LPD 3-SEP-72 22:56 11665

Network experience for August 1972

also distributed to Dave Walden via SNDMSG.

LPD 3-SEP-72 22:56 11665

Network experience for August 1972

This is a log of my experience with the ARPANET for the month of August, 1972, attempting to work on a LISP program on BBN-TENEX by dialing into the AMES-TIP. 1

8/1, 1030: TIP down; BBN up; used TELNET thru SRI-ARC, connectin hung up presumably because of "lost allocate" bug. 2

8/1, 2100: TIP said DEAD REFUSED; BBN up but IMP or IMP interface down. 3

8/2, 0900: all ok. 4

8/2, 1600: in through TIP, connection hung up; couldn't get in again thru TIP (don't remember why); BBN up. 5

8/2, 2130: TIP said DEAD REFUSED; BBN up, but NETSTAT said TIP was down 6

8/3, 1900: all ok. 7

8/3, 2300: all ok. 8

8/4, 0900: dialup line 965-0770 gave carrier, but when I put the phone in the coupler the power light went off for a few seconds, then lost carrier; other lines apparently ok; TIP said TIMEOUT; BBN "momentarily" down. 9

8/4, 2215: all ok. 10

8/5, 1700: in through SU-AI (didn't try TIP), all ok. 11

8/7, 0900: BBN down, disk and drum trouble. 12

8/7, 2100: TIP gave carrier but no response to initial E; BBN up, NETSTAT said TIP not up. 13

8/7, 2200: in through TIP, then connection hung up. 14

8/7, 2320: TIP said DEAD while I was typing; BBN still up, NETSTAT said TIP was up. 15

8/8, 0000: BBN crashed. 16

8/10, 2200: ok through TIP for about 10 minutes, then a long (>20 sec) wait for output, then connection hung up (based on no output for >2 min). 17

8/11, 2130: all ok. 18

Network experience for August 1972

8/11, 2200: TIP died (no response to any input). 19

8/12, 1230: all ok. 20

8/12, 2230: BBN down - I think there was a bad lightning storm. 21

8/13, all day: BBN still down, core trouble. 22

8/14, 0930: line 0770 failed as on 8/4, other lines ok; TIP said TIMEOUT; BBN up. 23

8/14, 1000: called NCC, then got in through TIP. 24

8/15, 0900: connection hung up while I was typing the LOGIN parameters for BBN. 25

8/16, 1500: all ok. 26

8/16, 1830: all ok. 27

8/16, 2000: connection hung up after <5 min, then several times more; BBN up (dialed direct). 28

8/17, 1000: all ok. 29

8/17, 1400: connection hung up once. 30

8/17, 1900: all ok. 31

8/18, 1030: all ok. 32

8/19, 1800: line 0771 echoed a consistent garbage character to E (as if it had gotten stuck on the wrong speed), 0772 ok. 33

8/19, 2100: same. 34

8/20: all ok. 35

8/21: TIP down, BBN up. 36

8/22, 1200: all ok. 37

8/22, 2330: BBN down. 38

8/23, 0930, 1430, ...: all ok. 39

8/24, 0030: all ok. 40

Network experience for August 1972

8/26: all ok. 41

8/27, 1330: all ok. 42

8/29, 0930: connection hung. 43

8/29, 2000-2230: BBN down. 44

8/30, 1200: all ok. 45

8/31, ----: all ok. 46

8/31, 2330: TIP down, BBN up. 47

The above problems fall into three classes, which I rank in order of decreasing frustration: 48

1) TENEX down. This makes it impossible to do any work. 48a

2) TIP down, or TENEX NET interface malfunctioning. This requires a long-distance call to do work. This seems to be the most frequent type of problem. While expensive, this type of connection produces so much better echo and output response that I actually prefer to work in this mode. 48b

3) Lost connection. While annoying, this problem usually does not destroy any work since TENEX gives about 5 minutes' grace before killing a job whose network connection has gone away, which is enough time to dial up long-distance and regain control. 48c

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Network experience for August 1972

(J11665) 3-SEP-72 22:56; Title: Author(s): L. Peter Deutsch/LPD;
Distribution: Warren Teitelman, Steve D. Crocker/WT SDC2; Keywords:
ARPANET; Sub-Collections: NIC; Clerk: LPD;
Origin: <DEUTSCH>NETLOG.NLS;5, 3-SEP-72 22:51 LPD ;

AAM 4-SEP-72 8:51 11666

Information on TIP for ICCC

During the meeting at BBN on August 31 and September 1, I inadvertently gave you all some incorrect information regarding the use of the ICCC TIP. I also was unable, at that time, to answer some specific questions. This note is to correct and update the information I gave you then. 1

1 - The commands 1a

@PHYSICAL HALFDUPLEX 1a1

@PHYSICAL FULLDUPLEX 1a2

do not and will not exist in the ICCC TIP. 1b

2 - The full complement of echo-control commands which do now, and will continue to, exist in the ICCC TIP are: 1c

@ECHO HALFDUPLEX 1c1

Tells the TIP that the terminal is a halfduplex terminal 1c1a

@ECHO ALL 1c2

Tells the TIP to echo all the characters typed by the user 1c2a

@ECHO NONE 1c3

Tells the TIP to echo TIP commands but not to echo data which is passed to the network 1c3a

@ECHO LOCAL 1c4

Tells the TIP to switch to ECHO ALL mode and, in addition, to send the TELNET control signal indicating "user-end echoing" over the currently open TELNET connection (if any). 1c4a

@ECHO REMOTE 1c5

Tells the TIP to switch to ECHO NONE mode and, in addition, to send the TELNET control signal indicating "server-end echoing" over the currently open TELNET connection (if any). 1c5a

3 - The TIP command 1d

@TRANSMIT ON LINEFEED 1d1

is fixed; thus this is the only TIP command a user should need when talking to line-at-a-time systems like Multics. The effect of this command is canceled by the command 1e

@TRANSMIT EVERY 0 (zero) 1e1

which should put the terminal into a state suitable for talking to character-at-a-time systems like TENEX. 1f

4 - I have conveyed the strong feeling of the group about a "reinitialize this terminal" command to Dave Walden. Since there appear to be NO other changes required for the ICCC TIP, he believes that this one can be implemented in time for the show. I will provide more details as soon as possible. 1g

5 - Remember that TIPs with version numbers less than 230 may not work exactly as described above. (The version number of a TIP is printed as part of the "HELLO" message.) 1h

AAM 4-SEP-72 8:51 11666

Information on TIP for ICCC

(J11666) 4-SEP-72 8:51; Title: Author(s): Alex A. McKenzie/AAM; Distribution: Abhay K. Bhushan, Robert D. Bressler, Michael A. Padlipsky, William W. Plummer, Robert E. Kahn, Richard W. Watson, Peggy M. Karp, Robert H. Thomas, James E. (Jim) White, Dr. Vinton G. Cerf, Robert M. Metcalfe, Albert Vezza, Diane C. Roberts, Alex A. McKenzie, David C. Walden/AKB XIC3 DCW3; Sub-Collections: NIC XIC3; Clerk: AAM;

AAM 4-SEP-72 13:22 11668

Facilitator data for Jon Postel

Re your convesation with Dick Gans (KJOURNAL, 11531, 1:w) the TIP does not currently support any modems other than Bell 103 or equivalent. The 103 is restricted to operation at 300 baud or less. This is not to say that other modems will not be supported in the future but there is currently no implementation schedule for others. 1

AAM 4-SEP-72 13:22 11668

Facilitator data for Jon Postel

(J11668) 4-SEP-72 13:22; Title: Author(s): Alex A. McKenzie/AAM;
Distribution: Jonathan B. Postel/JBP; Sub-Collections: NIC; Clerk: AAM;

LPD 5-SEP-72 1:02 11669

An unbelievable bug in L10

PLEASE try and get this fixed SOON.

LPD 5-SEP-72 1:02 11669

An unbelievable bug in L10

Apparently the opcode table L10 uses for machine instructions has the wrong value for TRNE -- 603 (TLNE) instead of 602. How is it possible that no one has noticed this? What can I do to get it fixed? HELP 1

LPD 5-SEP-72 1:02 11669

An unbelievable bug in L10

(J11669) 5-SEP-72 1:02; Title: Author(s): L. Peter Deutsch/LPD; Distribution: William H. Paxton, Harvey G. Lehtman, L. Peter Deutsch/WHP HGL LPD; Keywords: L10; Sub-Collections: NIC; Clerk: LPD;

LPD 5-SEP-72 2:14 11670

L10 is even worse off than I thought

see 11669. URGENT

LPD 5-SEP-72 2:14 11670

L10 is even worse off than I thought

Things are worse than I thought. ALL THE OPCODES 6x2 ARE MISTAKENLY DEFINED AS THE CORRESPONDING 6x3 OPCODE, e.g. TRNE as TLNE, TDNE as TSNE, etc. The fault is plainly visible in <PAXTON>OPS. Someone will have to make a new L10 ASAP. 1

LPD 5-SEP-72 2:14 11670

L10 is even worse off than I thought

(J11670) 5-SEP-72 2:14; Title: Author(s): L. Peter Deutsch/LPD; Distribution: Harvey G. Lehtman, William H. Paxton/HGL WHP; Keywords: L10; Sub-Collections: NIC; Clerk: LPD;

JMP 5-SEP-72 13:38 11672

A SAMPLE JOURNAL SESSION

ISNT THIS FUN

JMP 5-SEP-72 13:38 11672

A SAMPLE JOURNAL SESSION

A MESSAGE 1

JMP 5-SEP-72 13:38 11672

A SAMPLE JOURNAL SESSION

(J11672) 5-SEP-72 13:38; Title: Author(s): James M. Pepin/JMP; Distribution: James M. Pepin/JMP; Keywords: AL; Sub-Collections: NIC; Clerk: JMP;

JMP 5-SEP-72 13:50 11673

A SAMPLE JOURNAL SESSION

ISN'T THIS FUN

JMP 5-SEP-72 13:50 11673

A SAMPLE JOURNAL SESSION

THIS IS A SAMPLE MESSAGE 1

JMP 5-SEP-72 13:50 11673

A SAMPLE JOURNAL SESSION

(J11673) 5-SEP-72 13:50; Title: Author(s): James M. Pepin/JMP; Distribution: James M. Pepin, James M. Pepin/JMP JMP; Keywords: TEST SAMPLE; Sub-Collections: NIC; Clerk: JMP;

JRP 5-SEP-72 14:26 11674

quickie

i'll be gone this week. (5 sept on)

if you want to reach me i will be in the bay area and you can leave a message with my parents at 408-243-0261. at this point the file transfer stuff is not workwng. the bug has been found but i dont have time to fix it before my vacation starts. sorry if that creates a problem.

ill send another message when i return.

john 1

JRP 5-SEP-72 14:26 11674

quickie

(J11674) 5-SEP-72 14:26; Title: Author(s): John R. Pickens/JRP;
Distribution: William P. Jones/WPJ; Sub-Collections: NIC; Clerk: JRP;

ARCG 5-SEP-72 14:46 11675

Qestion on AMES TIP Host Number

Alex, Question I'm using the AMES TIP to pracice with and note that it is using version 161 of the TIP system, is this correct as it will not accept commands such as @L <host number> 1

ARCG 5-SEP-72 14:46 11675

Qestion on AMES TIP Host Number

(J11675) 5-SEP-72 14:46; Title: Author(s): Guest O. ARC/ARCG; Distribution: Alex A. McKenzie/AAM; Sub-Collections: SRI-ARC; Clerk: ARCG;

NDM 6-SEP-72 16:54 11717

The ARC Physical Environment special interest group is movin' out

you may want to read this as a warning

NDM 6-SEP-72 16:54 11717

The ARC Physical Environment special interest group is movin' out

The ARC Physical Environment special interest group met Tuesday afternoon, Sept 5 see --kjournal, 11071, 1). 1

In attendence were NDM, HGJ, JBN, WJB, and JCP. 1a

Six problem areas were mentioned: 2

the general appearance of ARC, 2a

the distracting console area and 2b

it's ugly, 2b1

it's noisy, 2b2

it's uncomfortable 2b3

e.g. the chairs 2b3a

the conference room, 2c

the noise from the line printer 2c1

the need for a lounge, 2d

the need for a library--reading area, 2e

the need for regular housecleaning 2f

(e.g. picking up papers from the consoles). 2f1

We would like to be an action special interest group. We don't want to sit around talking and planning. 3

