlton, Marvin L. Graham, Jaacov Meir, Gary R. Grossman, W. Jack Bouknight, Michael S. Sher, Daniel L. Slotnick, Kathy Beaman, John D. Day, David H. Crocker, Beauregard A. Hardeman

Jean Iseli, James E. (JED) Donnelley, William Kantrowitz, Michael S. Wolfberg, Yeshiah S. Feinroth, Anthony C. Hearn, Robert M. (Bob) Metcalfe, Bradley A. Reussow, Daniel L. Kadunce, George N. Petregal, Michael B. Young, Michael A. Padlipsky, Schuyler Stevenson, L. Peter Deutsch, John Davidson, Thomas O'Sullivan, Sol F. Seroussi, Scott Bradner, Robert H. Thomas, Michael J. Romanelli, Ronald M. Stoughton, A. D. (Buz) Owen, Robert L. Fink, Jeanne B. North, Steve D. Crocker, Thomas F. Lawrence, John W. McConnell, James E. (Jim) White, A. Wayne Hathaway, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Abhay K. Bhushan

Stephen R. Wilbur, Adrian V. Stokes, Hugh R G H Gamble, Sylvia Kenney, Connie K. McLindon, Edmund J. Kennedy, Phyllis Hauser, Jeanne M. Beck, Paula Kazanjian, Gary L. Bockweg, Nancy J. Neigus, Donna R. Cooper, Jeffery B. Rubin, John F. Wakerly, Tom C. Rindfleisch, Leonard B. Fall, David L. Hyde, Gary Blunck, Tom P. Milke, Alan H. Wells, Chuck R. Pierson, Carl M. Ellison, Robert P. Blanc, Jay R. Walton, Terence E. Devine, David J. King, William L. Andrews, Milton H. Reese, Kenneth M. Brandon, Lou C. Nelson, Jeffrey P. Golden, Richard B. Neely, Dan Odom, Robert G. Merryman, P. Tveitane, Adrian V. Stokes, David L. Retz, Reg E. Martin, Gene Leichner

DVN 24-OCT-73 16:21 19846

Interrogate Requires More Typing Before Beginning Dialog

(J19846) 24-OCT-73 16:21; Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /TU NJN(got your note,am slowy replying.);
Sub-Collections: SRI-ARC NIC TU; Clerk: DVN;
Origin: <VANNOUHUYS>ARCH.NLS;1, 24-OCT-73 16:17 DVN ;

Possible Letter to Burns

Stanford Research Institute
Augmentation Research Center
333 Ravenswood Avenue
Menlo Park, California 94025

Mr. Burns, RADC/PMA
Department of the Air Force
Headquarters Rome Air Development Center (AFSC)
Griffiss Air Force Base, New York 13440

Dear Mr. Burns:

1

Until recently we believed that contract F30607-73-C-0285 did not call for a monthly letter report. When we discovered our error, I reconstructed the bare minimum of information for the months of June through September. That accounts for the flurry of letters that came to you within the last few days. In the remaining reports, I will provide narrative information about the progress of work.

2

As you may know, NLS, the system we develop, includes provisions for creating, distributing, filing, cataloging and retrieving documents, including correspondence through the ARPA network or U.S. Mail. The reports we have mailed to you have gone to Duane Stone via the computer and are accessible to him online.

3

We could identify you to NLS. By default the system would then deliver the monthly reports by U.S. mail, but you might be able to arrange with the Information Science Branch at RADC to receive them online.

4

We identify users to the system by a few characters, usually their initials. If you wish, please choose your initials or some other letters in reply.

5

Sincerely,

Dirk van Nouhuys
Research Analyst
Augmentation Research Center

Possible Letter to Burns

dvn

19847 Distribution
Duane L. Stone,

Possible Letter to Burns

(J19847) 24-OCT-73 17:23; Title: Author(s): Dirk H. Van Nouhuys/DVN;
Distribution: /DLS(I as distributing this to you only. Do you think it
is a good idea? Do you want to suggest changes?); Sub-Collections:
SRI-ARC; Clerk: DVN;
Origin: <VANNOUHUYS>BURNS.NLS;1, 24-OCT-73 16:55 DVN ;

Reply to (19825,): Append Command Needs

Robert: About the append ideas-- you might like to try the user-program append with the goto programs get append and then goto programs execute append connamd. This asks you what group of statements you want appended and what text inserted between them as they go together. Is this what you want?? lso, there is a smarter input sequential user program called inseqh or such. I think it does som level setting stuff according to the number of consequetive CR's....might help. I assume you are using the INMES stuff on sndmsgs..it's a user program too...I guess we discussed it. Let me know if this helps you ok? Jim

19848 Distribution
Robert N. Lieberman, James H. Bair, N. Dean Meyer, Duane L. Stone,

Reply to (19825,): Append Command Needs

(J19848) 24-OCT-73 17:33; Title: Author(s): James C. Norton/JCN;
Distribution: /RLL JHB NDM DLS; Sub-Collections: SRI-ARC; Clerk: JCN;

NWG/RFC# 580 JBP 25-OCT-73 06:00 19849
note to protocol designers and implementers

Hereafter proposed protocols shall be submitted in the form of on-line documents, preferably as nls files at the Network Information Center. This will greatly facilitate the review process and enable editorial and substantive changes to proceed quickly. This also will permit timely updating of protocol documents as may be neccessitated by future decisions. On-line documents are also easily distributed to the network community. If you find great difficulty in complying with this request please contact me. 1

It should be noted by all Telnet protocol readers and especially implementers that all the existing Telnet Options that involve subnegotiation are modified (see RFC 562) to terminate the subnegotiation strings with IAC SE. The value of SE is 240. Also note that within subnegotiations the occurance of a byte with the value 255 (IAC) requires doubling that byte on transmission. 2

Please note that my address has changed to:

Jon Postel
The MITRE Corporation
Mail Stop W185
Westgate Research Park
McLean, Virginia 22101

Phone: (703) 893-3500 x2350

On-line messages will reach me addressed to either

POSTEL@ISI

or

JBP in the NIC Journal. 3

19849 Distribution 1

Roberta J. Peeler, Craig Fields, Margaret Iwamoto, Dee Larson, Robert E. Doane, Brenda Monroe, Jeanne B. North, Pam J. Klotz Cutler, Stan Golding, Steve G. Chipman, John P. Barden, Martha A. Ginsberg, Shirley W. Watkins, Janet W. Troxel, Connie D. Rosewall, Anita L. Coley, Carol J. Mostrom, 1a

Travis L. Greening, Kasee N. Menke, Ruth Ann McDermott, Angie R. Yingling, Michael M. Dervage, Carolyn E. Taynai, Easter D. Russell, Leonard B. Fall, Peggy D. Irving, Roy Levin, M. P. McCluskey, Pitts Jarvis, Barbara A. Nicholas, Jacquie A. Priest, Terence E. Devine, Paul M. Rubin, Paula L. Cotter, O. A. Hansen, Dan Dechatelets, Nancy C. Thies, Robert Silberski, Marcia Lynn Keeney, Margaret A. (Maggie) Bassett, J. A. Smith, Leina M. Boone, Diana L. Jones, Nancy J. Neigus, Terry Sack, Frances A. (Toni) McHale, Lucille C. (Lucy) Gilliard, Ed J. Collins, Gary Blunck, John F. Heafner, Kathy Beaman, David J. King, Sue Pitkin, Jerry Fitzsimmons, Gloria Jean Martin 1b

NWG/RFC# 580 JBP 25-OCT-73 06:00 19849
note to protocol designers and implementers

(J19849) 25-OCT-73 06:00; Title: Author(s): Jonathan B. Postel/JBP; Distribution: /TLG NSAG; Keywords: protocol postel telnet documents on-line; Sub-Collections: NWG NIC NSAG; RFC# 580; Clerk: JBP;

Letter to Burns

Ref (19847,), letter to Burns. I think such an idea might "blow their minds in procurement. However, I would be interested in seeing how they react to it. We are currently proposing an RADC Management Information System, which would include NLS and a local Data Management system. There would be terminals scattered around RADC, including some in procurement. I they were to start receiving routine mail fOM A COMPUTER OR FROM OUR LOCAL PRINTER, this might start getting them prepared. Go ahead and send it...let me know how they react. 1

19850 Distribution 1
Dirk H. Van Nouhuys, James C. Norton, Edmund J. Kennedy, 1a

Letter to Burns

(J19850) 25-OCT-73 05:23; Title: Author(s): Duane L. Stone/DLS;
Distribution: /DVN JCN EJK; Sub-Collections: RADC; Clerk: DLS;

DLS 25-OCT-73 05:52 19851

RADC-MIS..TR

Is you ident listed as JMB in the user statistics??

DLS 25-OCT-73 05:52 19851

RADC-MIS..TR

Hi Jim,
Things have been slow recently on the RADCMIS proposal. System has been unavailable 2 days this week. Also, there are the continual diversions..5550 writeups, briefings etc. Roger, Joe and Dave all have files in their own directory with similar names, where they are doing therir own thing. Also see (stone,proposal,) for beginning attack on the proposal itself. I wouldn't plann too heavily on using the RADC machine, until we find out for sure that it will be on the ARPANET. Then we will have to fac all the political problems of making it a Host. Since we don't have too much money, maybe we could swap some computer time?? I will enquire into the TR and see if it can't be moved..The delay is approaching the rediculous!! 1

19851 Distribution
James H. Bair,

1
1a

RADC-MIS..TR

(J19851) 25-OCT-73 05:52; Title: Author(s): Duane L. Stone/DLS;
Distribution: /JHB; Sub-Collections: RADC; Clerk: DLS;

FJT 25-OCT-73 06:31 19852

tickler for week 22 Oct - 2 Nov

(om4) 22 October - Monday 1

0830 hrs. Branch Chief's Meeting 1a

(ot4) 23 October - Tuesday 2

Due Date - ISIS/ISIM - Junior Achievement Program 2a

(ow4) 24 October - Wednesday 3

0830 hrs. Branch Chief's Meeting 3a

laboratory activity reports are due tomorrow. 3b

(oth4) 25 October - Thursday 4

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 4a

Officer's Commander's Call - 0900 hrs. - Bldg. 106 - Auditorium 4b

Nelson/Robinson - DAIS (AFAL) due date - To Col Thayer 4c

(of4) 26 October - Friday 5

Commander's Review of DL Technical Review - Bldg. 106 - Room C-102 from 1030 - 1130 hrs. for ISI & ISC from 1330 - 1430 hrs. 5a

Timecards due today. 5b

Bobbie: Travel figures due by noon. 5c

Due Date - ISIM/Ray Liuzzi - Final Report Contract F30602-72-C-0491 5d

1200 hrs. - LUNCH - ALL MILITARY 5e

(om5) 29 October - Monday 6

0830 hrs. Branch Chief's Meeting 6a

Briefing from Hughes Aircraft will be here to discuss what Hughes is doing in area of simulation and modeling, topics will include simulation langauage survey, ecss studies, simscript 2.5 studies and other areas of interest. Discussions will be informal. Point of contact - Roc Iuorno. 6b

1000 hrs. University of Michigan - R. Iuorno 6c

tickler for week 22 Oct - 2 Nov

(ot5) 30 October - Tuesday 7

DL Technical Review 7a

(ow5) 31 October - Wednesday 8

DL Technical Review 8a

0830 hrs. Branch Chief's Meeting 8b

Form 2's (employee time expenditures) are due today. 8c

Form 6's (projected manpower) are due today. 8d

IR&D Evaluations Due - ISC/Semeraro 8e

(nth1) 1 November - Thursday 9

DL Technical Review 9a

News Brief items due into Becky Today. 9b

Bobbie: Personnel Strength Rpt. due. 9c

Laboratory Activity Reports due today: Bucciero must have them by 1000, ISM must have them by 1100, and DOT must have them by 1600. 9d

ISC Confessions 0830 hrs. 9e

(nf1) 2 November - Friday 10

Col Cosis - AFSC/DL will be here in the afternoon to visit & discuss a Management Information System for AFSC. Topics include Management Information Systems, Relational Data Bases and Data Management. 10a

Bobbie: Travel figures due by noon. 10b

19852 Distribution 1

Roberta J. Carrier, Donna R. Robilotta, David L. Daughtry, Richard H. Thayer, Frank J. Tomaini, Mike A. Wingfield, Edmund J. Kennedy, Ray A. Liuczi, Richard Calicchia, John W. Johnson, Donald Van Alstine, Dean F. Bergstrom, William P. Bethke, Frank S. LaMonica, William E. Rzepka, Rocco F. Iuorno, Frank P. Sliwa, Thomas J. Bucciero, Robert E. Doane, David A. Luther, Roger B. Panara, John L. McNamara, Joe P. Cavano, Duane L. Stone, Marcelle D. Petell, Josephine R. Stellato, Robert K. Walker, Thomas F. Lawrence, James H. Bair, 1a

FJT 25-OCT-73 06:31 19852

tickler for week 22 Oct - 2 Nov

(J19852) 25-OCT-73 06:31; Title: Author(s): Frank J. Tomaini/FJT;
Distribution: /RADC; Sub-Collections: RADC; Clerk: FJT;

RADC Host MIS and TR

JMB is a cute little female (not Chick, bad word) = Jennie Beck, who is a writer out here. I will look at the proposal for info purposes. Im surprised (well, not really) that no movemen toward an RADC ARPA NET Host has been made. There cerainly does seem to be a possibility for "swapping" compuer ervices.
Yes...I really appreciate your offer (,19851,) to check on the thing I would like to see become a TR (see -- bair,secl,). I can't imagine that it would have any negative impact and I'm sure that are some worthwhile ideas in the 180 pp.