We will devote each meeting to a specific problem. 3a

Well before each meeting, we will send out an all-ARC journal message announcing the subject of the meeting. 3b

We will collect ideas at the meeting, assumming that anyone with an interest in the subject will be there, then just go out and do it (if possible). 3c

Details mentioned: 4

The Parsley room may, in the near future, become somebody's office, so it should not be part of our plans. 4a

Instead, the console area and/or the cave could be reorganized to give us more space. 4a1

Dirk has investigated the problem of the line printer noise. 4b

A solution must be pushed; we should take on that job. 4b1

Hanging plants would be nice. 4c

There is a possibility that we could have a few hundred dollars to work with, if our plans are approved. 4d

An example of when we can't just go out and do things is when money is involved. 4d1

HGL 6-SEP-72 21:11 11718

L10 Opcode definitions repaired as requested

L10 was fixed by Bill yesterday. Opcodes have been corrected. 1

HGL 6-SEP-72 21:11 11718

L10 Opcode definitions repaired as requested

(J11718) 6-SEP-72 21:11; Title: Author(s): Harvey G. Lehtman/HGL; Distribution: L. Peter Deutsch, William H. Paxton, Charles H. Irby, Don I. Andrews/LPD WHP CHI DIA; Sub-Collections: SRI-ARC; Clerk: HGL;

HGL 6-SEP-72 21:14 11719

NEW NLS

There is a new NLS. Jump to link should no longer loop, DEX repeats should function as promised, compilers other than those in subsys may be used for automatic compilations. There are a few other minor changes. As usual, let us know immediately if there are any problems. Backup is OLDNLS.sav;343. 1

NEW NLS

(J11719) 6-SEP-72 21:14; Title: Author(s): Harvey G. Lehtman/HGL; Distribution: Guest O. ARC, Elizabeth J. Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, Ralph Prather, James E. (Jim) White, Jacques F. Vallee, Diane S. Kaye, Paul Rech, Michael D. Kudlick, Don Limuti, Ferg R. Ferguson, Linda L. Lane, Marilyn F. Auerbach, Walt Bass, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Cindy Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. (Ken) Victor, Smokey C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: HGL;

RMM 7-SEP-72 13:00 11720

Scenario Staffing Report

I am pleased to announce that NLS now
greets me with "Good afternoon Bob".

The scenario staffer (RMM,VGC,PMK) have met and organized
a system around five regional managers:
(1) Bhushan for MIT with Padlipsky,
(2) Powell for MITRE and RAND with Melvin,
(3) Ollikainen for UCLA with Postel,
(4) Watson for NIC with White,
(5) Thomas for BBN with Plummer.

Regional managers are asked to touch base with people
assigned to them (get reservations), organize a regional
meeting for TIP and Scenario training, assign specific people
to time slots (1,2,3,4 each Tues, Wed, and Thurs), and report
back to me.

Let's expedite those scenarios.

1

RMM 7-SEP-72 13:00 11720

Scenario Staffing Report

(J11720) 7-SEP-72 13:00; Title: Author(s): Robert M. (Bob) Metcalfe/RMM; Distribution: Robert D. Bressler, Michael A. Padlipsky, William W. Plummer, Robert E. Kahn, Richard W. Watson, Peggy M. Karp, Robert H. Thomas, James E. (Jim) White, Dr. Vinton G. Cerf, Robert M. (Bob) Metcalfe, Albert Vezza, Diane C. Roberts, Alex A. McKenzie/XIC3; Sub-Collections: NIC XIC3; Clerk: RMM;

NDM 7-SEP-72 13:48 11721

Notice of new Output Processor Users' Guide

The new Output Processor Users' Guide is ready
For on-line viewing, see --ljournal,11076,2:gy)
Hard copy is being printed, and will be available
next week. See Cindy, Barbara, or Dean. 1

NDM 7-SEP-72 13:48 11721

Notice of new Output Processor Users' Guide

(J11721) 7-SEP-72 13:48; Title: Author(s): N. Dean Meyer/NDM; Distribution: Guest O. ARC, Elizabeth J. Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, Ralph Prather, James E. (Jim) White, Jacques F. Vallee, Diane S. Kaye, Paul Rech, Michael D. Kudlick, Don Limuti, Ferg R. Ferguson, Linda L. Lane, Marilyn F. Auerbach, Walt Bass, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Cindy Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. (Ken) Victor, Smokey C. Wallace, Richard W. Watson, Don I. Andrews, Rome Air Development Center (ISIM)/SRI-ARC RADC; Sub-Collections: SRI-ARC RADC; Clerk: NDM;

DIA 7-SEP-72 14:28 11722

New Superwatch

There is a new superwatch. See (ANDREWS,DOCSUPER,) for up-to-date documentation. new features: accepts lower case, allows editing with ↑A, ↑W, new averaging commands for Paul Rech, and new exciting ways to look at drab data. 1

DIA 7-SEP-72 14:28 11722

New Superwatch

(J11722) 7-SEP-72 14:28; Title: Author(s): Don I. Andrews/DIA; Distribution: Guest O. ARC, Elizabeth J. Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, Ralph Prather, James E. (Jim) White, Jacques F. Vallee, Diane S. Kaye, Paul Rech, Michael D. Kudlick, Don Limuti, Ferg R. Ferguson, Linda L. Lane, Marilyn F. Auerbach, Walt Bass, Douglas C. Engelbart, Beauregard A. Hardeman, Martin E. Hardy, J. D. Hopper, Charles H. Irby, Mil E. Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Cindy Page, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. (Ken) Victor, Smokey C. Wallace, Richard W. Watson, Don I. Andrews/SRI-ARC; Sub-Collections: SRI-ARC; Clerk: DIA;

DCE 7-SEP-72 16:54 11723

Visit Notice: NBS Team of Designers for NSF Computer Network will be at ARC 12 Sep 72

Tom Pyke, George Lindamood, Dennis Fife, Al Newman, and Bob Blanc from the National Bureau of Standards, will arrive a bit after 0830 and stay through lunch. They have a contract from NSF to develop a design for NSF's computer network. They are considering: 1

User requirements, 1a

Network communication technology, and 1b

Network management (in which they include such as NIC services). 1c

They will be particularly interested in talking to us on the first and last categories. 2

I would like to begin in our conference room, with them and Dick Watson. We'll give them a brief overview to fill them in on our current status, and then work out with them an agenda for their stay. 3

I will ask them to give us about a half hour presentation on their status at 0930 (later, if they come late -- stand by), for any ARC person interested. The subsequent discussions, as arranged earlier in the day, will doubtlessly involve other ARC staff, and we'll set these up at the end of their presentation. I would like the following to either be available (at least by 1000) or let me know ahead of time: WLB CHI MDK JBN JCN PR JFV DCW JEW 4

DCE 7-SEP-72 16:54 11723

Visit Notice: NBS Team of Designers for NSF Computer Network will be at ARC 12 Sep 72

(J11723) 7-SEP-72 16:54; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Walt Bass, Charles H. Irby, Michael D. Kudlick, Jeanne B. North, James C. Norton, Paul Rech, Jacques F. Vallee, Smokey C. Wallace, James E. (Jim) White, Richard W. Watson/WLB CHI MDK JBN JCN PR JFV DCW JEW RWW; Sub-Collections: SRI-ARC; Clerk: DCE;

HGL 8-SEP-72 13:13 11724

Call from Dave Walden of BBN -- Online Documentation Question

Dave Walden of BBN called on Thursday, 7 September requesting information concerning the possible entry of the TIP User's guide on-line at the NIC. He was concerned about questions such as formats expected by our system, compatability of on-line indices with hard copy indices, updating the file, etc. I explained to him some of our capabilities and mentioned briefly the Output processor and some things DPCS was planning on doing. I suggested that Dirk would be a better person to speak to concerning the problems of documentation and the use of our system for it. I told him Dirk would call him upon his return from his vacation. He said there was no rush to get the manual on-line, but was interested in the possibility. 1

He also wanted to remind Dick Watson of his question about running TTYTST over the net through a TIP. 2

HGL 8-SEP-72 13:13 11724

Call from Dave Walden of BBN -- Online Documentation Question

(J11724) 8-SEP-72 13:13; Title: Author(s): Harvey G. Lehtman/HGL; Distribution: Walt Bass, N. Dean Meyer, Dirk H. van Nouhuys, Marilyn F. Auerbach, Diane S. Kaye, Douglas C. Engelbart, James C. Norton, Richard W. Watson, Charles H. Irby, Richard W. Watson, Douglas C. Engelbart, James E. (Jim) White/DPCS RWW DCE JEW; Sub-Collections: SRI-ARC DPCS; Clerk: HGL;
Origin: <LEHTMAN>CALL.NLS;2, 8-SEP-72 13:04 HGL ;

RMM 8-SEP-72 13:33 11725

TIP should echo BELL on input discard.

Users (who type fast) have reported losing characters from their type-in stream - presumably because the TIP must discard such input when there is no space for it.
It is suggested that if the TIP must ignore input due to a lack of buffer space that a BELL (or equivalent) be echoed to let user know. Is this a good suggestion or not and why?

1

RMM 8-SEP-72 13:33 11725

TIP should echo BELL on input discard.

(J11725) 8-SEP-72 13:33; Title: Author(s): Robert M. (Bob) Metcalfe/RMM; Distribution: Alex A. McKenzie, Smokey C. Wallace/AAM DCW; Sub-Collections: NIC; Clerk: RMM;

LPD 8-SEP-72 18:04 11726

Additions to IMLAC protocol

per our discussion today

Additions to IMLAC protocol

Specification for Changes in PDP-10/IMLAC Protocol 1

These changes are to be implemented before the ICCC, 10/20/72. 2

Change to ADA (code 1): 3

Currently followed by DAID NSTRS CSIZE HINC FONT. 3a

Replaced by ADA' (code 16B) followed by DAID NSTRS NCHARS INXY DY CSIZE HINC FONT. 3b

NCHARS is a single byte which gives the length of a line in characters, i.e. the width of the d.a. divided by HINC. 3c

INXY is the coordinates of the origin of the d.a., namely the lower left-hand corner. 3d

DY is a long number (2 bytes, like a coordinate) which gives the Y separation between lines, i.e. the height of the d.a. divided by NSTRS. 3e

New command: ECHDA (code 3): 4

Followed by FLAGS [DAID1] [DAID2]. 4a

FLAGS is a single 7-bit byte: the bits are 0 AD SD A1 S1 A2 S2. 4b

IF AD=1, teletype simulation output to the default area is activated; if SD=1, default output is suppressed. 4c

A1 and S1 function similarly for the first alternate echo area: DAID1 gives the area if A1=1. 4d

A2, S2, and DAID2 function similarly for the second alternate area. 4e

New command: APSDA (code 17B): 5

Followed by DAID STRING. 5a

Appends string to display area sequentially. Carriage return and line feed are simulated properly. Lines longer than NCHARS (from ADA') will be broken. 5b

Carriage return, but not line feed, will actually appear as an invisible in the displayed string. 5b1

↑A or ↑H erases the last character in the area. ↑W erases 0 or more trailing invisibles, followed by 1 or more trailing visibles, i.e. a word. ↑G produces a bell symbol which is overwritten by the next character output. 5c

Change in STRDA (code 4): 6

Currently followed by DAID STRID NCHARS INXY FORMATS [CSIZE] [HINC] [FONT] STRING. 6a

Replaced by STRDA' (code 20B) followed by DAID STRID NCHARS FORMATS' [INXY] [CSIZE] [HINC] [FONT]. 6b

FORMATS' is a single 7-bit byte, offset by 40B; the bits in FORMATS'-40B are FDS FDD IDS IDD SDS SDD XYDS. 6c

Note that since FDS and FDD cannot both be on, FORMATS' always lies in the range 40B to 165B. 6c1

FDS=1 means use the old string value for FONT; FDD=1 means use the default d.a. value for FONT; FDS=FDD=0 means FONT is present in the command string. 6d

IDS and IDD have the same effect on HINC; SDS and SDD have the same effect on CSIZE. 6e

XYDS=1 means use the string's present coordinates; XYDS=0 means INXY is present in the command. 6f

Also, the STRID is not required to be between 1 and the value of NSTRS in the ADA': any value between 1 and 177B is legal. 6g

New command: CCNDA (code 21B): 7

Followed by DT DXY. 7a

DT and DXY are long numbers. 7b

Enables continuous transmission of mouse coordinates in the form ESC 4 X (2 bytes) Y (2 bytes). 7c

Coordinates are transmitted every DT milliseconds, provided that the mouse has moved more than DXY points in either coordinate since the last transmission, and only if the IMLAC is in long input mode. 7d

Of course, coordinates continue to be sent with characters regardless of how much the mouse has moved. 7e

Additions to IMLAC protocol

New command: CCFDA (code 22B): 8

Disables continuous transmission. 8a

LPD 8-SEP-72 18:04 11726

Additions to IMLAC protocol

(J11726) 8-SEP-72 18:04; Title: Author(s): L. Peter Deutsch/LPD;
Distribution: Kenneth E. (Ken) Victor, Charles H. Irby, L. Peter
Deutsch/KEV CHI LPD; Sub-Collections: NIC; Clerk: LPD;
Origin: <DEUTSCH>PROT.NLS;4, 8-SEP-72 18:01 LPD ;

VGC 11-SEP-72 10:10 11727

REGIONAL MANAGER CHANGES AND SCENARIO REPORT

THERE HAS BEEN A CHANGE IN REGIONAL MANAGER STATUS FOR UCLA. MORT BERNSTEIN HAS AGREED TO TAKE CHARGE OF REGION 3 AND I HAVE TEMPRARILY ASSIGNED DAVE CROCKER AS HIS DEPUTY. JON POSTEL HAS OFFERED TO ATTEND ICCC AND DEMO ON THE FLOOR, BUT I HAVEN'T ASKED HIM TO TAKE ON ANY FURTHER RESPONSIBILITY SO AS TO AVOID IMPINGNG ON HIS DISSERTATION WORK.

NEETING OF SOUTHERN CALIF GROUP SCHEDULES SEPT 14 AT UCLA. WILL DISCUSS ICCC SCHEDULE, ORGANIZATION, AND SCENARIO REQUIREMENTS.

PROVERB GENERATOR AT BBN ON SOCKET 17 OUGHT TO BE A DEMO'D RESOURCE.

HAVE ARRANGED FOR LARGE TSO (160K) ON SATURDAYS FOR THE PUROOSE OF GETTING USC DHESS PROGRAM RUNNING. SORRY, CHESS PROGRAM. LAST SATURDAY CCN CRASHED WITH MEMORY HARDWARE PROBS SO DIDN'T GET TO TRY IT OUT. WILL REPORT AS PROGRESS IS MADE.

HAVE STARTED TO PREPARE SCENARIOS FOR SAIL AND NMC ON-LINE USING NIC. COULD NOT GET TO NIC FRIDAY OR SATURDAY FOR REASONS OF UNCERTAIN ORIGIN (DISK PROBS AT NIC?).

BBN-TENEX FAILS TO OPEN THEIR RECEIVE CONNECTION TO UCLA ABOUT 2 OUT OF 3 TRIES. HAVE REPORTED SAME TO NCC AND THEY WILL PASS IT ON TO TENEX PEOPLE.

CHEERS VINT

1

VGC 11-SEP-72 10:10 11727

REGIONAL MANAGER CHANGES AND SCENARIO REPORT

(J11727) 11-SEP-72 10:10; Title: Author(s): Dr. Vinton G. Cerf/VGC; Distribution: Robert M. (Bob) Metcalfe, Peggy M. Karp, Dr. Vinton G. Cerf, Dr. Vinton G. Cerf/RMM PMK VGC VGC; Sub-Collections: NIC; Clerk: VGC;

RWW 11-SEP-72 11:37 11728

ICCC Participant Meeting

There will be a meeting of the ICCC participants Tues. at 3:00 in the conference room. 1

RWW 11-SEP-72 11:37 11728

ICCC Participant Meeting

(J11728) 11-SEP-72 11:37; Title: Author(s): Richard W. Watson/RWW; Distribution: James E. (Jim) White, Paul Rech, Michael D. Kudlick, Charles H. Irby, Douglas C. Engelbart, James C. Norton, Jeanne B. North, Marilyn F. Auerbach, Dirk H. van Nouhuys, Jacques F. Vallee, Walt Bass/JEW PR MDK CHI DCE JCN JBN MFA DVN JFV WLB; Sub-Collections: SRI-ARC; Clerk: RWW;

DCE 11-SEP-72 13:36 11730

Phone Log: 11 Sep 72 from Howard Franks

Howrd Franks (Ident = HF), of Network Analysis Corporation, called to ask about the potential bidders for our NLS Utility. He has been asked by Bruce Dolan to stand ready to provide an analysis of the cost of hooking each bidder to the Network; assuming that this hookup cost would be used as part of the bid evaluation. 1

I told him which eight organizations were represented at our bidders conference last Friday. His offhand assessment was that they all were about equal in their hookup costs, and he surmised that there would be little or no relative weight from this hookup-cost factor in the evaluation process. 2

But for the sake of completeness, I agreed that we should formally inform him of the bidders who we vill be evaluating, so that he can explicitly evaluate their hookup costs. 3

(Note to MDK: Will you please follow through with this?) 4

DCE 11-SEP-72 13:36 11730

Phone Log: 11 Sep 72 from Howard Franks

(J11730) 11-SEP-72 13:36; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Michael D. Kudlick, Richard W. Watson/MDK RWW; Sub-Collections: SRI-ARC; Clerk: DCE;

GM 11-SEP-72 16:09 11732

Some Reflections Of and On ARC

This is entered with the ARC Journal with Gus Matzorkis's approval for record purposes.

Some Reflections Of and On ARC

Gus Matzorkis, 30 June 1972 1

SOME REFLECTIONS OF AND ON ARC 2

I mean "reflections" here in the first two of the three main meanings of the word, but not in the third. The first meaning being "a reflecting or being reflected... the throwing back of an image", the second meaning being "the fixing of the mind on some subject... serious thought or contemplation... the result of such thought", the third meaning being "blame or discredit". 2a

The material in this feedback report falls rather neatly into two categories. One category is a mirroring back of data obtained during my work with ARC on 28 June through 30 June 1972, particularly during my one-to-one conversations with a number of individual ARC staff members. The second category is a verbalization of my sorted-out thoughts and feelings about what I had apprehended during that 6/27 through 6/30 period, particularly during my observations of PODAC meetings and the closing feedout meeting with the full ARC staff on the morning of 30 June. 2a1

There is a third section - if not category - at the end of this report, whose title, "Some Suggestions As Thought Starters", is clear enough. 2a2

SOME REFLECTIONS AS FROM A MIRROR 3

Some of my conversations with individual staff members were more frank and open than others, some were more positive and optimistic than others, some were more friendly than others, all were interesting and valuable. Some of the value lies in the feeling and awareness of each of the participating individuals and that value will be enhanced by and will find additional payoff in the 31 July/1 August ARCATHON. The rest of the value lies in the specific ideas and thoughts and feelings which emerged from the one-to-one conversations and which I list below, as literally as possible and without value judgement. 3a

"The PODs are working as well as could reasonably be expected at this point... in fact, better than that." 3b

"Our POD is successful and engaging and productive; all the other PODs are in trouble." 3c

Some Reflections Of and On ARC

"PODs are a good thing in theory, but as they exist now as tools of manipulation for Doug, they are not good." 3d

"PODAC got off to a bad start, in that it was really imposed upon the group, but the PODs are finally coming onto their own now." 3e

"I understand Doug's reluctance to join any one POD, and I think he's right." 3f

"Doug should be in a POD." 3g

"We need more 'process' or 'sensitivity' awareness and activities in ARC, more by far than the PODs are providing." 3h

"If members of a POD want more this or more that to happen, I just don't know why they don't take action as a POD to try to make that happen." 3i

"The PODs need more structure, overall. They might well benefit, for example, by having rotating chairmen, by grouping themselves around special interests, etc." 3j

"The PODs are not integrated into the day-to-day activities in our group, and some mechanisms for fostering such integration should be developed." 3k

"I would like to see some of the energy now devoted to criticizing PODAC directed to working within a POD to get concrete things going to deal with whatever discontent is at the base of the criticism. In short, I would like to see the PODs taking more direct responsibility for things around here, and for themselves." 3l

"If we are serious about growth based on 'things emerging organically' then we are going to have to learn to be more patient about PODs and how long they are taking to 'get turned on', to 'find themselves', to 'get some concrete things done'." 3m

"This is not a happy or pleasant place to work for me. I don't particularly like coming to work here in the morning." 3n

"I like working here. It's challenging and exciting. I'm glad I am here." 3o

"Some people around here are not really pulling their oar, and

there is no mechanism for dealing with that problem or problems like that." 3p

"We need more proven traditional management and administrative approaches in ARC." 3q

"Except perhaps for Doug, senior people with years of experience and achievement are not given their due around here, particularly by the young hotshots here. It's not only that they are not recognized for what they are and what they've done, but they are not being used well and their full potential contribution is not being realized." 3r

"An internal effort is required within any team to keep up its 'spirit' or else the team 'falls out of condition'." 3s

"Some of the newer people in ARC expect too much, too soon." 3t

"Some of the people who have been around here for a long time are slavish and undemanding to a fault." 3u

"Some people around here really don't understand Doug at all. They don't have the patience to wait until they're really on to what he is saying and what he is all about before they negatively criticize everything in sight." 3v

"Doug cannot stand criticism. He does not listen. My part of any conversation with him is a kind of stage wait in his mind... just a pause until he can start talking to me again." 3w

"Look, I see Doug as a kind of Freud or Newton or Einstein. This is his dream here at ARC, really, but I'm damned good too and I'm buying into this dream and owning a piece of it for myself. That's good enough for me." 3x

"I need recognition too. I don't like being in a situation in which all the credit and praise go to one person... in which all the publishing credit belong to one man 'and staff'. I don't like being merely an anonymous piece of somebody's 'and staff'." 3y

"I don't care about credit and recognition. I like the work and challenge and opportunity to do interesting things here. That's okay with me." 3z

"We really are doing exciting... I mean stunningly exciting work at the cutting edge of things here, and that really turns me on." 3a*

Some Reflections Of and On ARC

"'Augmentation?'... bull We are doing good work in an interesting field, sure, as are many other people in the country. We're just not all that unique here." 3aa

"I know that in the end, PODs or something like PODs are absolutely essential. What I'm not so sure of sometimes is whether we're relly ready for PODs yet. Maybe we're a year or five years too early." 3ab

"I really like Doug a lot, and I have a hell of a lot of respect for what he has done and for what he can do. If, as you say, I am seen by some as challenging him and bedeviling him, I can tell you that that is not my intention. It honestly had not occurred to me that I would be perceived that way." 3ac

"I don't think some of the newer people here knew what they were actually getting into when they came with ARC. Whether they just did not listen or whether they simply were not told, something was missing when they were being interviewed." 3ad

"Organic evolution is the only known successful design of systems above a certain size. Our approach should be to work with the ongoing organic evolution in our system, not independent of it or as though it were not happening here." 3ae

"Doug is simply indecisive. He hates to make decisions, and you'll find him putting off making decisions as long as possible, and longer." 3af

"Doug is so far-seeing in certain ways. He hesitates making decisions because he sees so clearly the inevitable possible negative consequences of any decision." 3ag

"Doug doesn't want to have to take the responsibility for decisions himself. He's much more comfortable manipulating things so that the group seems to be making the decisions, instead of him." 3ah

"I'm sure Doug would like us to collaborate more with him in decision making, at least in certain areas, and in a number of other things as well. We're just not very good yet at moving in and taking him up on that sort of thing." 3ai

"Most, if not all, the 'process' and 'organization development' stuff I have come to know about is overrated and/or not relevant to us here." 3aj

"It made me mad to see Doug constantly needled and challenged

and judged in advance of anything he had to say in the early FRAMAC meetings, but I didn't say anything in the meetings themselves. Those meetings were not the appropriate place in which to do that. I would speak up now, though." 3ak

"Doug has a way, deliberately or not, of building a protective ring of people around him - a protective ring of solicitousness and concern and mothering." 3al

"Every team and organization of the future has to have a constant built-in activity that takes care of the 'organic' conditioning. This should not be something that's done for the team or organization by a chaplain or a big daddy, etc." 3am