1

1985½ Distribution
Duane L. Stone, Richard H. Thayer,

1
1a

Stinson seems to agree with this, but Dondero has some reservations, wondering where the manpower is goin to come from. He feels that T Buccerrio should still preform the administrative part of the package, and that they would provide a "service coordinator" who would contact local or contractual piople to do the actual maintenance.

Equipment Maintenance Requirements for AKW Project

The ISI branch has a maintenance and supply problem as a result of acquiring various terminals and I/O devices for the Augmented Knowledge Workshop (AKW) project. When we first started in 72, we had 2 Execuport terminals. Since then we have acquired a rough total of 35 units to support the AKW project, some of them consisting of several parts. For some time the AKW project personnel have acted as their own maintenance and supply agents, but this is becomming intolerable in view of manpower transfers and limitations. We have neither the skill or manpower to continue our own maintenance and supply functions.

During these two years, the AKW project has reached a certin level of maturity. The On Line System (NLS) at SRI has stabalized to some degree and the ARPANET has become reasonably reliable. During Nov 73 a commercial version of NLS will become available on the ARPANET. ISI is purchasing 25% of this Utility in order to embark on Phase II of the project, namely to bring up Nelson's section. With a reliable and stable NLS and ARPANET, the weak link in our attempts to provide a useful service are the local terminals and I/O devices. Hence our appeal to ISF for assistance in this area.

An ideal soloution would seem to be the hiring or transfer of a technician to the project, to handle the maintenance, supply and the administrative work associated with it. It would be ideal if he were a user of the system, so he could better interpret users' complaints and so he could record maintenance actions as part of the overall evaluation of the cost effectiveness of the system.

Barring this, it is desireable to have one focal point for all user terminal problems and supply problems. We would like to have a single person (with name and telephone number affixed to the terminal) who could be called in event of a problem. We would also like not to have to worry about supply of various papers, magnetic cassettes, etc.

We would strongly urge that ISF assume this responsibility. The ARPANET, TIP, modems, lines, etc. were initially in an experimental category. They are now reasonably well "checked out", and should be viewed as part of the resources available from ISF. Following this philosophy, any terminals at RADC (particullarily within IS) that are used to access the ARPANET and/or the local facility, should likewise be supported by ISF.

Following is a list of current terminals and I/O devices acquired (or in the process of being purchased) under the AKW project, along with maintenance requirements and status.

Execuport: 12 units, models 310&311, thermal print head, 10, 15 and 30 characters/second

Maintenance

Contractual--Local Honeywell people maintain these units under subcontract to Computer Transceivers Inc, the manufacturer. Maintenance has been good, quite responsive. We have worked out an informal agreement with Paul Reily, whereby we deliver the defective unit directly to Honeywell offices, they fix it and we then send a copy of the Honeywell maintenance report to Paul. This circumvents and speeds up the usual procedure of calling Paul, who calls Computer Transceivers, who calls Honeywell, who calls the local office, who calls Paul to report in for duty.

In house--Has been limited to identifying the problem as best as possible for Honeywell people, and an occasional adjustment of the print head, tightening of screws etc.

Supplies

Special heat sensitive paper available only from Computer Transceivers. It could also possibly be available from NCR (who makes the print head for CTI), but we have not investigated this. We have gone through the paper procurement route enough times so that standard paperwork is available. Lou Cassetta was taking care of this for us before he was transfered.

Texas Instrument "Silent 700": 9 units, model 725, thermal print head, 10, 15 and 30 characters/second

Maintenance

Contractual--The units are under a 1 year warrente, however we have not taken any steps to submit the necessary paperwork. We have a GSA schedule which indicates that maintenance is only available in the regional offices. The closest are in Waltham Mass and Springfield NJ. We now have two units that are inoperative. I have not contacted the regional offices yet, to see how the maintenance should be handled. One possibility is to have the units transported to Waltham by someone going to ESD/Boston area. On site/on call maintenance is available, but at a stiff price. Availablility of training school is unknown.

In house--No real experience..replaced cover on one unit when received, tightened various screws etc, but have never been inside the guts of the unit. Current problems of stuck print head could possiblly be fixed if someone took a look inside to see if there were any obvious problems.

Supplies

Special thermal printing paper, available only from TI. We have a limited stock now obtained from SRI and have ordered a pallet (528 rools) from TI. $4.25/roll FOB Stanford Texas....6-8 week delivery.

IMLAC: 3 units, model PDS-1D, mouse, keyset, cassette recorder, and long vector hardware options....also have one programmers console for debugging, programming purposes etc.

Maintenance

ContractualWe have a maintenance contract with IMLAC. They have been called in once, and gave each unit a check, cleaning, alignment, etc. About two days after the maintenance man left, the unit in Kennedy's office went bad. John Hayden attempted to identify the problem but was not successfull. IMLAC likes to try to fix the units by telephone, if possible.

In house--John Hayden has helped us out by cleaning the mice, cleaning and aligning the tape heads, and running diagnostic routines to identify glitches in the hardware. His support has been good, but we are not always able to get him when needed, because of other priority assignments. Regular maintenance on the mice should be set up on a weekly basis..consists of cleaning the posts and aligning them, and on the cassettes on a monthly basis..again cleaning the heads and aligning them if necessary. Training courses are available from IMLAC free of charge when we purchase units. I'm not sure if we have used up our quota yet.

Supplies

We could use another mouse or two as backup. We need a ready supply of cassette tapes. We currently have 30 of these on order, which should do us for the rest of this Fiscal Year.

TYCOM: 5 units (2 here, 3 on order..arive by Dec), model 38KSR, IMB Selectric II typewriter + base plate + electronic box and acoustic coupler, 10 characters/sec, ASCII code.

Maintenance

Contractual--We have no maintenance contract with TYCOM. We have shipped back one electronic box for or repair. We have been experiencing intermittent errors in transmission and occasional errors in receiving (missed characters, dropped characters). The IBM Selectric is supposed to be maintained by local IBM maintenance force (according to agreement that TYCOM has with IBM, however, we have taken no action to make sure

this happens (although we have called in the IBM man once and he fixed the typewriter).

In house--We have made minor adjustments in the unit via telecon with the TYCOM people. We have tried various configurations of direct connect vs acoustic coupled, to see if problems were in the base telephone lines..they were not. TYCOM indicated that there were a number of internal adjustments that could be made if necessary, but this requires a technician to follow up. Training is available at the plant in NJ for maintenance. TYCOM also attempts to diagnose and fix via phone, prior to shipping.

Supplies

The TYCOM does not require any special paper. Any roll paper is ok...sometimes we use bond for printout of final version of a document. It takes a cartridge type ribbon, which should be stocked if it already isn't being done. We would like to get a pin feed platen from IBM for some applications..about $125. We also need some additional type balls from IBM (ASCII).

Termicette: 4 units, model 3000-3, digital cassette tape recorders, 10, 15 and 30 characters/sec..used to prpare off-line text tapes for input to SRI NLS.

Maintenance

Contractual--We tried to get a maintenance contract with Termicette, but the only thing they offer is repair in plant. They have worked with us over the phone.

In houseThe units were delivered with a couple of control codes mixed up. We got the fixes from Termicette over the phone, and Grant Strength made the wiring changes. They checke out OK. We have not made extensive use of the units yet, because SRI has not made the Defferred EXecution (DEX) subsystem available over the ARPANET. They have recently released it however, and we intend to start using it. Periodic maintenance ..head cleaning..should be set up once we swing into full use of them. Training for maintenance is unknown.

Supplies

A supply of tape cassettes will be needed once we get into full use of the units. The quantity should not be too great, since they are reuseable, but we don't know how many times.

Line printers: two units (one-Data Products here, the other-Pertec on order)

Maintenance

Contractual--The 8090, which drives the Data Products printer is maintained by CDC. I don't know if there is a contract to maintain the Data Products printer. The availability of maintenance on the Pertec Printer and the Digital Associates interface to the TIP is unknown at this time. Mike Wingfield is handling the buy.

In house--Red Moran has been our primary focal point for problems with the 8090 and/or the printer. He has made changes in the 8090 program and adjustments to the printer itself. His support has been excellent. There is a general problem with transmitting to the printer from SRI, but Tom Lawrence is working with BBN and SRI to fix this. We will need someone knowlegeable of the Pertec printer and the Digital Associates interface when it is delivered. He should be in on the ground floor when the unit is delivered (about 3 months).

Supplies

There is still a need for a special kind of paper for one of the printers. It should be 132 columns wide, prepunched holes for a three ring notebook, perforated on the left side to allow removal of feed chain holes and perforated between the 80th and 81st column.

Other possibilities for terminals include a forms printer which would have dual or split platens, two color ribbon, and other goodies, for the purpose of printing out NLS files onto preprinted official AF forms. We tried to get one of these units, but did not receive a successful bid. We are also following SRI's development of a cheap replacement for the IMLAC. If they are successful we may try to procure several toward the end of the fiscal year.

Maintenance

Contractual

In house

Supplies

term

Maintenance

Equipment Maintenance Requirements for AKW Project

Contractual

In house

Supplies

DLS 25-OCT-73 10:51 19855

Equipment Maintenance Requirements for AKW Project

(J19855) 25-OCT-73 10:51; Title: Author(s): Duane L. Stone/DLS;
Distribution: /EJK JLM TFL; Sub-Collections: RADC; Clerk: DLS;
Origin: <STONE>MAIN.NLS;1, 25-OCT-73 10:46 DLS ;

The NIC by any other name...

Recently we (MDK, JBN, JAKE) discussed possible names for the online reference service that the NIC might offer. All were agreed that 'Hotline' would not be the right name because it denotes the feeling of help for systems failure, etc. The problem then become one of thinking up a suitable acronym for such a service and the following are my contributions (some somewhat tongue-in-cheek): 1

- NIC/INQUIRY (to match NIC/QUERY) 1a
- GET/NIC 1b
- NET/GET 1c
- NETQUEST 1d
- NET/SEEK 1e
- NETREF 1f
- FISHNET 1g
- NETROSPECT 1h
- FERRET 1i
- NETFINDER 1j
- DISSEMINET 1k
- NETSMART 1l
- WHAT'S UP (Not to be confused with who's up) This would make answering the phone kind of fun - "This is the NIC WHAT'S UP") 1m
- NIC/KNOWS 1n

and so on...and on....and on.... 1o

My serious suggestion would be to use the name NETINFO (now used only for my Resource Notebook directory name) as this seems to have the right amount of brevity without too much levity. 2

3

The NIC by any other name...

(J19856) 25-OCT-73 11:12; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /MLK MDK JBN JEW; Sub-Collections: NIC ;
Clerk: JAKE;
Origin: <FEINLER>NICNAMES.NLS;2, 25-OCT-73 11:09 JAKE ;

JHB 25-OCT-73 15:04 19858

Suggestion for Primer

A suggestion that I think I forgot mention: How about having pointers, peerhaps in the form of a list, in the Primer to related documentation. Hopefully, this would enable the user to find details on things that interested him in the document. Could be likke footnotes, or just a bibliography for both on-linne and off line access. Not sure if the HELP system should be the only thing obviously available.