"Doug and I used to have many problems. We did not get along at all well at first. Now, however, we understand each other and appreciate and respect each other a good deal more than before. I feel our relationship is now a very good one, and I'm sure he feels that way too. I know how to talk to him and listen to him now, and most of the old frustration is gone." 3an

"We need to develop some process that can turn people on to the idea of becoming something uniquely better. It's our business to explore better ways of individuals and teams solving problems." 3ao

"For any formal definition of goals, organization, roles, procedures, etc. to work well, there must be an 'organic' process among the people involved." 3ap

"From the point of view of PODAC, participation in PODs is mandatory; from the point of view of the individuals in ARC, participation is voluntary." 3aq

"I don't question that PODAC should continue, but I wonder about the proper level of activity at this time - given all the other things we have to do. Perhaps we should spend less time on POD activities." 3ar

"We should spend more time and energy on POD activities, but in some way that actually integrates such activites into our day-to-day, hour-to-hour work." 3as

The inevitable tendency of the human mind to find meanings in the patterns and sequences of individual items of data and statements of viowpoint like the above should be resisted in this instance. I have not tried to sequence these items in any deliberate pattern, to make any

particular points, to tell any story with a beginning and a middle and an end, to suggest that some of the above statements are "true" and that other things are not, to make any value judgements about what things are "good" and what things are not. This is simply data obtained from individual ARC people, being mirrored back to all ARC people, for them to do with as they will. 3as1

I consider that interviews or any such data gathering sessions with client personnel to be confidential. What that means to me, among other things, is that data thus obtained is public and shareable in the aggregate, but that any personal ownership of, or agreement with any of the data must come voluntarily from individuals involved. 3as2

SOME REFLECTIONS AS SORTED-OUT THOUGHTS AND FEELINGS 4

There is a largely unacknowledge clash of personal value systems in ARC. 4a

Differences in personal lifestyles and appearances are clear and visible enough in ARC. There are long beards and long hair and general shagginess, and shaved cheeks and short hair and shirt/coat/tie neatness. There are ladies and chicks and Ms.'s in the group. These kinds of obvious differences certainly are widely noticed and acknowledged. 4a1

I sense, though, that there are underlying differences in personal values and codes of life in the group which are neither so obvious nor much acknowledged. For example, there are sharp differences, perhaps falling along generational lines, in the way ARC people react to traditional values of personal recognition, credit - and, related to this, to security, reputation, independence. 4a2

I sense somewhat less clearly (I guess, really) that there may be underlying clashes of some significance in matters of public/private, national citizenship/planetary beingness, elitism/equalitarianism, work/play. I perceived hints of these things, here and there, now and then, in people's words and gestures and "vibes". 4a3

From the standpoint of organizational health and the building of a more effective team, it is neither a particularly bad nor good thing when there are sharp differences in value systems within a group. It is generally a bad thing when such differences exist and are not acknowledged and dealt with directly and openly, and

generally a good thing when such differences are flushed out and acknowledged and consciously lived with and/or ameliorated. The "acknowledging" etc. can be a personal matter of one individual or can be a group thing involving a public dealing with "directly and openly" by many or all individuals in the group. 4a4

There is considerably more formality in the ARC work culture than appears at first glance, and more than most people in ARC think there is, and some or all of this formality may be a necessary thing and good thing. 4b

The informal garb - sandals, jeans, etc. - which mingle with the more conventional American urban business dress at ARC, and the breezy language and manner in the ARC scene, mask an underlying formality in the work culture. 4b1

Some of the formality is simply an extension of the strongly intellectual tone of this work culture. Some of it is more than that, I feel - more, that is, than merely an echo of the structure and recurring patterns and predictability that are inherent in things intellectual. 4b2

Part of what I sense along the lines indicated here I would call a tendency to fall into a negotiating posture - "You make an offer or suggestion and I'll make a counter offer," etc. Other indications to me are the things like rather formal invitations and other matters of protocol, a rather sharp impression of what's my turf and what's your turf, and other suggestions of structure in this work scene. 4b3

As I see all this, the most negative aspects of the half-hidden formality in the culture are tendencies to bury feelings, to walk around with hidden agendas, to mute spontaneity. The most positive aspects are a sense of order and predictability, the potential for creating forms that will work well in the increasingly complex world of the future, and the promise of achievements being captured and made available and retrievable in the future and not just consumed in the flash of their first realization. 4b4

It seems to me clear enough that thinking about, contending with, and talking about the role of formality and structure in ARC can lead to decisions and modes of behavior that will maximize the more positive and desirable things and minimize the more negative and undesirable things. There are exciting possibilities here, it also seems clear to me, that creative new ways can be found in which formalisms can

be employed in stimulating, unconstraining ways - if common error can be avoided of believing that the only choice for people and organizations is between informality/freedom/creativity, on the one hand, and formality/constraints/stagnation, on the other hand. 4b5

There is a tendency in ARC to sometimes be unduly tied down to the past, to be preoccupied with evaluating past decisions and events, to be carrying a load of yesterday's "unfinished business". 4c

A concrete example of what I mean here is the attitude implicit in strong sentiments I heard expressed like "PODAC got off to an unhealthy start and never really can get off the ground" and "I saw that PODAC was a manipulative tool from the beginning." Questions aside of how accurate these descriptions of PODAC's beginnings may or may not be (and a number of people apparently feel they are very inaccurate), what comes through to me here is how limiting and devitalizing such an unconscious tendency toward predestination, toward a sense of unchangeable fate can be. 4c1

In addition to being limiting and devitalizing, such an unconscious tendency can provide ready rationalizations for irresponsibility. "The cause of today's ineffectiveness is somebody else's decision of yesterday or last month or last year." "We can't make so-and-so work now; it was conceived in error and doomed to failure from the start." 4c2

I sense that a lot of energy is directed to passing out grades for yesterday's performances - usually somebody else's performances. 4c3

I suspect that a basic reason any of this is true to whatever extent it may be true is that more often than not, the style and mechanisms in the ARC work culture have not encouraged the "finishing" of issues and conflicts - that is, the acknowledged working out of such to a point where involved people can feel something like, "Okay, that's over now; whether or not I have had my way, I have spoken and have been heard and I have heard others on this and it's finished; I'm ready for today, cleanly." 4c4

I'll say it another way. I discern more a flavor of "might have been" and "should have been" here and there in this work culture, and not so much a flavor of "can yet become" and "can still be made to be". 4c5

Some Reflections Of and On ARC

The relationships between Doug and ARC as a whole, and between Doug and various individuals and subgroups in ARC, set much of the tone and pace of the work culture and provide the immediate setting or background for the major issues and problems in the culture. 4d

This dominance of the leader/others relationships is stronger here than in most work cultures. We see such dominance in organizational cultures when there are strong people and a weak leader, and when there are weak people and a strong leader, and especially when there are strong people and a strong leader. I perceive ARC as clearly being in the third category, and then some. 4d1

SOME SUGGESTIONS AS THOUGHT STARTERS 5

These are not recommendations for action, but rather possibilities for members of the ARC staff to consider. I emphasize this, because (1) concrete action plans should be developed and carried out by ARC people and not by a consultant (although a consultant or outside resource person can sometimes be helpful as a facilitator, a group activity leader, etc.) and because (2) I have not spent enough time with ARC people in the ARC work culture to go beyond offering some mostly tentative suggestions as thought starters at this point. 5a

In this spirit, then, I ask ARC people to consider: 5b

Developing and carrying out an explicit internal change agent program in ARC. 5b1

Following up on the spontaneous desire of many people at the 30 June 1972 feedout session for an offsite group activity, and soon. In general, if such an initial flush of enthusiasm holds up for a day or two afterwards, it is well to move ahead. (Since I first noted this, the 31 July/1 August ARCATHON was conceived and scheduled.) 5b2

Taking stock of yesterday's unfinished business in your own mind and feelings, and confronting it either alone or publicly in an appropriate group setting. "An appropriate group setting" could mean a POD meeting or a luncheon gathering with a couple of people on the staff. Finishing it. Helping others finish their "might-have-beens". 5b3

Trying to be more open and sharing of certain kinds of perceptions, experiences, and skills with one another. For

example, here's someone who maintains that Doug simply does not listen and therefore frustrates the hell out of him or her. And there's someone else who says he or she also used to feel that way but now finds that there are relaxed and productive ways of inter-relating and communicating with Doug. Those two people might do well to seek out one another and frankly talk about that, very concretely. Similarly, person A who frankly hates to come to work might find it interesting and valuable to frankly talk to person B who is turned on about coming to work in the mornings. 5b4

Developing the ability, to a higher degree, of expecting and fostering change in yourself, as well as others. 5b5

Avoiding the superficial slogans and fraudulant pieties often associated with it (and this can be done), focus more on, and give more room to, and encourage more the flow and thrust of feeling as well as thinking - vividly, unselfconsciously, viscerally. 5b6

GM 11-SEP-72 16:09 11732

Some Reflections Of and On ARC

(J11732) 11-SEP-72 16:09; Title: Author(s): Gus Matzorkis/GM;
Distribution: Gus Matzorkis/GM; Sub-Collections: SRI-ARC; Clerk: LLL;
Origin: <LANE>GMATZORKIS.NLS;2, 11-SEP-72 13:41 LLL ;

RDB2 12-SEP-72 8:03 11733

I HAVE A FILE IN MIT-DMCG CALLED ITS.SCENARIO THAT I WOULD
LIKE TO HAVE VIEWED BY ANYONE. HOW?
BOB BRESSLER

1

(J11733) 12-SEP-72 8:03; Author(s): Robert D. Bressler/RDB2;
Distribution: Richard W. Watson, James E. (Jim) White/RWW JEW;
Sub-Collections: NIC; Clerk: RDB2;

JRP 12-SEP-72 9:56 11734

note to bill jones

the file transfer programs out of ucsb seem to be working now. give them a try. i'm working on file transfer in now. please send me a message with your reaction to the documentation. 1

JRP 12-SEP-72 9:56 11734

note to bill jones

(J11734) 12-SEP-72 9:56; Title: Author(s): John R. Pickens/JRP;
Distribution: William P. Jones/WPJ; Sub-Collections: NIC; Clerk: JRP;

AAM 13-SEP-72 7:28 11776

Response to NIC 11725

Bob, Good morning/afternoon/evening as the case may be;
It is certainly reasonable for a TIP to do "something"
when it ignores a user's input due to lack of buffer space.
The problem arises when we try to decide what that "something"
should be. For example, not all ASCII terminals have
a bell ang 2741's certainly don't; not all terminals have
a backslash, and some may not have a frontslash; half duplex
terminals like 2741's need to have the line "turned around" in
order to output anything; etc, etc, etc. We are certainly
aware of the problem, and as soon as we can decide on a
universal solution that doesn't take any extra code to
implement we will fix it all up.
Dave Walden may have additional comments.
Alex

1

AAM 13-SEP-72 7:28 11776

Response to NIC 11725

(J11776) 13-SEP-72 7:28; Title: Author(s): Alex A. McKenzie/AAM;
Distribution: Robert M. (Bob) Metcalfe, David C. Walden/RMM DCW3;
Sub-Collections: NIC; Clerk: AAM;

JBN MDK JFV 13-SEP-72 13:34 11779

Comparative analysis of three state-of-the-art information systems

Transcript of an SDIS Planning session. Discusses the features of three installations that support interactive information systems.

Comparative analysis of three state-of-the-art information systems

COMPARATIVE ANALYSIS OF THREE STATE-OF-THE-ART INFORMATION SYSTEMS. 1

The SDIS Planning team (Jeanne North, Mike Kudlick and Jacques Vallee) has met on 16 August 1972 to compare notes regarding recent site visits to three installations supporting information systems. This document is a transcript of the taped discussion edited by JFV. For greater readability it has been broken into sections. It is the third document in our planning series (see JOURNAL 10806 and 11331). 2

PART 1. OVERVIEW OF THREE INFORMATION SYSTEMS. 3

Mike: In order to set the framework for future planning stages, we have visited three sites with interactive computer systems that serve special functions, one of them at the Rand Corporation, the second site at IBM's Research Lab in Los Gatos, the third site at NASA Ames Research Center here in Mountain View. 3a

The last two systems, NASA and IBM, were tailored for library management, for document retrieval, at least for bibliographic searching, and in the IBM case, for management of a library system excluding circulation. It covered book ordering and cataloging, and keywording, and all the other functions of the library; user searches were done by the users themselves. Similarly, the way I understood it, the NASA system was set up to aid the user in finding his information by giving him a browsing capability and keyword search capability, author search, etc. But I didn't think it was used in the library management functions of circulation and ordering, acquisition, cataloging and things of that nature. 3a1

Jacques: No they didn't. 3b

Mike: So the systems differ in that respect, and then a final comment for this initial summary was that the system that we saw at RAND was not a library management system at all; in fact we saw two systems, one a Data Analysis system which was a highly interactive, to my mind very satisfactory way of displaying statistics graphically: Getting various regressions calculated and displayed and manipulated and combined, etc, and the second system was called video WYLBUR, a display version of the WYLBUR text editing system, which we'll talk about also. 3c

Comparative analysis of three state-of-the-art information systems

The main points that I'd like to cover (and then we'll get into anything into which we're led from there), are just what we learned from these systems from the design standpoint, from the user's standpoint, the computer systems standpoint, and how they might affect us in the further development of SDIS intelligence retrieval system that we are sort of chartered to design and implement. Does anyone care to add anything to that? 3c1

Jacques: I think it's important to point out that the RAND systems are the only ones that had generalized facilities for a personalized file system, in terms of what we were saying the other day in the first session, namely that we wanted to strive for personalized processing. In the other systems you have to take whatever the indexer or librarian has put into the data-base. 3d

Mike: That's a very good point. You're always searching on what's there and in fact, in the NASA case, to get any changes at all in the system they have to go back to Headquarters in Washington. 3e

Jeanne: And that's by design. 3f

Mike: That's by design. That's a very good distinction. Neither the IBM or the NASA systems are personalized in any sense. 3g

Jeanne: There is no way to move any of it even, to make your own file? We talked last time about an interface between those two, the fact that we would want to interface with data bases in which we could not make edits; I think that's the thing we want to look for: a data base where you cannot change contents but where you can move it as we can in ours, where you can move it to a spot where you can make changes in your copy of it. That we haven't found, a system where you can do that... unless the RAND one? 3h

Mike: There is another aspect of the systems, however, that on this general level we ought to at least comment on, and maybe get back to. That is that they were all user-oriented systems. They were not for systems programmers or highly competent computer professionals in any sense. We saw very "run-of-the-mill" librarians using the system at IBM and quite unsophisticated (in a computer sense) quite unsophisticated users at NASA and at IBM using the system to search the catalogs and the indices. At RAND even, the people were

problem solvers rather than programmers. They don't want to do everything, all they want to do is mathematical analysis. The system was designed with them in mind and in that sense I think all three systems are successful. I think they've really met that goal, being user oriented. We'll get into that in a little while, I hope. [See Part 4 below]. 3i

Jacques: Again, the WYLBUR system would be the exception. Although he didn't demonstrate the capability of using WYLBUR as a language for procesing or doing computations by interfacing with other processors, etc. 3j

Mike: No, I didn't see that. I don't know anything about WYLBUR. I really would like to have you maybe now or maybe in a few minutes come back and describe what you saw on the VIDEO-WYLBUR system because I know that it has practically all the capabilities that we have here for text editing. It may not have the hierarchy but whatever it has I'd really like to hear a description of it so we can have it on record. 3k

PART 2. DATA-BASE STRUCTURE. 4

Mike: I'd like to just start a more detailed discussion about picking up some on this subject of indexing, and how you find information in the data base. One of the things I noticed with both the IBM system and NASA system, (which we might as well call by their names, the IBM system is LMS for Library Management System and the NASA system is RECON for Remote Console System), is the following: 4a

> The RECON and the LMS system both have multiple indices into the data base. They have author indices, they have title indices, they have keyword indices, and you can combine keywords and indices logically to search in a rather sophisticated way for what you are looking for. You search over a good wide data base. The RECON system, and I don't remember in the LMS system, had a feature they call EXPAND which allows you to choose a word in the display surrounding entries in alphabetical order that occur before and after the word that you've chosen. This allows you to primarily pick up misspelled words or alternative versions of that word and also allows you to see that there may be phrases using that word which could serve as additional entries into the system.I think that's very valuable for a searcher. 4a1

Jeanne: I find the term EXPAND to be poor in a system sense

because the general meaning of "expand a term" in the thesaurus indexing terms means that you have given the various aspects of it or taken it apart and you take a general term and then you expand it by giving various terms which are narrower or broader: That is a term expansion and in this case what they're doing is simply giving you a context from the index and I don't know what word you would use but I find that is bad because this isn't expanding a term, this is expanding a space in the index. That's something else again. 4b

Mike: Yes, it's a window feature. 4c

Jeanne: Yes, and there ought to be some better way; if we were designing one I think we would pick a better term for it because it's a bad use. There's lots of things we find in these machine systems that we find where somebody has settled on a term and then later it had to be changed because in the general, bigger framework, it was wrong. 4d

Mike: The LMS system uses that EXPAND feature if I remember right in terms of the keyword-in-context listing, is that correct? 4e

Jacques: Yes. 4f

Mike: And I just don't remember well enough. 4g

Jeanne: It did it in the author. It did it, I think exactly the same way. My recollection of it is that it did exactly the same thing for the author search. You ask for the author and his name appears in the beginning and then on each side or any that are alphabetically close to it in exactly the same way. I think they've picked it up from RECON. I think RECON had it first or DIALOG had it first. 4h

Mike: Okay, my point originally in this is that I think it's a very good method for the user. He doesn't know all the correct keywords and really isn't in complete command of the article that he's searching for and he's sort of browsing, it gets him into the system in knowing what's in there in a very simple way. 4i

Jeanne: In only one way, only in something that's spelled similarly. You need another, which would be the thesaurus or what I would call "expanding" the term and there's no systematic reason that you couldn't do that and put the EJC thesaurus which they use as their basis online, and when you

say "expand" a term then it would show you the entries from the EJC thesaurus which would say: "here's the term you're asking for, here are the terms which we used instead or similar, broader or narrower terms of the other two possibilities." Then you can say, "yes, I really wanted something much narrower." There's no capability built into the RECON system for that. You have to do it by the way of subject terms, keywords that you find at the bottom. You have to go to article and then go from there to say "oh yes, this is similar," which is the same thing you do in a card catalog. 4j

Jacques: From the point of view of implementation, it seems that in neither of the systems was there a tree structure. I didn't ask about RECON, but I asked about LMS. And it turned out that the librarian that was using it thought about it in terms of a tree structure, but there wasn't any there... 4k

Mike: Just a straight index, just a straight alphabetical index... 4l

Jacques: Yes, so that you couldn't have an expansion in the sense that Jeanne is asking. 4m

Jeanne: No, I'm saying that you would have to put the thesaurus in and once you have keyed that thesaurus in then you could jump to that as your guide to what subject term shall I use. Of course you could use the published one. But that's no great advance, but most of these things we're doing are no advance over some other way of doing it, they're just more fun because you have the computer. 4n

Jacques: What we ideally want to have is an automatic expansion here so that once you trigger one... 4o

Jeanne: You ask for a turn-on... 4p

Jacques: It automatically also triggers the related terms in the index. That wasn't illustrated in any of the systems. 4q

Mike: Not at all. 4r

Jeanne: I'm saying, that's what you want "expand term" to mean. And let's see, Thompson has something, if you have ever seen David Thompson's system he's been working for years on just that kind of thing and I think that's what Phyllis has too; a thesaurus is a way of showing your related terms in the index so there are capabilities for that and there is a, at

least at NASA, there is already an existing thesaurus, so that even the terminology wouldn't have to be worked out for us, it's just a matter of feature of putting it in. In many disciplines like ours, there's no thesaurus, so you'd say ah, we'll key this thesaurus in and then we'll have one that we can use in our system because then... 4s

Mike: Okay, but then, given that that's desirable, and I really did agree with that, there's a really nice sort of meta-aspect of that whole concept which is that you let the user work in a context mode trying to find out, just by browsing and checking words and getting clues from keywords, what he might be wanting to look up, rather than a very dogmatic approach which is our Journal approach which says that you've got, (at least the way I understand it) you've got to know the Journal number number in order to jump to it, to get it on your screen. The only other way you can do it is to look through the index, the author index, which is a separate document and is not automatically going to get you to the document that you're looking for. You've got to look through that and find out where are all the things that Kudlick wrote (which may not be very many) but still you have got to go through in order to get the number and that's the handle that gets involved here and I think it's not desirable. 4t

Is my interpretation of that system correct? Our system? Is there more power? 4t1

Jeanne: Yes there is, but it takes a human to do it. Well, one thing that does it, of course, is the title word index as Jim's been doing and we want to do for the NIC weekly: run a titleword program on it: then we'll have at least that keyword out of the titles in an index and the thing that Jim discovered when he tried to do it, and the reason he never put out a NIC one, (but he had a titleword index, you know to the whole Journal), was that most of the titles are so ridiculous that they're not useful for that kind of thing. Then the next step is what we do in the regular catalog which is put it through a human who assigns keywords to it and we can do the same thing to the Journal. 4u

Now, there are two schools of thought on whether this is worth while doing. What we want to do, what I want to do is to selectively pick Journal dialogue which seems to have substantive value so it's the kind of thing you would want to refer to, or people would want to refer to, because of the subject interest (not because it was a part of a very

singular dialogue), and give those the regular human treatment of assigning keywords to them, giving them normal cataloging, giving them bracketed titles in the cases where no title or a peculiar title was assigned to them, to give them enough of a clue to it that you can go at them with a titleword index. 4u1

Mike: You're saying, if I understand you right, that because there is such a wide variety of types of material in the Journal, some of it very personal and probably not of use to anyone else after it's been read once, and some of it of more widespread use in an historical interest, etc, that you'd have a human interface to subset the Journal and pick out the articles which are of the latter category? 4v

Jeanne: Yes, because we don't find that the system does a good job of indexing them, and we certainly don't want to say everything in the journal will go through a human, because that's just as ridiculous. 4w

Mike: Yes, everything going through them as far as getting keywords and all that stuff. 4x

Jeanne: It isn't worth it. But, to my way of thinking, it's not very hard to make a selection because there aren't that many that are really important things: like the SDIS discussions, there's no question about them. That needs to be coded and treated by subject terminology; and then there are little things about meetings and so forth which are not important for a long time. If people finally want to know about, you know, how many meetings were held on a certain subject or something, I mean scheduled for something, then you could do that kind of a search some other way but you don't put everything in. 4y

Jacques: This is deviating from what you were discussing, but it seems that at the time of article submission to the Journal, if the user was given the option to have automatic keywording, that would solve part of the problem. 4z

Jeanne: There is such an option. 4a*

Jacques: For cataloging automatically? 4aa

Jeanne: Oh. 4ab

Jacques: At that time if he was automatically given a list of

keywords for example, a subset of words picked out from the title by the system itself. 4ac

Jeanne: He is given the option to enter keywords. 4ad

Jacques: I'm saying the system could generate keywords from the title. It would type, "these are the keywords that we picked from the title", whether he had any or not explicitly. 4ae

Mike: Okay, but I think one of the problems that Jeanne mentioned is a real one and that is that people by and large compose poor titles and just as by and large, people don't write very well either. 4af

Jacques: Maybe it would make them aware of it. 4ag

Mike: Yeah, it would make them aware of it, I just wonder if... 4ah

Jeanne: But I think we'd still have to put the human in, and if we're going to have to put the human in why burden trying to make everybody a trained cataloger which is what that comes out to. It's the same as a novice mode on some other things. If you make it seem awfully difficult, if you make the Journal process seem to load a lot of junk on the user, then he won't use it as much. If he gets, you know, he has to put in keywords or if he has to decide a more appropriate title or something. 4ai

Jacques: But that's why I suggest that there would be a default there and the system would be automatically picking words and automatically assigning them to every article. 4aj

Mike: Okay, that's good. That's what that is in my mind like in the compiler sense, an interpretive keyword in context mechanism, okay, only it's just picking the words out right now with a stop word list, saying we don't want "and, of, the "and five hundred other words could be included, and I agree with that; but one step back is the question, is that title any good for the article in the first place? or is it sort of a cryptic message or a facetious message or what ever the hell it is as far as the guy's own whim is concerned? 4ak