1

19858 Distribution
Dirk H. Van Nouhuys,

1
1a

Suggestion for Primer

(J19858) 25-OCT-73 15:04; Title: Author(s): James H. Bair/JHB;
Distribution: /DVN; Sub-Collections: SRI-ARC; Clerk: JHB;

Network Working Group D. Crocker (UCLA-NMC)
Request for Comments: # 581 J. Postel (MITRE-TIP)
8 NOV 73

NIC # 19860

References: RFC 560, RFC 563
Categories: Protocols, TELNET, RCTE

1

Corrections to RFC 560
Remote Controlled Transmission & Echoing TELNET Option

1a

[This RFC contains corrections to RFC 560 (NIC -- 18492,) which described the Remote Controlled Transmission and Echoing TELNET Option. A completely updated version of 18492 has been journalized and will be included in the Protocols Notebook. These new specifications for RCTE are in NIC document (19859,).] 2

Section 1 of the RCTE Option specification (18492,2a:gy) was supposed to include the name and code for the option. The code was accidentally left out. That statement should read: 3

RCTE 7 3a

Section 2 should include the End of Subnegotiation Parameter, at the end of the subnegotiation parameter specification (18492,2b5:gy). All examples in the option specifications, showing RCTE SB commands, should also show the IAC SE parameter. (The revised RCTE specifications have been so changed.) Section 2 should be changed so that it reads: 4

IAC SB RCTE <cmd> [BC1 BC2] [TC1 TC2] IAC SE 4a

The sample scenario, in Section 5.D (18492,2e4:gy), should be modified to reflect the kind of assynchrony of events that can occur with the RCTE protocol. The updated RCTE specifications (in -- 19859,1e4:gy) now reflect this. 5

In RFC 563 (18755,) John Davidson criticizes RCTE's apparent failure to allow Net I/O and server computation to overlap. 6

I agree with John's criticisms and feel that the following should fix the problem: 7

NWG/RFC# 581 DHC JBP 1-NOV-73 18:25 19860
Corrections to RFC 560: Remote Controlled Transmission & Echoing TELNET Option

1. Change 5.A (18492,2e1) 7a

from: 7a1

Overview of Interaction 7a1a

to: 7a2

Overview of User Terminal Printing Action & Control 7a2a

2. Change 5.B.5.a (18492,2e2e1) 7b

from: 7b1

A Transmission character is one which REQUIRES the User Host to transmit all text accumulated up to and including its occurrence. (For Net efficiency, User hosts are DISCOURAGED from sending before the occurrence of a Transmission character). 7b1a

to: 7b2

A Transmission character is one which RECOMMENDS that the Using Host transmit all text accumulated up to and including its occurrence. (For Net efficiency, Using hosts are DISCOURAGED from sending before the occurrence of a Transmission character, as defined at the moment the character is typed). 7b2a

3. Change 5.B.5.b (18492,2e2e2) 7c

from: 7c1

A Break character has the effect of a Transmission character, but also causes the Using host to stop its print/discard action upon the User's input text, until directed to do otherwise by another IAC SB RCTE <cmd> IAC SE command from the Serving host. Break characters therefore define printing units. "Break character" as used in this document does NOT mean Telnet Break character. 7c1a

to: 7c2

A Break character REQUIRES that the Using host transmit all text accumulated up to and including its occurrence and also causes the Using host to stop its print/discard action upon the User's input text, until directed to do otherwise by another IAC SB RCTE <cmd> IAC SE command from the Serving host. Break characters therefore define printing units. "Break character" as used in this document does NOT mean Telnet Break character. 7c2a

4. Change 5.B.6 (18492,2e2f) 7d

from: 7d1

Input from the terminal is (hopefully) buffered up to the occurrence of a Transmission or Break character; and the input text is echoed or not echoed, up to the occurrence of a Break Character. The most recent RCTE command determines the echo, Transmission and Break actions. 7d1a

to: 7d2

Input from the terminal is (hopefully) buffered into units ending with a Transmission or Break character; and echoing of input text is suspended after the occurrence of a Break Character and until receipt of a Break Reset command from the Serving host. The most recent RCTE Break reset command determines the Break actions. 7d2a

5. Change 5.C.4 (18492,2e3d) 7e

from: 7e1

A severe (User) site-dependent problem will be buffering type-ahead input from the terminal. It is possible, especially in the case of TIPS, that the input buffer will overflow often. If the receiving (serving) host will permit, the accumulated text should be transmited at this point. If the text cannot be transmited and further typing by the user will result in lost text, the user should be notified. 7e1a

to: 7e2

Buffering Problems and Transmission vs. Printing Constraints: 7e2a

There are NO mandatory transmission constraints. The Using host is allowed to send a character a time, though this would be a waste of RCTE. The Transmission Classes commands are GUIDELINES, so deviating from them, as when the User's buffer gets full, is allowed. 7e2a1

Additionally, the Using host may send a Break Class character, without knowing that it is one (as with type-ahead). 7e2a2

The problem with buffering occurs when printing on the user's terminal must be suspended, after the user has typed a currently valid Break Character and until a Break Reset command is received from the serving host. During this time, the user may be typing merrily along. The text being typed may be SENT, but may not yet be PRINTED. 7e2a3

The more standard problem of filling the transmission buffer, while awaiting an ALLOC from the Serving host, may also occur, but this problem is well known to implementors and in no way special to RCTE. 7e2a4

In any case, when the buffer does fill and further text typed by the user will be lost, the user should be notified. 7e2a5

6. And add 5.C.5, 5.C.6, 5.C.7, 5.C.8, and 5.C.9 as follows: 7f

(5) The Serving and Using hosts must carefully synchronize Break Class Reset commands with the transmission of Break characters. Except at the beginning of an interaction, the Serving host MAY ONLY send a Break Reset command in response to the User host's having sent a Break character as defined at that time. This should establish a one-to-one correspondence between them. (A <cmd> value of zero, in this context, is interpreted as a Break Classes reset to the same class(es) as before.) The Reset command may be preceded by terminal output. 7f1

(6) Text should be buffered by the User host until the user types a character which belongs to the transmission class in force at THE MOMENT THE CHARACTER IS TYPED. 7f2

(7) Transmission Class Reset commands may be sent by the Serving host at ANY TIME. If they are frequently sent separate from Break Class Reset commands, it will probably be better to exit from RCTE and enter regular character at a time transmission. 7f3

(8) It is not immediately clear what the Using host should do with currently buffered text, when a Transmission Classes Reset command is received. The buffering is according to the previous Transmission Classes scheme. 7f4

The Using host clearly should NOT simply wait until a Transmission character (according to the new scheme) is typed. 7f4a

Either the buffered text should be rescanned, under the new scheme; 7f4b

Or the buffered text should simply be sent as a group. This is the simpler approach, and probably quite adequate. 7f4c

(9) It is possible to define NO BREAK CHARACTERS except TELNET commands (IAC ...). This might actually be useful, as in the case of tranmsitting on carriage-return, with the Using host echoing (a controlled half-duplex). 7f5

Having the using host send a Telnet Command will allow the serving host to know when he may reset the Break classes, but the mechanism is awkward and probably should be avoided. 7f5a

19860 Distribution

George N. Petregal, Michael B. Young, Michael A. Padlipsky, Schuyler Stevenson, L. Peter Deutsch, John Davidson, Thomas O'Sullivan, Sol F. Seroussi, Scott Bradner, Robert H. Thomas, Michael J. Romanelli, Ronald M. Stoughton, A. D. (Buz) Owen, Robert L. Fink, Jeanne B. North, Steve D. Crocker, Thomas F. Lawrence, John W. McConnell, James E. (Jim) White, A. Wayne Hathaway, Patrick W. Foulk, Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Abhay K. Bhushan, B. Michael Wilber, Edward A. Feigenbaum, Robert T. Braden, James M. Pepin, John T. Melvin, Jeanne B. North,
Marcia Lynn Keeney, Donna R. Cooper, Jeffrey B. Rubin, John F. Wakerly, Tom C. Rindfleisch, Leonard B. Fall, David L. Hyde, Gary Blunck, Tom P. Milke, Alan H. Wells, Chuck R. Pierson, Carl M. Ellison, Robert P. Blanc, Jay R. Walton, Terence E. Devine, David J. King, William L. Andrews, Milton H. Reese, Kenneth M. Brandon, Lou C. Nelson, Jeffrey P. Golden, Richard B. Neely, Dan Odom, Robert G. Merryman, P. Tveitane, Adrian V. Stokes, David L. Retz, Reg E. Martin, Gene Leichner, Jean Iseli, James E. (JED) Donnelley, William Kantrowitz, Michael S. Wolfberg, Yeshiah S. Feinroth, Anthony C. Hearn, Robert M. (Bob) Metcalfe, Bradley A. Reussow, Daniel L. Kadunce

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

Cost Estimate:

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

COST ESTIMATE FOR FIRST YEAR WORKSHOP UTILITY SERVICE
(total facility)

Personnel Costs			
Senior Prof	4087 hrs.		
Prof	4799 hrs.		
Clerical	1600 hrs.		
Total Direct Labor			$ 84,246
Payroll Burden @ 26%			21,904
Total Labor and Burden			106,150
Overhead @ 105%			111,458
Total Personnel Costs			217,608
Direct Costs			
Travel			14,160
30 trips East @ $318 =		$ 9,540	
120 Days Subsistence @ $31 =		3,720	
Auto Rental 60 days @ $15 =		900	
Communications			3,000
Materials and Supplies (tape, paper)			1,500
Utility Computer Support Subcontract			535,080
Documentation Costs			4,648
Total Direct Costs			558,388
Total Estimated Cost			775,996
Fixed Fee			46,560
Total Estimated Cost Plus Fixed Fee			$ 822,556
RADC CONTRACT SHARE: 25% =			$ 205,639

These costs are further explained in the Schedules that follow.

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

Cost Schedules:

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

SCHEDULE A

DIRECT LABOR

Direct labor charges are based on the actual salaries for the staff members contemplated for the project work plus a judgmental factor applied to base salary for merit increases during the contract period of performance. Frequency of salary reviews and level of merit increases are in accordance with the Institute's Salary and Wage Payment Policy as published in Topic No. 505 of the SRI Administration Manual and as approved by the Defense Contract Administration Services Region.

SCHEDULE B

OVERHEAD AND PAYROLL BURDEN

Based on projected 1973 budget data, higher overhead and payroll burden rates were formerly negotiated. However, these have been adjusted downward (with the concurrence of the Resident Government Auditor) to reflect more favorable cost experience through the first six accounting periods.

Rather than setting forth these specific rates, it is requested that contracts provide for reimbursement at billing rates acceptable to the Contracting Officer subject to retroactive adjustment to fixed rates negotiated on the basis of historical cost data. Included in payroll burden are such costs as vacation, holiday, and sick leave pay, social security taxes, and contributions to employee benefit plans.

SCHEDULE C

TRAVEL COSTS

Air fare is based on prices for travel to Washington, D.C., at $318 round-trip tourist established in the Official Airline Guide dated 1 October 1973.

Domestic subsistence rates and travel by private automobile are established standards based on cost data submitted to and approved by DCAA.

SCHEDULE D

DOCUMENTATION COSTS

Report costs are estimated on the basis of the number of pages of text and illustrations and the number of copies of reports to be produced, in accordance with the following rates per page which have been reviewed by DCAA:

The following is a breakdown of the estimated cost of report production:

Printing, 507 pages at $ 6.06 per page = (including editing, composition, report coordination, proofreading)	$ 3,072
Press and bindery at $ .021 per printed page = (for 180 printed pages - 200 copies, and 200 printed pages - 100 copies)	1,176
Mailing Costs =	400
Total Estimated Documentation Costs	4,648

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

SCHEDULE E

UTILITY COMPUTER SUPPORT SUBCONTRACT COSTS

See previously furnished (to ARPA) subcontract bid by Tymshare, Inc., Cupertino, California, dated 12 October 1972, updated 24 October 1973.

19861 Distribution
Douglas C. Engelbart, Richard W. Watson,

Proposal for Research No. ISU-73-51
(revision to 31 MAR 73 Document No. 15263)

(J19861) 31-OCT-73 21:50; Title: Author(s): Stanford Research Institute /&SRI-ARC ; Distribution: /DCE RWW ; Sub-Collections: SRI-ARC; Clerk: JCN ;
Origin: <NORTON>UTILRADCCOSTS.NLS;1, 30-OCT-73 08:09 JCN ;

Part Two -- Contractual Provisions [0]

Jean, I don't know whether you got the message I sent to you at ISI, but I would greatly Appreciate receiving the name of someone at SU-AI who I could talk to about using their HOTLINE system on a production basis. I will be in San Francisco next month, and would like to pay them a visit. Many thanks. Mike Leavitt 1

19863 Distribution
Jean Iseli,

1
1a

(J19863) 25-OCT-73 15:21; Title: Author(s): M. R. Leavitt/MRL;
Distribution: /JI; Sub-Collections: NIC; Clerk: MRL;

Suggestion for Line Printer Controller

Line Printer controller suggestion 1

I understand that the DEC controller that would allow us to put our line printer on the PDP-10 I/O bus, and make it look like an ASCII device, is very expensive ($10K ??). 2

In that case, I suggest that we look into making a line printer-line processor to connect the line printer to the data-line scanner and make it look like an ASCII serial printer. This would reduce the line printer driver in TENEX to trivia and save some CPU time. 3

The parts would cost a few hundred $$, but I don't know how many manhours would be involved. 4

If the line printer runs 300 lines per minute, thats 5 per second. At 50-100 characters per line, thats a 2500 to 5000 baud rate, which is very reasonable for the DLS. 5

I'll write the microprogram while we decide whether or not do to it... 6

TITLE:
COMMENT:
AUTHOR(S):DIA
DISTRIBUTION:
SUBCOLLECTION:
CLERK:DIA
GO. 7

1

1986h Distribution

Donald C. (Smokey) Wallace, Kenneth E. (Ken) Victor, James E. (Jim) White, Charles F. Dornbush, Elizabeth K. Michael, Diane S. Kaye, Don I. Andrews, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, Richard W. Watson, Douglas C. Engelbart, James C. Norton, Ferg R. Ferguson, Martin E. Hardy,

1a

Suggestion for Line Printer Controller

(J19864) 25-OCT-73 16:26; Title: Author(s): Don I. Andrews/DIA;
Distribution: /NPG RWW DCE JCN WRF MEH; Sub-Collections: SRI-ARC NPG;
Clerk: DIA;
Origin: <ANDREWS>LPLP.NLS;2, 25-OCT-73 16:22 DIA ;

JCN 25-OCT-73 19:01 19865

Expected Visit to SRI-ARC by Chinese Scientists in November 1973

Hardcopies to Cox and Floyd 10/24/73

JCN 25-OCT-73 19:01 19865

Expected Visit to SRI-ARC by Chinese Scientists in November 1973

To: Bart Cox cc: Doug Engelbart, Dick Watson, Spencer Floyd 1

From: Jim Norton

2

The following summary information about the proposed visit to SRI-ARC by a contingent of People's Republic of China scientists was reviewed with Mr. Al Blue and Col. John Perry of the Information Processing Techniques Office of ARPA, our sponsoring agency, on about October 11th. 3