Jeanne: But does it even need that kind of treatment, and I don't think we ought to discourage that kind of dialogue, and that's how I feel when just very inconsequential dialogue ought to be possible without people feeling "oh, I better not

put that in the Journal because it isn't substantive". I think that's fine for the Journal but... 4al

Jacques: But if the option was there of the author himself submitting it for indexing or not, if it was an automatic indexer, he would submit it himself and then the system would come back and say "these are the keywords that we are assigning to that". And then he could add a few or change his title if he wanted to. I just don't think we should confuse the Journal with a personalized filing system that doesn't serve the community. I don't think that you can rely on an indexer no matter how trained, you know, in a general situation where there isn't a controlled vocabulary. In LMS they have a controlled environment, but if you're talking about a very wide community, you don't have that kind of control. 4am

Mike: I think that's a very good point and if it was optional, I think that's a significant feature of the indexing. In a sense what that option says in another context, or Jeanne's context is that this document has some historical worth, or this document is a very topical localized interest but only to the sender or the receivers and isn't going to be used much in the future, like a meeting or Doug's vacation or something like that. 4an

Jacques: Well, how do you know that it's not going to be significant, that someone isn't going to be willing to pay a price to get it out of the system at some point? 4ao

Mike: You don't know that. okay, but you don't give it the grand treatement of several indices, you just leave it in there as a Journal item with a number and an author and it's out there in a single catalog which says these are all the Journal items and it stays there for ever. And it's painful to find what you want, but you can. It's not thrown away. Some of them may want to pay the price and they can but we're not going to make that price minimal for every user that's Jeanne's point and I think I really concur with that point. 4ap

Well, maybe we've beat this a little bit to death. From what I've seen we've summarized or agreed to a couple of points. One is that you DO have to provide keywords to an article. It may be done by the submitter of the article out of words used in the title, they may be done by a professional abstractor who writes his own title for the same article that has been submitted and then says: " these

are the words that should be used as the indexed words to the article", and most importantly, that this grand treatment not be given to every article that's in the Journal. I think in the state of the articles that we've been submitting it's probably a very plausible approach, it's not like Science magazine where we will have to make a big decision as to what articles are valuable and what aren't. Probably a simple dichotomy. 4ap1

PART 3. COMMAND LANGUAGE STRUCTURE. 5

Mike: So why don't we switch from the question of indexes to the question of another aspect of these systems which is there solely for helping novice users or even experienced users hand-holding, if you will, so they know what they are able to do in any step of the way. 5a

This was done with a fair degree of similarity with all the systems I observed. One of the interesting aspects of the LMS system at IBM was that on the screen near the bottom, whenever a user was in a particular operation, then all the other operations that were available to him at that point in time, were displayed at the bottom of the screen. He couldn't use a light pen or bug them or anything else, he still had to type in a command for them, but he had them there as a reminder. 5a1

I thought that was a very useful facility for the user. It was not a general purpose system where he had every command available all the time but whenever he was on an operation, then he had a certain subset of commands which were natural successors to what he was doing now as a backup or go ahead. One of the systems we saw at RAND, the Data Analysis System was very similar in that respect. 5a2

Jacques: What is interesting here is how they all use language functions in one way or another. Some of them use function keys that are actually built into the terminal so that you are always reminded of the functions that you have available. Some of them, such as the RAND system, are essentially simulating function keys by displaying boxes at the bottom of each screen so that you could point to that box if you wanted to execute that function next. There was a variant on that which was very interesting: the LMS system was doing it by just displaying a list of the commands that were available to you next, but of course you could point to them with the light pen as you could

at RAND. I thought there was a range of facilities from the hardware keys to the display-oriented keys, function keys. 5b

Mike: Also light buttons. That was very very nice, I think, helpful. 5c

Jeanne: Did the RAND one show only the ones which were available at that point and not ones that were not appropriate at that time? 5d

Mike: Yes, their commands were in a hierarchy. If you wanted to get back up to a higher level so that you could make a wider choice at the moment of what you wanted, what direction you wanted to take, there was always one command which said something similar to back up or emerge or what ever the phrase was. But otherwise, at the level you were at, you only had a few commands, maybe three, four, five commands which would allow you to get into more depth. 5e

Jeanne: And that changed according to what possibilities were available to you? 5f

Mike: Yes. 5g

Jacques: With the one exception that was WYLBUR which is similar to our system in that you have to memorize the commands that are available to you. 5h

Mike: All the commands. And they are all available what ever you are doing. 5i

Jeanne: And that's presumably caused by the fact that you have so many commands, there aren't just a few available. 5j

Jacques: Yes, and also, WYLBUR is a text editing system so that you don't have a natural hierarchy of things that you want to do next. In the Data Analysis Program, when you start asking for the correlation, then there are several questions that naturally follow and it's not the case in other systems. 5k

Mike: I think we would find, if someone has the patience to study it, that the commands in NLS fall into a hierarchy of sorts. I know damn well that there's a whole subset called content analyzer which you never have to have available to you until you enter the "content analyzer." There's a whole subset in the output processor that you couldn't care less about unless you were in the output processor. 5l

Jeanne: And the text editor and the ... 5m

Jacques: On the other hand, there are things that you might want to have on a general level that are not available to you at the general level in NLS. 5n

Mike: Well, that's true. 5o

Jacques: Well, like, what Doug calls set system, the general way of dealing with sets in general, no matter if you are in the journal, the catalog or in your own file. At the present we don't have that. We have to write a special routine within each context to accomplish that. 5p

Mike: What kind of set operations were you thinking of when you mentioned that? 5q

Jacques: Inverting and logical operations, for example. Those are the obvious ones, but I think that in the context of what we were saying earlier, indexing would be an appropriate one. Take this plex or take this branch and produce an index with it on this type of entry. 5r

Jeanne: It looks more and more like we really need to be aware of the difference between just accessing a file and having an editor change capability on it, because there are going to be lots of people who will be using files in which they have no capability to change it, and I think that there's no harm at all in being aware of which mode you're working in. 5s

Jacques: Well, in most sites that we visited, I was really struck by two things: One, I was struck by how well those programs worked. The other thing that I was struck by was that all of them were non-procedural as opposed to the procedural approach that we have to catalog indexing so all those systems are non procedural in the sense that you had the function, you applied that function to what ever data base you were working with and that function would be accomplished. You didn't have to write a special program every time or initiate it or compile it and run it, that particular set that we are talking about. Once that function was identified, it was available to all users. 5t

Mike: A function like that, getting back to this user aide business was the "explain" feature of the RECON system in which you could, it was sort of like a help system in the old QED sense that you, as we observed, if you wanted more

definition of your command in the command language, or of an error message (I think those were the two main things) you could say explain this thing, okay, explain command or explain error message, that you dumped on the screen, you have a full text description. Whether it was accurate or not is another question, but the facility was there for this on-line instruction only when you needed it, not all the time. That's something that we lack completely. 5u

Jeanne: Yes, we need somebody to go through the User Guide and put everything that's available to the user into some kind of "explain" format like that so that you could type in the word and then find out under what circumstances you use it and how you use it. 5v

Mike: Yeah, sometimes I come across commands in the NLS language simply by looking in the statement setup and I've never heard of them before. You know, what the hell is it? 5w

Jeanne: And it would be nice to say help, interrogate, explain or whatever, right then and get understanding of what it was. 5x

Mike: And it seems to me in principle that's not difficult of the system uses links that we have set up and you can link right to a branch. 5y

PART 4. USER-ORIENTED FEATURES. 6

Jacques: Let's talk about the expert and novice modes solution to the problem we have in NLS, because that was very striking. For instance, in LMS I was impressed by the fact that you could have, instead of one function following another and getting the interactive response flashed on the screen each time, you could string all the commands together and just jump to the end of the string, if you could anticipate the answers to all the questions. It seemed to be a very elegant solution to the problem of the expert and novice. 6a

Mike: Because you could jump into and out of an expert mode. You could be a novice during your session or be an expert during your session, intermixed depending on whether you were familiar with the question-and-answer sequence that you were working on. That's why it was a good solution, I think. 6b

Jacques: One example of that, just to get it on record, was this: Suppose you wanted to know the author of a particular book, and the screen flashed and you would get the author, and

then when you wanted the number of copies of that book, it would flash on the screen, and then you might want to know the date of that book and again you would get the answer to that. But if you knew in advance that particular sequence of questions was going to be executed, you could string those three commands together and you would only get the last screen. 6c

Jeanne: Now, what I'm wondering is why is it that necessary to build that into the system instead of just giving it that command for the last thing that you want, which is what our system allows? I mean, if you just want to order one, why can't you just give the command "order" instead of having to go through and essentially give the command, delete, and send a "command delete", which is what it sounds like: the command and the flash and the command and the flash. 6d

Jacques: No, you don't delete it, you originate a new function each time. It's like saying: load this file, then change this branch to put a comma out here and then jump to that link: instead of doing them one by one, you do them all together in one operation. 6e

Mike: Looking at it in another way, there are a number of questions that have to be answered when you're ordering a book. You have to give the edition, the author, the publisher, the price, the number of copies, you know, all of these things. And the way the LMS system is set up, it was a sequence of questions and answers. They didn't all come on the screen at once in a format where you just plug in answers, rather they came up with a number of optional answers for each question and all the optional answers were displayed with each question. 6f

> And in their system we had the choice of having each question displayed with its optional answers one by one, or, knowing the questions and all the options, just typing your particular optional answer string of answers separated by blotches of stuff. That let you just jump over all of these. 6f1

Jeanne: That lets you enter this information all at one time rather than in the series? 6g

Jacques: The reason it was impressive to me at least was that it illustrated something that I've been trying to argue for here, that there is no such thing as a novice and there is no

such thing as an "expert" user. Sometimes you are an expert, sometimes you are not; sometimes you have to be careful about what you are doing because you just won't know what information you'll find, sometimes you know in advance and then you don't want the system to get in the way, and you just want to go as fast as you can through that; it seemed to me it was a very nice way of allowing this without making the distinction between the novice and the expert. 6h

Jeanne: And the system can check you because if you don't enter the right system of commands you'd come back with something which would catch you up or what? 6i

Jacques: Yes, then it restores the state of the system in the previous function executed. 6j

Jeanne: What you're proving is that you're an expert before it lets you be an expert. 6k

Jacques: Yes. And the only exception to that bypass is the ordering of new books, where there has to be the human confirmation to the number of copies, and so on, that have to be altered. That's the only exception. 6l

Mike: That's a really good point, where you're going to go into the outside world and charge money to someone or whatever, cause physical goods to be known, and there you couldn't jump ahead and make an error and get the world in trouble. That was a nice answer to the expert-novice mode dilemma. 6m

> I find that all the time on this system, that there are a certain few things that I finally have learned how to do and I presume I'm an expert at it in the sense that everybody's an expert, they can do it without too much trouble just keying around, but there's a whole set of things that I have no idea how to do and there's no way to become a novice at it. 6m1

Jacques: Unless you're an expert first 6n

Mike: Unless you're an expert first, yes. I think, personally, that this philosophy has been carried too far. It may have been valid several years ago when the system had a limited command set, but now look how many commands we have on the system. I don't know if anyone has a count but there are at least 250, I imagine. 6o

Jeanne: Marilyn is making a collection of them. 6p

Mike: Okay, and you don't know all of these, who knows all of the output processor directives, and who knows all of the ins and outs of every aspect of the system, you don't. Sorting, the markers, the content analyzers, the names, use of names, all these things that are nice features: maybe Jim Norton knows them all and that's great, but he's the exception rather than the rule and I think he'll always be the exception. I don't think anyone or everyone will beat Jim Norton. 6q

Jacques: Well, you don't know all about the English language either, if you go that far. There are very few scientists who know what a discounted cash flow is. 6r

Mike: That's right. And there are only a few accountants who know. 6s

Jeanne: Is it possible that the reason that it works well in the LMS system is that there are so few procedures possible at any point? That there would be only a certain set of steps to go through, and it says to you, "okay, you can either go the slow way in which you are prompted at each point or you can go the fast way?" Our problem with NLS is what you're saying, I think, that under almost all the procedures that you get into, it branches off fast enough that the problem of trying to give a series of commands which you could jump over is taken care of by the fact that you simply use the command that you want rather than to realize that you've jumped over a bunch of possibilities. 6t

I don't see that it's the same problem, in fact, I think that this is one of the limitations on the LMS system, that it is very linear and all you're saying that is elegant is the fact that you can linearly jump a few steps on something, but that you do not have the range of capabilities which a really interactive system, a really usable editing system has. 6t1

Mike: Okay, but we have a lot of linear things too. They may not be 100% linear but take the problem of entering something to the Journal. We don't need... 6u

Jeanne: And we do have, you see, we have that same capability in there you can either ask it for interrogate or you can give all the information you want. 6v

Mike: Yeah, but I'm thinking of a slightly different aspect. There's a whole set of commands in the Journal system, some of them have to do with idents, some of them have to do with document numbers, some of them have to do with submitting file messages or branches or whatever, etc. You don't ever use one of those unless you first say execute Journal. You can't just type "author" in the middle of nowhere. So there's sort of a hierarchy there. Why have those commands available to you? It isn't necessary that they all be... they're not available and and yet they are in the general philosophy of the system. It seems to me that you can make... what I'm trying to say, and it's probably not coming out clearly, is that we have if we look hard, a natural hierarchy of commands; there may be some overlaps and there may be some things which are subsets and supersets at the different commands. 6w

But I think we could organize our commands better to make it easier for the user to be in a novice mode with respect to one set of commands and in expert mode with respect to another set. 6w1

Jacques: I think what it illustrates is the falsity of the premise that whenever you come to a decision point in designing a language like this, or designing software, you have a choice between doing something that's nice for the novice or something that's efficient for the expert. That statement is false. That's what that system showed, that you don't have such a dilemma. If you look hard enough, you can find a way of doing it that will satisfy both requirements. 6x

Jeanne: You mean two ways of doing it? 6y

Jacques: No, a similar way of doing it... 6z

Mike: A similar way of combining it for the novice and expert mode. 6a*

Jacques: You don't have to decrease the efficiency of the system for the expert just to please the novice. There is a way of doing it so that both of them will be happy. 6aa

Mike: This brings up another aspect of the design. I guess I've been a particular critic with respect to NLS and that is that each of the three systems that we're talking about, it seems to me that it took great effort to talk to the ultimate users in the development of design of the system; facilities that would be presented to the system always went through two

years of design and they had countless numbers of sessions with the librarians and always the users could decide what features to use and how. And I presume that RECON went through the same thing. 6ab

Data Analysis with RAND certainly shows a heavy emphasis on the user's need, how he could use it. I don't think we have done that, except in the sense that we all consider ourselves users, experts, everything which I have always maintained and still do is an error in design. 6ab1

Jeanne: I think we're about to do some of that a little bit late at the ICCC where Jacques is designing the query mode for the novice and we expect to... we were talking this morning about using that as a testing ground for finding out if we really carefully evaluate what the user says, and we'll have novices there, then we'll come back and be able to get some feedback on the equipment, but it should have been done several years ago. 6ac

Jacques: Of course the test of ANY system is the novice user Anybody can design a system for experts, because if you can select the users and then train them, then it's not very hard to get them to use the system; but if the burden is on the novice user, then you really have problems. I was really impressed by how well those systems were working in terms of acceptance by people who were actually using them. 6ad

There was a difference in psychological reactions that was interesting among the RECON users: she said that the physicists got very mad at the system after a while. The engineers or the librarians got used to it fairly rapidly, but the physicists were presumably expert users, got mad at it after awhile, so I found it interesting to investigate that kind of reaction. 6ad1

Jeanne: Yeah, we really didn't talk to users and there are probably lots of little hidden things that didn't come out, like some things are obvious and they can't cover them up, and one of those that was obvious was the number of citations for a certain keyword was not updated by posting each time; that's a peculiar lack in the system that obviously has to go in manually; they have to go through there and enter the number of things. It's also true then that some terms would not be entered in there even though those terms were being used. If they only post semiannually then for 6 months there are items

going in there which you would not find in there in their on-line thesaurus and that's a bad thing. 6ae

Jacques: Well, the experience that I had there was sort of simulating a real user, because I did a search that interested me on Pulsars. Of course that's a subject where the literature is expanding very rapidly since they were first discovered in 1968. For six months, its exactly what you're talking about, the term wouldn't even have been in the index, and there was a difference of a ratio of one to two between the number that was posted and the actual number there on the tree. 6af

Jeanne: But you might get thrown off if you didn't, I mean if you weren't a fairly experienced user, which I don't find you to be a novice user even though you hadn't used that system. You're not a novice on-line user and that's a different thing. I think you come to it with so much an understanding. For instance, you had the keyboard code very quickly and I don't think that a normal physicist would do that at all. 6ag

Mike: Yeah, that's mainly because we're simply familiar with computers. 6ah

Jeanne: Very. You know what to expect and that's different from somebody who hasn't used the system. I think there are still an awful lot of people who haven't used any system, or if they have they've used the keyboard terminal only which is a whole different field. 6ai

PART 5. HUMAN ENGINEERING AND TERMINAL USE. 7

Jacques: Well, since we're talking about design, should we bring up the parallel about TNLS and DNLS on one hand and WYLBUR and Video-WYLBUR on the other? 7a

Mike: I think we might comment on that. We were talking about that earlier and I thought your comments were good and if you'd like you could go back over that material. 7b

Jacques: That was the closest thing to the problems we have with NLS in terms of design: at RAND, when they went from WYLBUR, which was an outstanding typewriter-oriented text editor, to the video version, when they did that transformation, they had to essentially simulate the terminal on the television screen. 7c

Obviously they couldn't take advantage of the capabilities

of the television system without altering the language. It seems that they went, in reverse, through the same troubles we had when we tried to simulate the display station on the teletype, going from DNLS to TNLS. DNLS being an outstanding video-oriented text editor and TNLS being a simulation of it on the terminal. That was very striking: It really illustrated the fact that you need to go back to the basic thinking of the system if you're going to change your medium. That was the most obvious thing that came out of it. 7c1

Now I expect that Video-WYLBUR is going to evolve; the way it is now it's simply the same commands that were available on the typewriter-oriented version except that they split the screen horizontally and you see the last ten or fifteen commands that you've typed on the bottom of the screen and you see the text displayed on the top of the screen. It's continually refreshed so that you only see the latest one but it really doesn't take advantage of the capabilities of the screen for paging, for going from a document to another document. Also there are some commands that are irrelevant, that could be eliminated from the bottom part of the screen. 7c2

Then talking generally about the two systems we saw at RAND, it was obvious that you had on one hand a very good text editor or very adequate text editor; on the other hand you had a very good data analysis program, but one had no way of sharing files with the other. That's one thing that we presumably are in a position to do here. It would be very exciting to do it here. Having a common set of files that both the text editor and the data analysis program could share. 7c3

Mike: There was another aspect at the RAND system that we might just touch on, which I don't know if it's at all applicable to library management systems we saw at RECON and LMS, but it is applicable in our system, and that is subsetting files. On the RAND system you had your data base. It was fairly well known what the format and the content field they had, etc. what the data base was. But you may want to work in your data analysis mode with only a subset of that data and the way you did that was, you instructed the system to create a second file taking off of your original file only those data which satisfied certain attributes: Maybe all the data except the data that had this characteristic or that characteristic. Then you create a second file and you can work

with that and analyse it etc. And I think that was very useful. A lot of times, I suppose we could do it with the viewspecs capability by copying and with the substitute command, and with the assimilate. 7d

Jeanne: You can do a content analysis, if I understand that. That's the kind of search that you were doing from the data. 7e

Jacques: Yes, but here again we're talking about two completely different things. The content analyzer is a procedural approach to the problem, when all the systems we've seen, and that was very striking, used the nonprocedural approach in the sense that once a function like this was identified, the user could trigger that function and the result would happen, without his having to recompile the damned thing each time. 7f

Mike: Yeah. That's true. That's really an important point. I'd like to get at it from another aspect, which is that we have all the power, whether it's content analyzer or the assimilate command or the substitute viewspecs or whatever, but you really have to know the system so that you know that you can do what you want to do. I know what I want to do but I don't know how to do it and there's no way to find that out unless I learn every command and just have that be part of my body, so to speak, and then I know what to do with it. But I think that's the wrong approach. 7g

Jacques: If you take that approach, then you may as well learn assembly language, because you can do anything with assembly language, too. The problem is that when you're starting to serve this kind of need, then you pretty much have to agree that non-procedurality is going to be the premise, the design premise of the entire system. 7h

Mike: Okay, a synonym, in my mind for non-procedural functions is user-oriented functions. That may not be a good synonym for everyone else but it works for me in the following sense that if I am a typical, a large typical user, what I need is a function I can follow if I had a task: I could ask it to give me the function key or to give me a command which allows that function to be carried out. I really don't give a damn whether it's carried out by content analyzer or substitute sort or whatever I really don't care. And I sure as hell don't want to sort, merge and substitute etc. All I want to do is say: "subset this file according to these criteria." 7i

But as long as--I hate to come back to this and harp on it,--but as long as the systems programmers are the only ones who are designing the function, it will always be at the assembly language level; it's a very hard psychological thing for the systems programmers to take I'm sure, because they're smarter than I am and they can make many more functions out of the system than I can even dream of, and I have no doubt about that, but they also have to accept that they are maybe not so smart to put them into a context where we can't use them. Maybe they think that I'm too dumb to deserve to use them, but then again, I think that's the wrong approach. I shouldn't be so dumb that I can't use their system. 7i1

Jeanne: We're getting to that point in the catalog production program, when we're able to get Walt's time to take the catalog production from its current form and put it into something that you just make one command and you get the whole bunch of catalog outputs: different proofing format or different output, so I think that they're working toward that in a lot of ways, but maybe it's just a lack of time on some of these other things. 7j

Jacques: Yeah, but we're working toward that on an ad-hoc basis. We do it for one little part of the system here and one little part there. There is no unified approach to that kind of problem. There needs to be. 7k

Mike: I am trying to think about what we've covered so far and see where we might go next. We talked about indexing, the question of design between a display terminal and a typewriter oriented terminal, we talked about user aids in terms of help or explain, we talked about the idea of having a subset of commands available to the user, so that we could know what to do every step of the way, and novice and expert mode, we've discussed the expand feature in terms of the indexing capability, the file subsetting and function key and things of that sort. I think we've sort of exhausted that end of it. 7l

PART 6. PERSONNALIZED FILE SYSTEMS. 8

Jacques: Let's talk about one of the areas that we DIDN'T see and where we think a breakthrough might be possible since we were talking about breakthroughs the other day. There was very little use of microfilm systems. Everywhere we went, we asked "are you using microfilm or microfiche systems?" and the answer was, "sort of", but none of them was really using it

effectively and that's one area where we could do something completely new. In terms of personalized file systems, we didn't see much of what we were hoping to see the other day. 8a

Mike: Yes, we saw nothing there, very little... maybe this Data Analysis...? 8b

Jacques: Yes, a combination of WYLBUR and the Data Analysis program comes close to that if you can have a bridge between the two, combine the two. 8c

Mike: We saw various types of use that require copy output. The Data Analysis system prepared a tape to go down to somebody... the Stromberg-Carlson plotter produced hardcopy of the graphs that were on the screen and the other systems produced various, either off-line, high speed printer output or typewriter-oriented output. There may be other means. We didn't see any use for example, of a camera to take a snapshot of it. 8d

Jeanne: Or a contact print. No technology. Whatever you get on the screen you put the copy paper on. That is 8e

Mike: Sanders has a system like that. 8f

Jeanne: Yeah, and we can see that here in town if we want to go look. 8g

Mike: That would be very nice to see. 8h

Jeanne: Also Varian-Adco. Varian system has a contact print. 8i

Jacques: We can talk about terminals. I was struck by how easy it was to use LMS with a very simple-minded terminal. 8j

Mike: Yes, simplest and perhaps the crudest also. 8k

Jacques: Twelve lines, eighty columns, period. 8l

Jeanne: Do you like that? 8m

Jacques: It worked for what they were doing. 8n

Jeanne: It's very limited. There is only a certain amount you can get on the screen. And I find that to be very restricting. 8o

Mike: The point isn't that it was restricting, but rather that despite it's limited capabilities, they made use of it. 8p

Jeanne: Oh yeah, but I want to see a whole abstract and I don't find any system to be adequate that doesn't have room to display a whole item at once, and that one doesn't. You get hung up in the middle of an item with twelve lines, that just seems too... I know they make apologies for it so... 8q