Both Mr. Blue and Col. Perry indicated that the planned visit (including stops at other ARPA-Sponsored sites) would present no problems from their standpoint. They said that we should proceed with our arrangements. 3a

This memo serves also as a request to SRI Contracts to notify the RADC Contracting Officer of the impending visit. 4

Expected Visit to SRI-ARC by Chinese Scientists in November 1973

SUMMARY DATA ON VISIT TO ARC BY PEOPLE'S REPUBLIC OF CHINA SCIENTISTS 5

Date: November 5, 1973 5a

How many visitors: 14 5b

U. S. sponsor: Committee on Scholarly Communication with the People's Republic of China, in association with: 5c

American Council of Learned Societies 5c1

National Academy of Sciences 5c2

Social Science Research Council 5c3

address:
National Academy of Sciences
2101 Constitution Ave.
Washington, D. C. 20418
(202) 961-1534 5c3a

U. S. man arranging with us: Alex DeAngelis, Professional Associate 5d

Roster of Delegation of Chinese Scientists 6

Yen P'ei-lin 6a
Head of Group, Member of Board of Directors, Chinese Electronics Society; Director of Institute of Computer Technology, Chinese Academy of Sciences. (Pronounced YEN PAY-LYNN, addressed as Mr. Yen). 6a1

Wang Tsung-chin 6b
Deputy Head of Group, Deputy Manager of Chinese Radio Equipment Company. (Pronounced WONG DZONG-JIN, addressed as Mr. Wang). 6b1

Ting Ti-ch'ing 6c
Planning Engineer of Chinese Radio Equipment Company. (Pronounced DING DEE-CHING, addressed as Mr. Ting). 6c1

Wu Chi-k'ang 6d
Professor Specializing in Computers in Radio Department of Hsi-an Communicatons University.)Pronounced WOO GEE-KONG, addressed as Professor Wu). 6d1

Chang Tzu-ch'ang 6e
Deputy General Engineer of Peking Radio Factory. (Pronounced as JAHNG DZE-CHANG, addressed as Mr. Chang). 6e1

Chang Hsi-chiu 6f
Division Director fo Computer Design of Peking Radio Factory. (Pronounced as JAHNG SHE-JOE, addressed as Mr. Chang). 6f1

Ni Yao-kuo 6g
Engineer of Peking Radio Factory, specialty: peripherals. (Pronounced KNEE YAOW-GW(AW) as in law, addressed as Mr. Ni). 6g1

Hsu Cheng-ch'un 6h

Division Director of Institute of Computer Technology, Chinese Academy of Sciences, specialty: storage, memories. (Pronounced SHEW JUNG (as in jungle)-CHWUN, addressed as Mr. Hsu). 6n1

Yang T'ien-hsing 6i

Division Director of Institute of Computer Technology, Chinese Academy of Sciences, specialty: mainframes. (Pronounced YAHNG TIEN--SHING, addressed as Mr. Yang). 6i1

Sun Chang 6j

Assistant Researcher, Institute of Computer Technology, Chinese Academy of Sciences, specialty: peripherals. (Pronounced as SWUN-JAHNG, addressed as Mr. Sun). 6j1

Ch'en Jen-fu 6k

Assistant Researcher, Shanghai Institute of Computer Technology, specialty: systems design. (Pronounced CHUN REN-FOO, addressed as Mr. Ch'en). 6k1

Chu San-yuan 6l

Assistant Researcher, Shanghai Institute of Computer Technology, specialty: software. (Pronounced as JEW SAN-YUAN, addressed as Mr. Chu). 6l1

Ch'en Chin-chang: 6m

Engineer, Institute of Post and Telecommunications Research, specialty: data transmission. (Pronounced as CHUN JIN=JAHNG, addressed as Mr. Ch'en). 6m1

Hsu Jen-yao 6n

Translator, Chinese Electronics Society. (Pronounced as SHEW REN-YAO, addressed as Mr. Hsu). 6n1

U.S. Itinerary 7

MIT 7a

Prof. Edward Fredkin, Director
Project MAC
MIT
545 Technology Square
Cambridge, Mass. 02139
(617) 253-5852 7a1

HARVARD 7b

Prof. Thomas Cheatham, Director
Aiken Computation Laboratory
Harvard University
Cambridge, Mass. 02138
(617) 495-3989 or 4117 7b1

BOLT, BERANEK AND NEWMAN 7c

Mr. Severo Ornstein
BBN
50 Moulton Street
Cambridge, Mass. 02138
(617) 491-1850 7c1

DIGITAL EQUIPMENT COMPANY 7d

Mr. Kenneth Olsen, President
DEC

146 Main Street
Maynard, Mass. 01754
(617) 646-8600 7d1 7e

YALE UNIVERSITY
Prof. Alan Perlis, Director
Department of Computer Sciences
Yale University
New Haven, Conn.
(203) 436-0392 7e1 7f

LINCOLN LABORATORY
Dr. Gerald P. Dineen, Director
Lincoln Laboratory
Wood Street
Lexington, Mass. 02173
(617) 862-5500 7f1 7g

HONEYWELL INFORMATION SYSTEMS
Mr. Donald Sackman, Director
Licensing and Exports
200 Smith Street
Waltham, Mass.
(617) 890-8400 x2333 or 2856 7g1 7h

IBM
Mr. Homer M. Sarasohn, Director
Engineering Communications
IBM
Armonk, N. Y. 10504
(914) 765-2291 7h1 7i

AMERICAN AIRLINES
Mr. George Warde, President
American Airlines
663 Third Avenue
New York, New York 10017 7i1 7j

CHASE MANHATTAN BANK
Mr. David Rockefeller, Chairman of the Board
Chase Manhattan Bank
#1 Chase Manhattan Plaza
New York, New York 10005 7j1 7k

BELL LABORATORIES
Mr. William Baker, President
Bell Laboratories
Murry Hill, New Jersey
(201) 582-3424 7k1 7l

CONTROL DATA CORPORATION
Mr. Robert K. Nelson
International Liaison
Control Data Corporation
P. O. Box O
Minneapolis, Minn. 55440

(8100 34th Ave., South)
(612) 853-3006 or 8100 711

SPERRY-UNIVAC 7m
Mr. G. G. Probst, President
Sperry-Univac
P. O. Box 500
Blue Bell, Pa. 19422 7m1

3M 7n
Mr. Ray Herzog, President
Minnesota Mining and Manufacturing Company
3M Center
St. Paul, Minn. 55101
(612) 733 1110 7n1

WASHINGTON UNIVERSITY 7o
Dr. Charles Molnar, Director
Computer Systems Laboratory
Washington University
724 South Euclid Avenue
St. Louis, Mo.
(314) 361-7356

Mrs. Adelia Fries, Secretary

Mr. Wesley Clark
1572 Massachusetts Ave.
Cambridge, Mass. 02138
(617) 864-5229 7o1

TEXAS INSTRUMENTS, INC. 7p
Dr. Norman Neureiter
Director of East-West Div.
Texas Instruments, Inc.
P. O. Box 5474
Dallas, Texas
(214) 238-4434 7p1

NASA - Houston 7q
Mr. Robert MacMurry
Johnson Space Center
NASA
Houston, Texas
(713) 483-4241 7q1

STANFORD UNIVERSITY 7r
Ms. Diane Harrison, Staff Associate
Academic Planning Office, Building #1
Stanford University
Stanford, Ca. 94301
(415) 321-2300 x 4567
(home) 327-4367 7r1

XEROX PALO ALTO RESEARCH CENTER 7s
Dr. George Pake, Director

Xerox Park
Palo Alto, Ca. (415) 493-1600 7s1
STANFORD RESEARCH INSTITUTE 7t
Mr. Steven Miller
Stanford Research Institute
Menlo Park, Ca. 94025
(415) 326-6200

Dr. Weldon B. Gibson, Executive Vice President
Stanford Research Institute 7t1
NASA - Ames 7u
Mr. Ronald A. Schwartz
Ames Research Center
NASA
Moffett Field, Ca. 94035
(415) 965-5197 Or 965-5000 7u1
LAWRENCE LIVERMORE LABORATORY 7v
Dr. Roger Batsil, Director
Lawrence Livermore Laboratory
Livermore Ca. (415) 447-1100 7v1
HEWLETT-PACKARD 7w
Mr. Robert Hoke
International Sales Development Manager
Hewlett-Packard
11000 Wolfe road
Cupertino, Ca. 95014 7w1
IBM - San Jose 7x
(Same as New York) 7x1
FAIRCHILD SYSTEMS TECHNOLOGY DIVISION 7y
Dr. Harry Selo, Director
International Technology
Fairchild Research and Development
4001 Miranda
Palo Alto, Ca. 94304
(415) 493-7205 7y1

19865 Distribution 1

Douglas C. Engelbart, Richard W. Watson, John S. Perry, Allan G. Blue, Michael D. Kudlick, 1a

JCN 25-OCT-73 19:01 19865
Expected Visit to SRI-ARC by Chinese Scientists in November 1973

(J19865) 25-OCT-73 19:01; Title: Author(s): James C. Norton/JCN ;
Distribution: /dce rww jsp agb mdk ; Sub-Collections: SRI-ARC;
Clerk: JCN ;
Origin: <NORTON>RCVISITORS.NLS;1, 25-OCT-73 18:55 JCN ;

Patricia Anne Kennedy

FISH

11o

11p

11q

Fishes are the only major group of backboned animals completely adapted for life in the water. 12

Most fish have scales, fins and breathe with gills. 13

Their body temperature varies with the temperature of the water in which they live, therefore fish are called cold-blooded animals. Fossils reveal that the fishes were the first backboned animals. They first appeared more than 400 million years ago. 14

There are more than 30,000 species of fish divided into two main groups: 15

The first group is made up of lampreys and nagfishes. 15a

Sharks, rays and skates make up the second group. This group developed in the sea 300 million years ago. 15b

The third group is the bony fishes. This group includes basses, herring, salmon, catfish and mackerels. 15c

A fish needs oxygen like any other animal. They breathe the small amount of oxygen in the water, absorbing it into their bloodstream through their gills. In these gills an exchange of gases takes place. Carbon dioxide, the waste material released by the cells of the fish's body and carried by the blood, is given off by the gills. At the same time, the dissolved oxygen in the water is taken in by the gills and carried to the fish's body cells. 16

Different fish need different amounts of oxygen. Trout live in cold water which can hold a greater amount of oxygen than warm water. 17

Catfish need less oxygen so they can live in slow moving warm waters. Decaying plants remove oxygen from fresh water while giving off oxygen. A few kinds of fish breathe air just as we do. One of these is the lungfish. Their lungs are their air bladders. A lungfish will actually drown if it stays under water for a long time. 18

Keeping fish is the third most popular hobby in the United States. There are hundreds of different kinds of fish that you can keep. 19

Some of the most popular fish are goldfish and tropical fish such as

guppies. Some people even keep wild fish as pets. You can keep fish in an aquarium or in a pond. 20

Many people raise fish for a living. Some kinds of rare fish sell for thousands of dollars. 21

FISH

(J19866) 25-OCT-73 19:18; Title: Author(s): Edmund J. Kennedy/EJK; Distribution: /; Sub-Collections: RADC; Clerk: EJK;

NJN 26-OCT-73 06:08 19867

Online FTP

I don't have anyone to type in the FTP protocol online. This constitutes some degree of difficulty in complying with your rfc. Are you offering a typing service? 1

Online FTP

(J19867) 26-OCT-73 06:08; Title: Author(s): Nancy J. Neigus/NJN; Distribution: /JBP; Sub-Collections: NIC; Clerk: NJN;

19867 Distribution
Jonathan B. Postel,

1
1a

JI 26-OCT-73 08:30 19868

ARPANET Newsletter distribution list

Please include the following named person on the distribution list for the ARPANET Newsletter. I would further appreciate if you could send Steve several past copies: H. Steve Hughes, Environmental Policy Division, Congressionaal Research Service, Library of Congress, Washington, D.C.

Thank you for your prompt consideration, Jean 1

JI 26-OCT-73 08:30 19868

ARPANET Newsletter distribution list

(J19868) 26-OCT-73 08:30; Title: Author(s): Jean Iseli/JI;
Distribution: /MEJ(mil, i forgot the zip, it ios:20540) JBN;
Sub-Collections: NIC; Clerk: JI;

JBN 26-OCT-73 08:57 19869

Seconding JEW's Proposal for New Editing Commands (19830,)

Jim White --

Your proposal for a new family of NLS editing commands (19830,) states a need long felt by others, as you suppose. The ability to replace a string of text and blanks by a string of shorter or longer text and a filler of blanks to produce the same total length is a facility we have needed for display, but even more for teletype. All this time Mil has been making corrections to formatted catalog files by counting the spaces and tapping the space bar to fit, a tedious procedure requiring a lot of checking because the lines wrap around unpredictably. Kirk has had a similar problem with wrapped around lines, which makes the commands you propose even more useful.