Mike: There's another aspect of the RECON system which I think we didn't dwell on when we were there, but they used hierarchical storage in a more classical sense than we attempt to use it here. We use it for archive which is one direction, mainly as the item gets less and less use it goes on the page or somewhere else; on the other hand, they seem to put all of their documents on a tertiary storage device and then when they are going to work on one they would call it up to a secondary storage device. That's my interpretation of similar commands that we are using. When we specify author, for example, it would take a little while to go back and get the author and bring it up faster to level four and work on it from there and when they were finished, back it goes. We don't seem to do that too much, as a matter of fact we don't do it at all except as the TENEX does it with respect to swapping. 8r

But we don't have anything except a disk out there, and that's our online storage. We may want to have a super-fast tape or super-slow disk which has a very large capacity in handling; if we are actually going to use something we say, okay, we'll wait a minute to get this or a quarter of a minute to get this thing onto the disk. that's better than than having it out on some slow tape in an archive where it takes 15 or 30 minutes to get it. And then decide we didn't want it in the first place. I think that is a more classical use of the hierarchical storage and they seem to have implemented it real well. A simple way of allowing users to go back to the data. 8r1

Jeanne: How does it work in the LMS? What happens there? 8s

Mike: I don't know what happens. 8t

Jacques: Well, they have a very large computer, with a very large core and apparently they have only one level of storage. 8u

Mike: I think that's correct. 8v

Jacques: Also they have a data base which is small by RECON's standards they have only 17,000 documents. 8w

Jeanne: I think it's too small to consider as a system for anything, I mean we'd never want to design one. I said to Mike that that was one of the limitations that was really obvious: that they had designed it for a fairly small data base with fairly small data elements, no abstracts, for instance, LC subject headings, this kind of thing; and examples that they give in here are indicative, you know, if you want to look for Gable as an author you type in G in the author file and the author file is so small that it appears in the middle of your screen and it's designed for something much smaller than we would even consider. 8x

Also, I told Mike, it was no secret when we went there that they had put, they had given them a priority so that the library terminal, (the 2260) and their teletype input was on a priority system so that it went faster than it normally did and sometimes their response time was worse by the admission of the staff than they were getting at NASA, and it's almost insupportable for use, but for demonstrations they get a faster turnout on it, 8x1

Jacques: When was that? 8y

Jeanne: Last year. 8z

Mike: With all the difficulties that these people have had and with all the time and money that they've obviously poured into the development, design, and implementation of their system, a question in my mind is, what do we want to do? We certainly don't want to duplicate their errors but that's obvious. The real question is do we even want to duplicate the idea of having an automated library system? Or do we want to do something else, as an adjunct or tangent or a whatever. That question really bore home with me and these people who have designed for a year or more like that, and I don't know how many man-years they've put into it, and they still have difficulties-mainly as you pointed out they've got response time difficulties, transmission difficulties. 8a*

Jeanne: And the expense, if we'd look at what it cost to do that query of the data base and to do the printing out, when the printer is connected to make sole use of the computer, you know, real time use of the computer to print out, it's terrible. 8aa

PART 7. THE CASE FOR INTERFACES. 9

Jacques: Something that was certainly striking at NASA was that we don't want to compete with RECON in the light of what Mike was saying, not only do we not want to compete with them on the general technical literature, but even in our field: When we did a search for all the papers they had on information retrieval, it came out that they had 1,687 papers on that, and that was six months ago. So it seems that even in our field they cover the waterfront. Obviously this kind of service is going to be available elsewhere and we don't want to duplicate that. We have to look for, in response to what Mike was saying, we have to look for areas where we can make a unique contribution using the system we have. A good candidate for that among other things would be microfilm, mixing microfilm-video images with... 9a

Jeanne: Well, INTREX has done that and we haven't had a chance to see it. They started off with two terminals, as I remember the report from it they had a terminal in which you were doing the things we are and another terminal where the microfiche was displayed, by the jump thing that Doug talks about doing; then they decided that they wanted it all on one terminal. It seemed to me that that was a poor decision and I'd like it if we could go and find out how that's worked out because I'm still in favor (for my own user feeling) of having two, and I see no reason that they have to appear on the same screen. It's philosophically beautiful and that's probably why Doug would want to do it, to be able to jump back and forth, you know...interactive; and what he wants and his dream is, of course, to get the microfiche on there and then be able to change the text on the thing you're seeing on the microfiche, because I saw his eyes light up when somebody else mentioned that possibility, and any text that you get on there of course you could change. 9b

He thinks this is great but to my mind I can't accept that as a valid thing at this point. I think you could have the microfiche over here and copy something on-to your screen and then interact with it, but I still see two different things. I agree with you, that's the area in which it's most exciting to think, because there aren't many people who are working on it. 9b1

Jacques: Well, why shouldn't we have a microfiche reader in the machine room with a television system that could be mixed

with the image you get on your terminal? And maybe there could be an area that you would define... 9c

Jeanne: I think that's what INTREX is doing. We need to get the INTREX reports and read them and then I think it would be nice if there's a chance that we could get some ideas from seeing INTREX when we go East for the ICCC. It's just another interesting thing. I've dug out the old report on TIP. We'll probably need to catch up with what they are doing too, perhaps by talking to Bill Mathews. 9d

While we're throwing things in I think there's another system that is local that we do want to see because it has implications and that is the one at the Stanford Medical Library where they have a link with the biomedical communications system; that MITRE report that I gave you copies of was done to evaluate a system and I know that evaluation resulted in the DATA CENTRAL system being picked as the one to be used, and I haven't seen whether that is now, whether that's what was finally picked up or not, but the big advantage that they had, the reason that DATA CENTRAL was selected was that they had most of the same features as DIALOG (that's the RECON system now) has and in addition had what we would call content analysis. Instead of going only for words in the title, or words in the keyword section, it did, in fact, look at the whole data the whole citation and would pick the word, whether it appeared in the keyword, the title, the abstract, author. Any place in which this word had been entered could be selected. 9d1

And that's like our content analysis and that's why I feel that no system is complete unless it will do that, and Data Central did. Now Data Central of course doesn't exist anymore, so if this biomedical communications network picked that system up, we'll be interested in finding out. That was demonstrated and it really worked. It was demonstrated at various ASIS meetings, the one in Columbus, and the one in Philadelphia. Data Central was owned by Meade Corporation and my understanding is that they are no longer in business. 9d2

Mike: Do you think any of the systems that we've seen, well, let's put it differently. Do you think that the RECON system could be used by ARC for any of this library document problems? 9e

Jeanne: My feeling is that, and I think that we sort of touched on it during our first conversation, that we needed to interface with other systems rather than duplicate any of them. That's what I said about rekeying. But we thought that's the area... plus the microfiche, but that's an interface system too. I mean an interface problem is to be able to interface with an existing data bank (and other people are working on this) but nobody is doing anything about reprocessing old data banks and I don't think we ought to reprocess. 9f

Jacques: Well, fairly soon RECON or something much bigger than RECON is going to be sitting in the ILLIAC IV or some similar machine with some similar very large store, so I don't see why we couldn't go through the network and pick up that kind of information and come back locally and manage the subsets with our system. 9g

Mike: Yeah, that may be the area that we can make contributions in: how to do that, what facilities one needs for subsetting, what facilities one needs at the local site for not tying up the main computer... maybe this would come back to the concept of hierarchy of storage, maybe no one asks what the hierarchy at the main data base is, and somehow we ship over meaningful subsets of it to a local terminal, work on it and when we're finished we send the whole thing back. 9h

Jeanne: I don't see us taking a large storage, because if I understand what you mean, the meaning of that would be that we would move a large amount like the NASA RECON data base into ILLIAC and operate on it. I don't feel right about that. I think that although that might be possible, it's still not as advisable over being able to interface and make the NASA RECON system do its job and give you the result and just move this little subset... 9i

Jacques: No, what I'm saying is that NASA RECON someday might be sitting in the ILLIAC IV. 9j

Jeanne: That's what I don't see why. I don't think it should. 9k

Jacques: Because NASA will probably do it. Because they will run out of storage and processing capability elsewhere. 9l

Jeanne: Why? Won't they have their own ILLIAC IV? 9m

Jacques: Right, it will be sitting somewhere and NASA or

somebody else with have the responsibility for maintaining a very large data base. And what I'm saying is that, assume that it's sitting in the storage of the ILLIAC IV, that FROM HERE we go through the network and we dial up to RECON, we get RECON to set up a subset for us. When we have that subset then we come back here and we manage it locally. We use it locally, that's that I'm saying. 9n

Mike: I agree with that. 9o

Jeanne: Okay, I see. 9p

Jacques: Because obviously they... it was very obvious that we want the next step of RECON, something like 10 or 50 or 100 times the number of terminals, and you can't do that on 360/50's, especially with the payroll running in the background 9q

(laughter) 9q1

Mike: All of these systems were on 360's. They all had their response time problems. 9r

Jeanne: Well, a 360/50 isn't a really powerful thing. 9s

Mike: Well, of course not. Well, of course not. I don't remember what they were using for the LMS. Model 65? and they also have 65 at RAND? 9t

Jacques: Yes. 9u

Mike: Well, it might well be that that's the area that we ultimately would want to work in here; after we examine more systems perhaps we will realize that we don't, that we needn't re-invent wheels or rediscover and redesign errors. 9v

Jeanne: Or move data bases. 9w

Mike: Yes, move data bases. It might well be that what we want to do instead is decide to move our data base once to another system and then call upon it to be manipulated by our NLS system, locally, by getting it through the Network, say, and then just store it out there somewhere with all of their facilities for browsing etc. Maybe a mix of the two. We've got a damn good text editor so if we could get damn good other facilities... a content analysis, and things like that, but

why rebuild some of the facilities that we've seen that are also damn good? 9x

Jacques: You know, I saw some statistics the other day, with respect to what Jeanne was saying about not duplicating the information that's already printed or recorded somewhere: the whole contents of the world libraries is something like five times ten to the fifteenth bits of information; that's five thousand times the trillion-bit storage of the I-IV. and it's increasing at the rate of two million bits a second. So we've got a job ahead of us if we are going to keep track of all that. 9y

Jeanne: Well I see it as being able to link where everybody else is keeping track of it, whether they are keeping track of it on on-line storage or keeping track of it on hard copy books, also old manuscript on film with an optical scanning capability, or any way in which it is. We need to say "okay, we envision, anyway, that we will interface with that rather than re-input", and that's why I don't see that we need a very big storage capability per se; what we really want to design is something which can access all of these big data banks, even if they are actually hard copy things that are displayed before a television screen. A lot of these things are available and it's just a matter of seeing that you want to interface them instead of re-do them. 9z

And McCarthy over there still has in mind that he's going to input every one of those citations for everyone of those books and make a great encyclopedia of knowledge and this kind of thing and this just seems like the opposite way that we would want them. 9z1

Jacques: Do we have statistics on how fast our catalog is growing? 9a*

Jeanne: It's growing very slowly but we don't have any staff to do it. And what we're doing at this point is simply sampling instead of trying to say, "we are going to create a data base which covers this subject". We're saying, this is an interesting thing, here we have a video tape, okay, we'll make a citation for video tapes so we can tell everybody else :if you have a video tape collection, here's the way you make the citation. And then you put it in and here's how you format that on the index coming out.., that's what I envision as our function, because I can't see trying to build a whole library

and we want to handle only such things as they are actually useful to people here on it, like Martin. 9aa

Martin's reply to our, you know... he read our discussion and he said that he hoped that we were picking up areas to work on but we would remember the hardware people here, because he felt that they need support as well as the software programmers, that we weren't giving any kind of support that they needed in the handling of their information to the hardware people. 9aa1

I know this is an important thing and something that we can do: it's just a matter of taking time to say "here are the conventions for doing it", because they have data and they have information, they have published information. We could find a way to handle it but we need a little more staff and time to set the conventions and input it. 9aa2

Mike: I think this might be a convenient point to stop on because we're really getting into another subject here. We may want to take the time to review what we've said here and come back. This is sort of like a future goal to get to here, what are the breakthroughs that we might make as opposed to duplicating everybody else's failure and successes. 9ab

Jacques: We might not mind duplicating a few successes. 9ac

(laughter) 9ac1

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