Jeanne N

1

JBN 26-OCT-73 08:57 19869

Seconding JEW's Proposal for New Editing Commands (19830,)

(J19869) 26-OCT-73 08:57; Title: Author(s): Jeanne B. North/JBN;
Distribution: /NP SRI-ARC; Sub-Collections: SRI-ARC NP; Clerk: JBN;

(Journal) 19870

EXPERIENCE FROM THE NIC SHOWING FACTORS CREATING INSTABILITY IN APPLICATION OPERATIONS 03

04

INTRODUCTION

We are about to embark, through placing a Knowledge Workshop Utility into operation, on an expansion of application of our developing workshop technology to outside communities and organizations. We are doing so because of the importance we place on obtaining involvement and feedback from groups other than ourselves. In moving in this direction, we also run risks of not meeting peoples expectations thus turning them off to further exploration, and run risks of seriously slowly or even permanently damaging our own R&D thrust by trying to tie up all the loose ends, and complete all of the details necessary to satisfy legitimate considerations necessary for our technology to be really useful and operable in outside environments. 05

I believe we should take these risks because of the high payoff to be obtained in technology transfer and potential for bootstrapping to be gained by getting others involved who can participate in the workshop system evolution process. Further, while I feel writing papers is important to describe our experience (we should do more of it), the type of technology our work represents is qualitatively different enough from most peoples experience that it needs demonstration and considerable hands on experience to appreciate its implications and importance. 06

We can minimize our risks if we learn as much as possible from past experience. Therefore, I write the following to encapsulate some of my view on our experience with the NIC and try to draw parallels to our new ventures. 07

The Network Information Center (NIC) in its 2 1/2 to 3 years of operation has made, I believe, substantial contributions to ARC goals and those of the ARPANET. The latter contributions have been briefly described in our recent ARPA-IPT proposal (16368,) which I reproduce here. The former have not been adequately documented, but range from semi-intangible contributions such as shifting ARC's focus more toward outside user needs, providing an opportunity for many people to be exposed to ARC goals, and gain hands on NLS experience, providing a funding category under Networks for ARC during a period when ARPA had no explicit programs in more directly related areas to ARC's R&D, improved reliability; to providing strong development thrusts in dialog support, user interface, and the beginning of information management. The NIC has also provided valuable experience with training, documentation, maintenance of various databases, and other augmentation methodologies 08

032

NIC Roles

033

1) Stimulating interest in and use of the Network.

This role has had two aspects: assisting in marketing the ARPA Network and assisting in the development of network protocols. 034

The NIC's staff has taken an active role in introducing visitors and network users (both potential and actual) to the network's resources. This has been done through distribution of various reference materials to network associates and sites, and through discussions and demonstrations for those who visit the Network Information Center. The NIC and ARC staff also devoted many man months in helping ARPA prepare for the 1972 ICCC, in order to help stimulate interest in the network. Finally, others such as NBS and MITRE have been using NLS and the NIC online Query system to demonstrate the capabilities and potentials of the network. 035

This role of the NIC in marketing ARPANET technology has not been generally recognized, but has been implicitly accepted and used as part of our services. We have continued this role because we believe it has been of strategic value to ARPA. 036

The other aspect of the NIC's role in this area (with support from the Augmentation Research Center staff), has been active participation in the development of network resource sharing protocols, ensuring that the needs for information exchange were adequately addressed. For example, the NIC was one of the prime contributors in the development of the Telnet and Mail protocols, and has participated in the design of the File Transfer and Graphics protocols. 037

2) Supporting dialog among geographically distributed researchers, to help stimulate network-oriented R&D. .PBS; 038

ARC and the NIC have developed and operated the "Journal" system for the support of online and offline dialog among geographically distributed researchers. This has facilitated the development of network protocols, by providing a means to exchange technical memoranda and to record and retrieve all documentation and memoranda relating to protocol development. A key aspect of this support is that distribution is automatic once an individual or research group is named in the addressee list. 039

Recent innovations have extended the dialog support to other groups of researchers working in common problem areas, such as Computer-Based Instruction, Speech Understanding Research, and Packet Radio. We have also recently implemented a mechanism that allows network users to utilize the NIC's Journal system via any site's File Transfer Protocol software, without the users having to learn or use NLS. 040

3) Providing reference information, to help create a feeling of community among network developers. 041

The NIC's reference service is simultaneously online and offline. It is available to all users of and researchers on the network. It includes indexes to all dialog that has been transacted through the Journal, a directory of individuals and research groups using or associated with the network, and a directory ("notebook") of resources and facilities on the

network. It also includes indexes and hard copy distribution of professional papers that are of interest to special interest groups of network participants. 042

Use of the online reference service has been facilitated through development of a prototypical user-oriented Query language. In addition, introduction of Enterprise phone service at many locations around the network has allowed users to have toll-free conversational access to the NIC when that mode of communication was desirable. 043

Use of the offline services was accomplished by distributing and maintaining a collection of NIC documents at each network site and at other locations where interest in network developments existed. 044

045

4) Developing prototypical services. .PBS;

As with virtually all other aspects of the network technological development, the combination of the context, type, and scope of NIC's services have had few precedents. We intentionally set out to develop prototypical, evolutionary services and evaluate them and evolve them, to be of use in future information centers, as well as in the present one. 046

Our recent analysis of NIC services and expenditures is in keeping with this prototypical nature of the NIC. Based on this analysis, we have found that it will be beneficial to restructure our services and to restructure the framework in which we provide those services. 047

For example, the concept of providing a uniform level of both online and offline services to the entire network community is, we now believe, not sufficiently responsive to rapidly changing user needs. We also believe that because of the growth of the network community, it is no longer efficient to serve all users with a uniform set of products. We therefore intend to tailor the products to meet specific user groups' needs. 048

As another example, the practice of fairly widespread distribution of a uniform set of hard copy documentation was necessary at the beginning when much of the technology for online dialog was somewhat unstable and the network community was smaller than it is now. However, because of network growth and a stable technology, this practice is now felt to be inappropriate, and is being reevaluated. 049

Our proposal in the next section addresses these problems directly. It includes approaches that will enable us to continue this development/operation/analysis cycle more effectively, until network usage patterns and information needs stabilize. These approaches are (a) the "evolutionary" NIC and (b) the ARPA-IPT Community Information Service. 050

The contributions to ARC and the ARPANET have not been made without considerable difficulties nor have these contributions or difficulties

always been recognized properly. The NIC has not always met adequately the needs for its services, for example: while many people have grown to like and appreciate NLS, others have complained of difficulty learneng to use it, our more integrated and sophisticated approach to recorded dialog support and its cost in learning time, present lack of privacy, higher computer cost leading to infrequent deliveries has led much of the online dialog in the network to take place through the simpler sendmessage facility of Tenex, and our data bases have not always been uptodate or distributed on a timely basis or necessarily in the right form. 09

Finally, the gap between the level and quality of service that the NIC staff would have liked to provide and what they have been able to provide with the resources and environment available have created recuring internal psychological and morale difficulties. Let us look at some of the problems the NIC has had in operating in the ARPA/ARC environment and see what implications it may have for future application operations. 010

LACK OF ARPA MANAGEMENT UNDERSTANDING OF NEEDS TO BE MET BY THE NIC 011

The recognition for the need for some kind of information service associated with the ARPANET was made at an ARPA-IPT contractor meeting 6-7 years ago, as I understand it. What exactly the nature of the needs and what these services were to be was never clearly defined. DCE volunteered to create a NIC as he saw the value of experience to be gained in line with ARC longer range R&D goals and the importace of such a service for the ARPANET community. 026

There has been little or no feedback or guidance from ARPA in the intervening years as to what needs they would like met at what costs. Nor has ARPA set up explicit procedures associated with new sites coming on the NET to assure that the NIC receives timely notification (or any notification for that matter) and other information it needs for its data bases. The NIC depends on the voluntary contribution of information from NET sites for its data bases and has no leverage of any kind to assure accuracy and timeliness of its information. 051

There are two or three other groups on the ARPANET providing related and occasionally redundant information service to the NET. There has been little or no ARPA coordination of these activities from the top. The NIC has in the past and continues in the present to try to make its management and guidance needs known, although we probably need to be even more forceful in the future. 052

The above factors, besides having the problems associated with lack of availability of information, create feelings in the NIC staff such as are we really doing something that's needed, does anyone up there care, etc. 012

These management problems are not unique to the NIC, but have been common with many aspects of the ARPANET growth. The above reflections are not given as criticisms of ARPA management because I am aware of the many programs and the many facits of the ARPANET project that ARPA's small staff have to deal with and manage. 053

These problems are given because and they have existed and we can expect similar problems to exist with respect to Utility clients. Their expectations are often likely to be unclear and they may not feedback clearly their needs, nor may they or we learn early enough about the gap in our mutual expectations of each other. Even if such a gap exists and is known, various organizational and cultural barriers may make bridging the gap difficult. 013

Even if the people we are in immediate contact with and we clearly understand our mutual goals, their management may change or come under new forces thus creating problems for them and us. Other competing capabilities for subsets of the Utility capabilities or providing capabilities we do not provide will be coming on the commercial scene with increasing frequency in the future creating the need for our having clear plans and projections for how they fit into our framework. These new entrees will cause problems for our client management in understanding our role relative to them. 014

ARC MANAGEMENT VIEW OF THE NIC AS PART OF THE WORKSHOP BOOTSTRAPPING PROCESS 015

ARC management including myself, have seen the importance of the NIC to ARC in terms of what can the NIC contribute to ARC's broader goals. In other words, the NIC has not been considered in and of itself. This view has lead to many positive contributions to ARC and the network community, but has also created some serious problems. The NIC has had to use NLS based technology to meet network needs and often has had to perceive these needs in NLS terms. This has led to distortions of actual needs and thus failures to perceive and meet actual network needs. Perception of user needs is a difficult task even for the most objective observers and is even more difficult when observed from the other motivations. 016

The NIC has not had the attention of management that it needs on its explicit problems nor often the quantity, quality, or timeliness of resources it needs to do its job. The NIC has had to depend on pieces of people in many areas and thus has had difficulty in creating critical mass, follow through, and group spirit. Often NIC priorities have had to take second place to broader ARC objectives. The NIC it should also be pointed out has often altered and distorted longer range ARC objectives and caused resources to be expended on details or problems of scale not necessarily relevant to R&D objectives. 029

Lessons to be learned here for the Utility relate to avoiding such pitfalls again where possible or at least walking into them knowing the consequences of client frustration when their priorities and needs are not met due to concentration on larger or longer range objectives. We need to try to avoid scattering of our resources and lack of critical mass if possible. We need better client/ARC communications about goals and priorities. We need to perceive needs and solutions with less bias towards present NLS capabilities and possible usy competing older technologies where appropriate until the new can be brought to fuller maturity. We should be more selective of future clients to assure more bootstrapping and additive energies rather than more divergence of drains on the limited energies we

have.

028

HAVING TO FUNCTION IN AN R&D ENVIRONMENT

019

It is well known that it is very difficult to run an operational entity providing service to outside clients from within an R&D organization. This is one reason we chose TYMSHARE to run the computer service aspect of the Utility. Operational services need stability, close attention to detail, problem solution closure (i.e., all system elements to solve a whole problem need to be there), high reliability, adequate resources to meet outside commitments in timely fashion, etc. On the other hand, in an R&D environment there is need to change and experiment, and to demonstrate the feasibility of an idea to some level, but not necessarily to work out all the details etc.

020

The interests, motivations, job satisfaction, and personality types of people good in operations are not necessarily the same as for those good at R&D. ARC management and most of the people in ARC of of the R&D type which has made it very difficult for the NIC to obtain the operational conditions it has needed or even often adequate understanding of its needs at deeper levels.

021

If a person is hired into the NIC, there are strong forces making for concentration on developmental aspects rather than on operational aspects. The system on which the NIC has been based was not originally designed for NIC functions, and while it is being adapted to meet NIC needs as part of its development evolution, it is incomplete and not finished through to the level of detail necessary for NIC needs. The system is also under the pressure of constant change.

030

Failure to recognize possible differences and limitations of R&D or operational personality types and needs could result in improper hiring or assignment and to unnecessary conflicts. A healthy balance of the needs on both sides will cause creative fruitful tensions. The problem will be to maintain balance and understanding on all sides.

025

These factors make it hard to create a stable plan and to carry it out as new factors are constantly appearing on a daily and weekly basis to shift priorities or over come some new glitch. The basic initial needs for information from the NIC could probably have been carried out much more simply, effectively, and inexpensively with card files and typewriters or with simpler computer tools if the goal had not been chosen to use the NIC needs to help in the NLS bootstrapping process.

022

Another factor associated with use of a developing system has been the inadequate access and response of the computer resources for many aspects of NIC work. The difference in needs and level of attention to detail necessary for a system useful in an R&D environment and to people in other environments is often large unless the end users can understand and accept these limitations from the beginning.

023

For example, only 6-10 man years of effort were necessary to develop

the original Berkeley 940 system. However ten times that effort was expended in making a commercially viable system and even more has since been expended. The difference in required effort between building a breadboard model of a device and a commercial quality device is normally one or more magnitudes of effort. These extra efforts are not generally expended in improving the basic principles of a system, but on important operational details, such as start up procedures, packaging, manufacturing ability, use of lower cost components, reliability. For a product to be used by lots of people, one may have a man devoting full time to selection of typeballs or ribbons. An R&D organization can not usually afford such attention to detail nor is it usually necessary or appropriate. 024

Some specific instances in the NIC's experience may make the above thoughts more concrete. 054

Services were advertised that had not yet been adequately debugged. Thus, they were not workable for non-ARC users. At ARC non-workability could be easily reported, corrected or more readily forgiven. 055

Commands at times were changed in NLS without adequate (or any) notice or documentation thus leading to upsets. 056

Sites were deleted or lost without notice. 057

Links in files as part of NIC databases were unreliable as data bases changed without adequate control over change procedures. 058

Features needed by the NIC staff were not always developed on a timely basis or fully debugged. 059

NIC never knew currently what were official network members or how to reach them. 060

The answering service often was not kept up-to-date. 061

The NIC often could not provide users information about what features were operational or when exactly they would be. 062

NIC never has had sufficient staff to collect, process and make available all the information or background documentation needed. 063

Training and documentation were oriented toward general NLS use rather than just specfic NIC features. 064

NLS was highly oriented toward expert users rather than infrequent novices. 065

The catalog system was difficult to run, debug and ran slowly on our PDP-10. The catalog process of input, processing, and proofing was a heterogenous kludge of new and old methodology. 066

The NIC never received adequate accounting information to know wat its costs were. 067

The Resource Notebook effort never had adequate clerical support. 068

NIC staff were often not adequately trained to utilize NLS most effectively. 069

All of the Above are not conceptually difficult problems to solve, but each requires sconsideracle time ad attention. More than ARC had resources to deal within its NIC budget. 070

Our Utility clients will need to spend much initial attention, and will expect much help from us on issues such as terminal selection and connection and on additions of features to make the system mesh into their present systems and practices. Failure to pay attention to key details could mean failure even though the basic concepts were correct. Paying attention to too many details could drain us dry and stifle needed ongoing conceptual and system organizational advances. 031

071

CONCLUSION

In conclusion I would like to indicate that inspite of the difficulties listed above it is my feeling that ARPA and ARC have gotten their energies worth from the NIC. If I were doing the past three years over there are many things related to the NIC I would want to see done differently, but I would still want to treat the NIC as an integral part of ARC's broader goals. Based on this experience the NIC is presently under redesign and reorganizaton to meet its clients needs better while yet contributing to ARC's goals of workshop development and community support. 072

There is much experience there that should be of value to ARC's staff heavily involved in Utility operations. 073

EXPERIENCE FROM THE NIC SHOWING FACTORS CREATING INSTABILITY IN APPLICATION OPERATIONS 1

INTRODUCTION 2

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I believe we should take these risks because of the high payoff to be obtained in technology transfer and potential for bootstrapping to be gained by getting others involved who can participate in the workshop system evolution process. Further, while I feel writing papers is important to describe our experience (we should do more of it), the type of technology our work represents is qualitatively different enough from most peoples experience that it needs demonstration and considerable hands on experience for them to fully appreciate its implications and importance. 2b

We can minimize our risks if we learn as much as possible from past experience. Therefore, I write the following to encapsulate some of my views on our experience with the NIC and try to draw parallels to our new ventures. 2c

The Network Information Center (NIC) in its 2 1/2 to 3 years of operation has made, I believe, substantial contributions to ARC goals and those of the ARPANET. The latter contributions have been briefly described in our recent ARPA-IPT proposal (18368,) which I reproduce below. The former have not been adequately documented, but range from semi-intangible contributions such as shifting ARC's focus more toward outside user needs, providing an opportunity for many people to be exposed to ARC goals, and gain hands on NLS experience, providing a funding category under Networks for ARC during a period when ARPA had no explicit programs in more directly related areas to ARC's R&D, improved reliability; to providing strong development thrusts in dialog support, user interface, and the beginning of information management. The NIC has also provided valuable experience with

training, documentation, maintenance of various databases, and other augmentation methodologies 2d

SOME NIC CONTRIBUTIONS TO THE ARPANET COMMUNITY 2e

1) Stimulating interest in and use of the Network. 2e1

This role has had two aspects: assisting in marketing the ARPA Network and assisting in the development of network protocols. 2e1a

The NIC's staff has taken an active role in introducing visitors and network users (both potential and actual) to the network's resources. This has been done through distribution of various reference materials to network associates and sites, and through discussions and demonstrations for those who visit the Network Information Center. The NIC and ARC staff also devoted many man months in helping ARPA prepare for the 1972 ICCC, in order to help stimulate interest in the network. Finally, others such as NBS and MITRE have been using NLS and the NIC online Query system to demonstrate the capabilities and potentials of the network. 2e1b

This role of the NIC in marketing ARPANET technology has not been generally recognized, but has been implicitly accepted and used as part of our services. We have continued this role because we believe it has been of strategic value to ARPA. 2e1c

The other aspect of the NIC's role in this area (with support from the Augmentation Research Center staff), has been active participation in the development of network resource sharing protocols, ensuring that the needs for information exchange were adequately addressed. For example, the NIC was one of the prime contributors in the development of the Telnet and Mail protocols, and has participated in the design of the File Transfer and Graphics protocols. 2e1d

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ARC and the NIC have developed and operated the "Journal" system for the support of online and offline dialog among geographically distributed researchers. This has facilitated the development of network protocols, by providing a means to exchange technical memoranda and to

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Recent innovations have extended the dialog support to other groups of researchers working in common problem areas, such as Computer-Based Instruction, Speech Understanding Research, and Packet Radio. We have also recently implemented a mechanism that allows network users to utilize the NIC's Journal system via any site's File Transfer Protocol software, without the users having to learn or use NLS. 2e2b

3) Providing reference information, to help create a feeling of community among network developers. 2e3

The NIC's reference service is simultaneously online and offline. It is available to all users of and researchers on the network. It includes indexes to all dialog that has been transacted through the Journal, a directory of individuals and research groups using or associated with the network, and a directory ("notebook") of resources and facilities on the network. It also includes indexes and hard copy distribution of professional papers that are of interest to special interest groups of network participants. 2e3a

Use of the online reference service has been facilitated through development of a prototypical user-oriented Query language. In addition, introduction of Enterprise phone service at many locations around the network has allowed users to have toll-free conversational access to the NIC when that mode of communication was desirable. 2e3b

Use of the offline services was accomplished by distributing and maintaining a collection of NIC documents at each network site and at other locations where interest in network developments existed. 2e3c

4) Developing prototypical services. 2e4

As with virtually all other aspects of the network's technological development, the combination of the context, type, and scope of NIC's services have had few precedents. We intentionally set out to develop prototypical, evolutionary services and evaluate them and evolve them, to be of use in future information centers, as well as in the present one. 2e4a

Experience from the NIC Showing Factors Creating Instability in Application Operations

Our recent analysis of NIC services and expenditures is in keeping with this prototypical nature of the NIC. Based on this analysis, we have found that it will be beneficial to restructure our services and the framework in which we provide them. 2e4b

For example, the concept of providing a uniform level of both online and offline services to the entire network community is, we now believe, not sufficiently responsive to rapidly changing user needs. We also believe that because of the growth of the network community, it is no longer efficient to serve all users with a uniform set of products. We therefore intend to tailor the products to meet specific user groups' needs. 2e4c

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The contributions listed above to ARC and the ARPANET have not been made without considerable difficulties nor have these contributions or dificulties always been recognized properly. The NIC has not always met adequately the needs for its services, for example: while many people have grown to like and appreciate NLS, others have complained of difficulty learning to use it, our more integrated and sophisticated approach to recorded dialog support and its cost in learning time, present lack of privacy, higher computer cost leading to infrequent deliveries has led much of the online dialog in the network to take place through the simpler sendmessage facility of Tenex, and our data bases have not always been uptodate or distributed on a timely basis or necessarily in the right form. 2f

Finally, the gap between the level and quality of service that the NIC staff would have liked to provide and what they have been able to provide with the resources and environment available have created recuring internal psychological and morale difficulties. Let us look at some of the problems that the NIC has had in operating in the ARPA/ARC environment and see what implications it may have for future application operations. 2g

LACK OF NETWORK MANAGEMENT UNDERSTANDING OF NEEDS TO BE MET BY THE NIC 3

Experience from the NIC Showing Factors Creating Instability in Application Operations

The recognition for the need for some kind of information service associated with the ARPANET was made at an ARPA-IPT contractor meeting 6-7 years ago, as I understand it. What exactly the nature of the needs and what these services were to be was never clearly defined. DCE volunteered to create a NIC as he saw the value of experience to be gained in line with ARC longer range R&D goals and the importace of such a service for the ARPANET community. 3a

There has been little or no feedback or guidance from ARPA in the intervening years as to what needs they would like met at what costs. Nor has ARPA set up explicit procedures associated with new sites coming on the NET to assure that the NIC receives timely notification (or any notification for that matter) and other information it needs for its data bases. The NIC depends on the voluntary contribution of information from NET sites for its data bases and has no leverage of any kind to assure accuracy and timeliness of its information. 3b

There are two or three other groups on the ARPANET providing related and occasionally redundant information service to the NET. There has been little or no ARPA coordination of these activities from the top. The NIC has in the past and continues in the present to try to make its management and guidance needs known, although we probably need to be even more forceful in the future. 3c

The above factors, besides having the problems associated with lack of availability of information, create feelings in the NIC staff such as are we really doing something that's needed, does anyone up or out there care, etc. 3d

These management problems are not unique to the NIC, but have been common with many aspects of the ARPANET growth. The above reflections are not given as criticisms of ARPA management because I am aware of the many programs and the many facits of the ARPANET project that ARPA's small staff have to deal with and manage. 3e

These problems are are pointed out because they have existed and we can expect similar problems to exist with respect to Utility clients. Client expectations are often likely to be unclear and they may not feedback clearly their needs, nor may they or we learn early enough about the gap in our mutual expectations of each other. Even if such a gap exists and is known, various organizational and cultural barriers may make bridging the gap difficult. 3f

Even if we and the people we are in immediate contact withclearly understand our mutual goals, their management may change or come

under new forces thus creating problems for them and us. Other competing capabilities for subsets of the Utility capabilities or providing capabilities we do not provide will be coming on the commercial scene with increasing frequency in the future creating the need for our having clear plans and projections for how they fit into our framework. These new entries will cause problems for our client management in understanding our role relative to them. 3g

ARC MANAGEMENT VIEW OF THE NIC AS PART OF THE WORKSHOP BOOTSTRAPPING PROCESS 4

ARC management, including myself, have seen the importance of the NIC to ARC in terms of what the NIC can contribute to ARC's broader goals. In other words, the NIC has not been considered in and of itself. This view has led to many positive contributions to ARC and the network community, but has also created problems. The NIC has had to use NLS based technology to meet network needs and often has had to perceive these needs in NLS terms. This has led to occassional distortions of actual needs and thus failures to perceive and meet actual network needs. Perception of user needs is a difficult task even for the most objective observers and is even more difficult when observed from the other motivations. 4a

The NIC has not had the attention of management that it needs on its explicit problems nor often the quantity, quality, or timeliness of resources it has needed to do its job. The NIC has had to depend on pieces of people in many areas and thus has had difficulty in creating critical mass, follow through, and group spirit. Often NIC priorities have had to take second place to broader ARC objectives. The NIC it should also be pointed out has often altered and distorted longer range ARC objectives and caused resources to be expended on details or problems of scale not necessarily relevant to R&D objectives. 4b

Lessons to be learned here for the Utility relate to avoiding such pitfalls again where possible or at least walking into them knowing the consequences of client frustration when their priorities and needs are not met due to concentration on larger or longer range objectives. We need to try to avoid scattering of our resources and lack of critical mass if possible. We need better client/ARC communications about goals and priorities. We need to perceive needs and solutions with less bias towards present NLS capabilities and possibly use competing older technologies where appropriate until the new can be brought to fuller maturity. We should be more selective of future clients to assure more bootstrapping and additive energies rather than more divergence of drains on the limited energies we have. 4c

Experience from the NIC Showing Factors Creating Instability in Application Operations

HAVING TO FUNCTION IN AN R&D ENVIRONMENT 5

It is well known that it is very difficult to run an operational entity providing service to outside clients from within an R&D organization. This is one reason we chose TYMSHARE to run the computer service aspect of the Utility. Operational services need stability, close attention to detail, problem solution closure (i.e., all system elements to solve a whole problem need to be there), high reliability, adequate resources to meet outside commitments in timely fashion, etc. On the other hand, in an R&D environment there is need to change and experiment, and to demonstrate the feasibility of an idea to some level, but not necessarily to work out all the details etc. 5a

The interests, motivations, job satisfaction, and personality types of people good in operations are not necessarily the same as for those good at R&D. ARC management and most of the people in ARC are of the R&D type which has made it very difficult for the NIC to obtain the operational environment it needs or even often adequate understanding of its needs at deeper levels. 5b

If a person is hired into the NIC, there are strong forces making for concentration on developmental aspects rather than on operational aspects. Failure to recognize possible differences and limitations of R&D or operational personality types and needs could result in improper hiring or assignment and to unnecessary conflicts. A healthy balance of the needs on both sides will cause creative fruitful tensions. The problem will be to maintain balance and understanding on all sides. 5c

The system on which the NIC has been based was not originally designed explicitly for many NIC functions, and while it is being adapted to meet NIC needs as part of its development evolution, it is incomplete and not finished through to the level of detail necessary for many NIC needs. The system is also under the pressure of constant change. 5d

These factors make it hard to create a stable plan and to carry it out as new factors are constantly appearing on a daily and weekly basis to shift priorities or over come some new glitch. The basic initial needs for information from the NIC could probably have been carried out much more simply, effectively, and inexpensively with card files and typewriters or with simpler computer tools if the goal had not been chosen to use the NIC needs to help in the NLS bootstrapping process. 5e

Another factor associated with use of a developing system has been the inadequate access and response of the computer resources for

many aspects of NIC work. The difference in needs and level of attention to detail necessary for a system useful in an R&D environment and to people in other environments is often large unless the end users can understand and accept these limitations from the beginning. 5f

For example, only 6-10 man years of effort were necessary to develop the original Berkeley 940 system. However ten times that effort was expended in making a commercially viable version and even more has since been expended. The difference in required effort between building a breadboard model of a device and a commercial quality device is normally one or more magnitudes of effort. These extra efforts are not generally expended in improving the basic principles of a system, but on important operational details, such as start up procedures, packaging, manufacturing ability, use of lower cost components, reliability. For a product to be used by lots of people, one may have a man devoting full time to selection of typeballs or ribbons. An R&D organization can not usually afford such attention to detail nor is it usually necessary or appropriate. 5g

Some specific instances in the NIC's past experience may make the above thoughts more concrete. Many of these problems have since been solved, others still exist in one form or another and are being worked on. 5h

Services have been advertised that had not yet been adequately debugged. Thus, they were not workable for non-ARC users. At ARC non-workability could be easily reported, corrected or more readily forgiven. 5h1

Commands at times were changed in NLS without adequate (or any) notice or documentation thus leading to upsets. 5h2

Files were deleted or lost without notice. 5h3

Links in files as part of NIC databases have occassionally been unreliable as data bases changed without adequate control over change procedures. 5h4

Features needed by the NIC staff were not always developed on a timely basis or fully debugged. 5h5

NIC often has not known currently which were official network members or how to reach them. 5h6

The answering service often was not kept up-to-date. 5h7

The NIC often could not provide users information about what features were operational or when exactly they would be. 5h8

NIC never has had sufficient staff to collect, process and make available all the information or background documentation needed. 5h9

Training and documentation were oriented toward general NLS use rather than just specfic NIC features. 5h10

NLS was highly oriented toward expert users rather than infrequent novices. 5h11

The catalog system has been difficult to run, debug and runs slowly on our PDP-10. The catalog process of input, processing, and proofing was a heterogenous kludge of new and old methodology. 5h12

The Resource Notebook effort has not had adequate clerical support. 5h13

NIC staff were often not adequately trained to utilize NLS most effectively. 5h14

All of the Above are not conceptually difficult problems to solve, but each requires considerable time and attention, more than ARC had resources to deal within its NIC budget. 5i

Our Utility clients will need to spend much initial attention, and will expect much help from us on issues similar to those above such as terminal selection and connection and on additions of features to make the system mesh into their present systems and practices. Failure to pay attention to key details could mean failure even though the basic concepts were correct. Paying attention to too many details could drain us dry and stifle needed ongoing conceptual and system organizational advances. 5j

CONCLUSION 6

In conclusion I would like to indicate that inspite of the difficulties listed above it is my feeling that ARPA and ARC have gotten their energies worth from the NIC. If I were doing the past three years over there are many things related to the NIC I would want to see done differently, but I would still want to treat the NIC as an integral part of ARC's broader goals. Based on this experience the NIC is presently under redesign and reorganizaton to meet its clients needs better while yet

contributing to ARC's goals of workshop development and community support. 6a

There is much experience there that should be of value to ARC's staff heavily involved in Utility operations. 6b

RWW 26-OCT-73 10:06 19870

Experience from the NIC Showing Factors Creating Instability in Application Operations

(J19870) 26-OCT-73 10:06; Title: Author(s): Richard W. Watson/RWW; Distribution: /SRI-ARC; Sub-Collections: SRI-ARC SRI-ARC; Clerk: RWW; Origin: <WATSON>EXPERIENCE.NLS;7, 26-OCT-73 10:03 RWW ;

Request for Copy of Video Tape

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

Ms. Pam Knight
Annenberg School of Communication
University of Southern California
Los Angeles, CA 90007

Dear Pam:

I would like a copy of the video tape of Tom Martin's tutorial talk given at the SIG-UOI session held at the ASIS meeting held on Monday, 22 October 1973. 1

Jim Carlisle suggested that I contact you. Enclosed is a one hour Sony 1/2 inch blank tape. I intend to show the tape to others at the Stanford Research Institute Augmentation Research Center (SRI-ARC). I would also appreciate receiving a list of other tapes of system demonstrations which may also be available. 2

Thank you for your efforts. 3

Sincerely,

Harvey G. Lehtman
Augmentation Research Center

Request for Copy of Video Tape

(J19871) 26-OCT-73 12:57; Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: /RWW JCN; Sub-Collections: SRI-ARC; Clerk: HGL;
Origin: <LEHTMAN>LETTER.NLS;1, 26-OCT-73 12:34 HGL ;

JHB 26-OCT-73 10:16 19872

Dirk, Do you have a copy of OVERVIEW OF NLS (userguides,12202,). It looks like it might be interesting, but is off line. With dsk the way it is I dont want to bring it back. Could Xerox a copy.... 1

(J19872) 26-OCT-73 10:16; Title: Author(s): James H. Bair/JHB;
Distribution: /DVN; Sub-Collections: SRI-ARC; Clerk: JHB;

borden letter to kennedy

117E. McCormick

State College, Pa.

10-20-73

Dr. Edward Kennedy

RADC/ISIM

Griffiss AFB, NY

Dear Ed:

I've been thinking about the meeting the other day and decided to write and make it clearer what I can do. In looking at the process of evaluation as I did, I think I established some fairly good steps by which one can hope to accomplish what he wants to. Now, I see no way that I can help in finding out what the policy statements are, but I might be of some help in setting up the objectives, and I'm sure I could help in operationalizing these objectives into measurable behaviors. We could then set up the evaluative procedures for evaluating the remaining facets of the program (effect, quality, worth and efficiency). If you think I could be of any assistance, I would be more than happy to work out some arrangement for it. Under the Post-Doctoral program I was given $100 a day from which I paid my own expenses. When I traveled to Rome this included my travel time. I was expected to put in three days a month in Rome but I was also expected to do most of my work in State College. We also decided that if I could get a terminal here (which I can, now) I would put down equivalent days for the cost of the machine and phoneline. My last contract was for 55 days (1/4 man year I think). That could be stretched over 10 months and carry us through Phase II. Or I could come up for special times on a straight consultants fee - $100 a day plus expenses. Anyway, I thought I should let you know I would be glad to work with you on Phase II. I can spend up to 4 days a month away from Penn State (one day a week) on consulting.

One other thing, I talked to Jim yesterday and he said something

to the effect that Anna had put the last of my report first in the system. Maybe that should be edited by someone.

Well, let me know how things are going.

Cordially,

George A. Borden

borden letter to kennedy

(J19873) 26-OCT-73 11:20; Title: Author(s): Edmund J. Kennedy/EJK; Distribution: /DLS JLM RFI EJK FJT; Sub-Collections: RADC; Clerk: EJK; Origin: <KENNEDY>BORDENLETTER.NLS;1, 26-OCT-73 10:36 EJK ;

19873 Distribution 1

Duane L. Stone, John L. McNamara, Rocco F. Iuorno, Edmund J. Kennedy, Frank J. Tomaini, 1a

Adjunct to RWW's memo 19870

In his paper "Experience from the NIC Showing Factors Creating Instability in Application Operations" (LJOURNAL, 19870, 1:W), Dick Watson has made a good critique of some of the problems we have faced, and I basically agree with much of what he has said. However, there are a few areas on which I would like to elaborate further and a couple of instances where I see the problem from a different viewpoint. The following remarks, then, are by way of rebuttal to his remarks and are presented not in any way as a criticism of where we are or what we have done, but rather as input to a dialog of where we are headed now. It is my opinion that the NIC, ARC, and ARPA are all at a crossroads now. Dick has recognized this and has laid the groundwork for a worthwhile discussion of future thrust. 1

APOLOGY AND CRITICISM 2

I do not think the NIC or ARC needs to apologize for where it is at or what we have done in the past. We have taken on projects encompassing some of the most far-reaching concepts of information and communication with a small group and limited funds and equipment, and have still maintained a reputation for innovation. We have made mistakes and we have also produced good results. 2a

On the other hand, I do not think we should trade self-flagellation for self-adulation because this approach closes minds and avenues that need to be open in order to do objective research. 2b

In our quest for direction we must constantly have our antennae tuned to our failures as well as our successes with an objectivity that lets us learn from both. (Criticism is a bitter pill but, if taken as directed, it can cure the disease.) It is my gut feeling that all of us at NIC and ARC need to study the process of evaluation and objectivity in the face of failures and successes, because if we are on the forefront we will always be faced with both. We need to develop a good feedback loop for integrating criticism rather than ignoring it or becoming defensive about it. We must realize that considering people 'stupid' that do not understand our system or who honestly disagree with, it is a cop out. Any system we design should be useful by a range of intellects, or we have probably missed the point. 2c

SPECIFIC NIC OPERATING PROBLEMS 3

Dick has outlined several of the problems of operating a NIC within the ARC framework. These are the factors that seem to me to cause the most operating problems for the NIC. 3a

- Lack of integration of the NIC into the framework of ARC. We are frequently looked upon as a nuisance rather than as an

integral part of the ARC R & D effort. There are sometimes implications that ARC is solving the 'real' problems while NIC problems are largely manufactured, when in many instances just the reverse is true. NIC is designing for day to day user interface. This experience could be used to greater advantage in our total R & D effort if the NIC were viewed as an R & D 'lab'. 3a1

- Lack of committed programming support. In the year I have been here NIC programming needs have rarely taken precedence over ARC programming work. NIC has to wait at the end of the line for programming help and frequently has little control over whether the final program suits NIC needs. There seems to be a feeling that NIC needs for programming are trivial and that once a program is written it is finished and not subject to change or improvement. In some instances system designs for NIC applications are altered to fit ARC interests so that they are barely adequate to meet the original intended use. 3a2

- Lack of clerical help. Any information center has a tremendous amount of record keeping and detail involved. References do not walk into the computer and questions do not answer themselves. It is my feeling that many are not aware of the amount of detail involved in maintaining the NIC. I think our current effort at producing the HELP database points out that these efforts are intricate and not trivial and that there is a tremendous amount of maintenance after the design is initialized. 3a3

- Implementation of a service before we have a solid system to handle the service. This results in building houses-of-cards based on faulty foundations. Again systems should be designed for the general case with bootstrapping capability as a feature of the design. Program designs have often locked the NIC into faulty practices because the design was specific and not global 3a4

- Lack of stated direction. NIC has tried in some instances to be everything to everybody which, of course, we cannot accomplish well. My feeling is that we should provide one good service then add to this to have two, etc., rather than attempt to provide all services at once. We should state what we provide and not make numerous exceptions. 3a5

- Lack of direction from ARPA. If ARPA does not provide direction for the NIC, the NIC should outline the direction it thinks would be useful to the ARPAnet, and then press ARPA management for support and direction for whatever scheme is decided upon. 3a6

Adjunct to RWW's memo 19870

- Lack of space on the current system for the type of actvities that the Nic is trying to accomplish. If our own system is to remain small, the NIC should utilize the resources of other systems. (This approach presents a whole area of research in itself.) NIC people have the reputation for being system 'hogs' when in fact they take up relatively little space to do the jobs they are trying to do. 3a7

- Lack of training. NIC people often need to know many diverse aspects of system use and at the same time they are not usually programmers or mathematicians. An inhouse training program is badly needed to avoid the shoemaker's children syndrome, 3a8

As I mentioned, Dick has touched on all of these problems. I have repeated them to emphasize that we are in agreement as to what some of the basic problems are. 3b

THE NIC AS A KNOWLEDGE WORKSHOP 4

The NIC is one type of 'knowledge workshop' that we refer to frequently, but only recently (mostly due to outside pressures and competition) has our research at ARC begun to reflect the lessons learned through the NIC workshop. One of these, in my opinion, is that a Network Information Center should be a network COMMUNITY effort both in terms of resources and information. We cannot provide all the information ourselves, nor can our machine provide all the computer resources needed. What we CAN provide is co-ordination and design for a network information system. We have been too provincial, as have many other sites, in our use of the Network, but the NIC could give us the opportunity to bridge this gap and create a whole new research area of resource sharing and information retrieval. However, this will happen only if the NIC receives adequate recognition and support from within, and its members are given equal footing within the framework of ARC. NIC needs to stop beng a fostor child and be fully adopted by both ARPA and ARC. 4a

At the ASIS meeting Davis McCarn mentioned that in the near future there would probably be an oligarchy of a few large information networks. The ARPAnet could very well be one of these and at the same time be a window whereby users could interface with the other networks. The NIC (or a similar activity) could function as the traffic control center and interpreter for this internetwork interchange. 4b

This is heady research material and opens doors for funding and a 'lab' , if you will, in which ARC can make some very exciting contributions and implement some of our researcher's most unique ideas. 4c

Adjunct to RWW's memo 19870

ARC has emphasized tools for individuals, or knowledge workers, primarily based on the premise (and rightly so) that the knowledge will come FROM the individual. I feel we should develop further along the lines of how knowledge comes TO an individual with the goal of a marriage between the two concepts that leads to an easy to/from flow of knowledge, and hopefully to a synergism, for any given individual. We also need to keep in mind that if 10 or 20 individuals combine their knowledge, a fairly sizable information system begins to evolve, therefore, there is in practice no such thing as a small information system. 4d

Up until now systems have emphasized the output of one knowledge worker or have amassed the work of scores, but few systems have come to grips with the problem of easy interchange between the two so that an individual is able to build, tear-down, and rebuild from a combination of his own input matched against or added to the vast input of others. This is where the excitement is, this is where the payoff lies, and this is my view of Doug's dream of a knowledge workshop. 4e

Implementing this means designing intricate, complex, and interwoven systems that will challenge the capabilities of our best designers. Only within the network framework can such a system evolve. The complexity of the system, however, should not be a concern of the knowledge worker. (A whole new psychology of learning lies in this area alone.) Rather a system should be designed so that a knowledge worker can largely ignore its complexity and concentrate his effort on the complexity of the knowledge that intrigues him. 4f

Adjunct to RWW's memo 19870

(J19874) 26-OCT-73 14:01; Title: Author(s): Elizabeth J. (Jake) Feinler/JAKE; Distribution: /SRI-ARC; Sub-Collections: NIC SRI-ARC; Clerk: JAKE;
Origin: <FEINLER>DICK-REBUTTAL.NLS;6, 26-OCT-73 10:18 JAKE ;

ASIS 1973 Convention-- A Persoal Report

Introduction 1

I attended the ASIS convention in Los Angeles from Sunday, 21 October, through Wednesday, 24 October. (I left one day early.) The conference was useful to me in many ways: I was able to make contact with several people with whom it will be valuable to interact in the future, for what they can contribute in the develpopment of retrieval systems at ARC and connection to other retrieval systems and also in the study of user response to our system and the design versions of NLS with cleaner user interfaces. 1a

While the sessions themselves fit the usual model for conferences of this sort with the generally traditional mode of dull lecture in hotel ballroom followed by uninspired questions, I picked up some worthwhile information even in these formal sessions. The Proceedings consists of short "epitomes" of papers. It is XDOC (18901,). 1b

Several trends were apparent to me: 1c

A large number of the people who attended the ASIS convention were users of information systems who had been hurt in the past five years by prototypical systems which were marketed as finished and complete answers to the librarian's dreams. While these people were not sophisticated system designers, they had become wary of promises and reticent about trying new systems. They seemed to feel that system designers reaaly didn't care about them. 1c1

A number of systems are widely available for bibliographic retrieval over data bases which have become very large. These are not Management Information Systems of the sort in which we at ARC would be most interested, yet in many ways the user interfaces could be similar. 1c2

A small number of these systems (or related systems) have achieved prominent places in the marketplace primarily because of the size of the database available. These include DIALOG, BASIS, MEDLINE, a system at SDC. The user interfaces (command languages, etc.) of some of these systems are terrible and it is thus easy for me to understand the reaction of some of the users. It is difficult to imagine large commercial enterprises doing much to modify systems which do sell well already; it is also difficult to imagine members of this "information oligarchy" getting together to standardize their systems, a notion which came up several times at the conference. 1c2a

A number of "research" systems (which are used in real retrieval situations nonetheless) have also been developed at universites. See Tom Martin's paper for a representative list. 1c2b

In the absence of a homogeneous network of information systems, some researchers (e.g., Marcus at MIT) have suggested the development of a core lamguage/system through which a user could interact with a number of heterogeneous available retrieval systems. 1c2c

Del Frate at NASA-Goddard points out the reluctance of end users of information to use the currently available systems without "Information Specialist" intervention primarily because of difficulties in understanding data base structure and the time necessary to become proficient in the use of the command language. 1c2d

Information systems have in the past been designed at opposite ends of a user-interface spectrum: systems oriented toward information specialists (with a rich and sometimes obscure user interface having little tutorial feedback) and systems oriented to the end user of the information (with an interface with none of the richness and power, but also none of the difficulties.) There is a need for systems which would bridge the gap. The end user of information gains much from the "renegotiaton" which direct interaction provides. 1c2e

A group of system designers seemed to be developing an interest in the problems of the users. These designers (who seemed to gravitate to the Special Interest Group on User Online interaction-- SIG/UOI) felt the time was ripe for user interface studies (measurements of user interaction to lead to cleaner interface design) and for the develpment of some standards for retrieval systems and, by extension, for user systems in general. 1c3

Large retrieval systems have proven themselves. The time has come now for study and measurement, standards, clean-up, and consolidation. The designers in the field are prime prospects for a system development community. 1c4

Samuelson mentioned the need for prototypical communities of system developers. 1c4a

Session description 2

Wired City 2a

I attended a session on the "wired city". The discussion concerned the use of new media (cable TV, computer systems, etc.) to link together communities (both geographic and special interest) into more effective orgamisms. 2a1

Disussants included several Canadians and Americans (including representatives of Bell Canada) Who had concerned themselves with online conferencing, biomedical two way communication systems, and online polling. 2a2

Chairman: John Batteke, Canadian Centre for Inland Waters Environmet of Canada 2a2a

Donald Atkinson, Business Planning Group, Bell Canada, Montreal 2a2b

Wooster, Biomedical communications 2a2c

Harold Sackman, Rand Corporation 2a2d

I did not feel the possibilities of the developing media were pushed as far as they could have been; the usual truisms came up. 2a3

Comparative Analysis of Interactive Bibliographic Systems 2b

This SIG/UOI tutorial by Tom Martin of Stanford was for me the most interesting session of the coference. He discussed an NSF project which he and Ed Parker are doing under an NSF grant to study and compare eleven interactive information retrieval systems. A copy of a paper describing the work in progress is XDOC (18890,). A video tape of his session has been requested from the Annenberg School of Communiations at USC. Tapes of the various systems are also available. Descriptions of tapes of other systems are XDOC (18891,), (18894,), (18895,), (18896,), (18898,), and (18900,). The current SIG/UOI newsletter (with a bibliography) is (18888,). I have also made arrangements to send a short tapes demonstration of NLS for their library. 2b1

I also made contact at this session with Jim Carlisle of Yale Who I feel would be a valuable person to keep up to date on the state of NLS. I have made arrangements to send him a copy of our tape. Both he and Tom Martin will be at USC-Annenberg school in the near future. 2b2

Some observations: 2b3

System designers do not adequately monitor their users.

While every designer had attitudes concerning how his system is used, few had hard facts. 2b3a

Systems should be more responsive to the user. Interfaces should be oriented to the end user (though this is often currently not the case) with appropriate tutorial material and possible mode variations for novices and experts. The richness and power of the languages should not be truncated. 2b3b

The training system and documentation (online and otherwise) available to users are as imporatnt as any other part of the system and perhaps more so. There should be a gradual building of skills: teach the simpler parts of a system-- those simple tools which a person may use to get by, let her use them for a while, then go on to the next phase of the system. Instructors should live with a user group for several days to make sure the system fits into the needs of that particular group. 2b3c

Designers should be open to the possibility that their system is wrong, not the users. (I noticed that John Rothman, in describing the New York Times information bank, speaks about the "mistakes" mad by users who assume there is Boolean logic first level searches wthout considering the possibility that the design was wrong in only permitting Boolean compinations of sets!) 2b3d

Tutorial information is not being used much because they generally do not attack the problems of the user. Moreover, rather than dealing with the need for tutorials, designers more often end up simplifying the user interface. 2b3e

There should be a provision for continuing education concerning advanced features, difficulties, refreshers; online tests (games?) should be available. 2b3f

Words like "Illegal" should not be fed back to the user! 2b3g

Knowledge of the data base is essential for reasonable use of the system. (Davis McCarn of MEDLINE pointed out ip another session that the training for information specialist users of the MEDLINE system includes several weeks training in the structure of their data base.) 2b3h

There should be a minimal set of features which every information retrieval system should contain. At the Stanford workshop, matrices of system features for the analyzed systems were developed. Designers someties discovered that almost every other system under discussion

had a particular feature which their system lacked. After an intial reaction simialr to "We don't really need it for our purposes", they often discovered an oversight in their design. 2b3i

Epitome Session of SIG/UOI 2c

ADMIRE - David Thompson, Dale Seastrom, Stanford. 2c1

A system with assistive displays. Tree structures displayed one level deep for selection by light pen. Discussed various ways of portraying the information (e.g., highlighting items related to entries selected earlier in the session, reoirdering, only giving selected display, etc.) I found the system somewhat restrictive. 2c1a

Computer-User Interaction: Does It Exist?-- Adelaide Del Frate, Jane Riddle, NASA- Goddard 2c2

Discussion of second report on use of RECON system at NASA. (Earlier report was discussed in George White's paper on "Emerging Technological Applications in Information Retrieval" XDOC (18871,). Current results are as follows: 2/3 of the use of the system is through an intermediary. The 1/3 of use by the end user only does simple first level search. In the earlier study, there were few repeat users of the system, but this is increasing. RECON was used for exhaustive searches at the beginning of projects. These sorts of information needs only occured a few times during the year and end users felt it was not learning to use such a "difficult" system for such infrequent use. This was bad because they don't get the synergistic benefits of heing able to renegotiate queries with the system and because their feedback to the designers was lacking in the formative years of the system. 2c2a

State of the Art in Fast Information Retrieval System Technology (FIRST)-- Robert Landau, Science Information Association 2c3

Data in XDOC (18893,). Costs going down, Available data going up. Standards needed. 2c3a

Other talks on DIALOG 2c4

Network Interconnection Panel 2d

George Hicken, National Security Agency-- Network for Sharing among government agencies 2d1

Common Online Intelligience System COINS. An interagency network of shared databases. batch interrogation of 40 files (750 M characters) in star network. (If central processor goes down, so does the network.) Not a distributed network as is ARPA. Data shared, not computing resources. No attempt made to get around the fact that there are three different retrieval languages: users must learn them all. 2d1a

Richard Marcus, MIT-- Translating Computer Interface for a Network of Heterogeneous Interactive Information Retrieval Systems. (XDOC (18892,) 2d2

Interesting talk about an effort to interface several neterogeneous retrieval systems through the ARPA network by creating interface components: 2d2a

Communications-- ARPA network to fake out TIP into thinking other computers (or networks) are terminals 2d2a1

Command language-- Break out functions so that individual system sommands are translated into a comman language then into the destination language. If there are n systems, this mode only requires 2n translation modules rather than than n**2. The translations are rough currently because there is not a common set of functions, though there is a substantial overlap. 2d2a2

Data structure-- similar situation to the command language component 2d2a3

Indexing vocabulary translation-- Create Master index and thesaurus. 2d2a4

Commands currently available are SELECT (systemfor searching), SPEAK (in particular language-- specific system or common), FIND, PRINT (online or into a file.) 2d2b

Al De Lucia, RADC-- Use of Minis to relieve saturated main frames in networks. 2d3

Minis used to handle communications as well as to handle I/O functions . Sounds like propoosal we have to get PDP11 to handle terminal interaction. They use 11's too. 2d3a

Kjell Samuelson, Royal Institute of Technology, Stockholm, Sweden-- Planning for Global Interaction 2d4

There should be networks between countries, boh information

rich and poor. Prototypical communities of system developers over networks should be set up. 2d4a

John Rothman-- New York Times Information Bank 2e

General discussion of the Times information bank and the analysis which lead to its implementation. 2e1

SIG/UOI Technical Meeting-- Man-Computer Interface: Bottleneck or Breakthroughs in the 70's (much of the discussion was found in the earlier 1971 workshop proceedings "Interactive Bibliographic Research: The User/Computer Interface", XDOC (9474,).) 2f

Pauline Atherton, Syracuse University-- Standards needed for technical terms within the field as well as for the systems themselves. 2f1

John Bennett, IBM San Jose-- Discussion of "frameworks" for user interaction in two diverse systems, bibliographic search and geographic analysis. Bibliography and abstract in XDOC (18889,). 2f2

Siegfried Treu, University of Pittsburgh, NBS-- Meausrements of user interaction, analysis of user functions and their mappings into system commands. In addition to measuring systems response time, should meausre user response time-- input times, command frequency counnts, delays, etc. 2f3

John Rothman, NY Times-- Live system monitor available to users by special key on terminal for help at any time. 2f4

Davis McCarn, MEDLINE-- Searches are not done by the end user in spite of the system designers wishes. Information specialists seem to get the impression from the training that it is not a toy for the end user! Default modes of a system should be simple, but sophisticated features sould be present. 2f5

Exhibits 2g

There have been a few large commercial systems available (along with their relatives) and they were on exhibit. These included DIALOG, BASIS, an SDC system. I felt the interface was extremely limited and obscure, but the DBs available are very large for citation retrieval. IBM is introducing a system called STAIRS (XDOC (18887,)) which seems to be relatively complete with a typical (not so good) user interface. All of these systems have complicated updatating (for fast retrieval, inversions are made.) Because of the past investment and the

future profits, we just may see these imperfect systems entrenched in the market even more in the future. 2g1

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