JHB 31-MAY-73 08:56 16927

Notice of Effort Writeup.

The Effort writeup is complete as of 31 May 73 for the AHI Analysis--Evaluatiion Task. To read the current status jump on this link: (bair,effeval,status) and print the branch. Thank you. 1

16927 Distribution

John L. McNamara, Edmund J. Kennedy, Duane L. Stone,

JHB 31-MAY-73 08:56 16927

Notice of Effort Writeup.

(J16927) 31-MAY-73 08:56; Title: Author(s): James H. Bair/JHB;
Distribution: /JLM EJK DLS; Sub-Collections: RADC; Clerk: JHB;

Xerox PARC

Jake ... From LPD at Xerox, this message:
MAXC (host 040 octal) will run the stanndard Tenex servers:
TELNET (socket 1), FTP (socket 3), CPYNET (socket 105), and whatever
is on socket 15. Will probably be running RSEXEC in near future.
Use by outsiders of MAXC must be negotiated with Jerry Elkind at
PARC.
They are supposed to be up 24 hrs/day, 7 days/wk, except as announced
in the file <SYSTEM>DOWNTIME.

1

16928 Distribution

Elizabeth J. (Jake) Feinler, James E. (Jim) White, L. Peter Deutsch,

Xerox PARC

(J16928) 31-MAY-73 08:56; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /JAKE JEW(fyi) LPD; Sub-Collections: SRI-ARC; Clerk: MDK;

MDK 31-MAY-73 09:02 16929

Mailbox Addr

Jim ... a note I received some time ago from LPD* his mailbox is
DEUTSCH@PARC-MAXC. ... Mike

1

**1

16929 Distribution
James E. (Jim) White,

Mailbox Addr

(J16929) 31-MAY-73 09:02; Title: Author(s): Michael D. Kudlick/MDK;
Distribution: /JEW; Sub-Collections: SRI-ARC; Clerk: MDK;

DHC 31-MAY-73 14:29 16930

Identification mess

Hi. I made an (several?) error(s) creating a series of idents. First, I meant to create an organization (UCLA-BC) but instead it is now a Group. Then I created an organization which was given the unholy ident of AFF-14. It should be ucla-bc and the Group ucla-bc should not exist. JJV should be organization coordinator. If none of this is clear, please get back to me.

Also, I believe they should have a directory of their own (UCLA-BC?).

Tnx. --Dave 1

16930 Distribution
Marilyn F. Auerbach,

Identification mess

(J16930) 31-MAY-73 14:29; Title: Author(s): David H. Crocker/DHC;
Distribution: /MFA; Sub-Collections: NIC; Clerk: DHC;

DHC 31-MAY-73 14:32 16931

NLS Class

We are getting a huge list of people who want to attend an nls class. Bowles at ucsd would like to send 4 people. We have 4-6 people, and CCN will have several more. Can we schedule a class (or rather TWO????) as soon as possible (july?).

tnx. --dave

1

16931 Distribution
Dirk H. Van Nouhuys,

NLS Class

(J16931) 31-MAY-73 14:32; Title: Author(s): David H. Crocker/DHC;
Distribution: /DVN; Sub-Collections: NIC; Clerk: DHC;

About long messages--

When we implemented the "message" in the journal, we expected them to be short, assuming that if one wanted to submit something longer than a fes lines, he would probably want nls editing capability. When you expect that a message might get too long, you could compose it as a statement in some file. If it fits in one statement, you can use "Submit Statement" and it will still be delivered as a message. If it won't fit in a statement, you can submit it in pieces or use "Submit Branch", "Submit Plex", or "Submit Group" and a file citation will be delivered. 1

16932 Distribution
Alex A. McKenzie,

JDH 31-MAY-73 14:52 16932

About long messages--

(J16932) 31-MAY-73 14:52; Title: Author(s): J. D. Hopper/JDH;
Distribution: /AAM; Sub-Collections: SRI-ARC; Clerk: JDH;

New Output Processor: Dot Directives

This new Output Processor also has an improved format for COM Test output.

New Output Processor: Dot Directives

There is now a set of five Output Processor directives that can be used to provide "leaders" -- rows of "dots" leading from text on the left side of a page to text on the right side of the page. These directives will make easy some printer jobs which used to be arduous -- e.g., formatting indices and tables of contents -- and will make possible for COM formats which previously were impossible (or extremely ad hoc and time-consuming). 1

DotSplit Split Line with Dots DotSplit 2

---- 2a

DotSplit works exactly like Split except that the space between the split text strings is filled with "dots" according to the current values of the Dot, DotFont, and DotSpacing directives. 2b

DotTo Fill Line Segment with Dots DotTo 40,4.5 3

---- 3a

DotTo works exactly like TabTo except that the space between the last text character and the specified location is filled with "dots" according to the current values of the Dot, DotFont, and DotSpacing directives. 3b

If only the printer/tty parameter is specified, it will be multiplied by the width of a blank in the current body font for COM. 3c

Dot Set Dot Character Dot='- 4

Default: '. (period) 4a

Allows the user to chose the character to be printed as "dot." 4b

DotFont Set Font for Dot Char DotFont=10p,Film 5

Default: 10p,Courier (Same default as all other font directives) 5a

The same font will be used for all dots regardless of the font locally in effect at the time a dot directive is invoked. 5b

DotSpacing Spacing between Dots DotSpacing=1,.15 6

Default: 0,.05 (0 for printer/tty, .05" for COM) 6a

This parameter controls the spacing between dot characters. On printer/tty it is the number of blanks between dots; on COM it is the actual distance between dots (if only the printer/tty

parameter is specified, it will be multiplied by the width of a blank in the current body font for output to COM). The .05" default for COM is roughly equivalent to "3-to-em" spacing for a 10 point font (10/3 points) which seems to be the default used by the printing industry). 6b

Dots are spaced in the printed output so that the left edge of each dot is N*(W+S) from the left margin, where W is the width of a dot character in DotFont (1 for printer/tty) and S is the DotSpacing parameter. This way all dots on a page will line up in vertical columns, regardless of where the DotSplit and DotTo directives occur in the original text. 6c

For printer/tty output there will always be a minimum of one space between the text characters and dots (both before and after the dots), except when the DotSpacing is 0. For COM output the minimum spacing between the dots and adjoining text characters is 6d

MIN (sp, dotspacing) / 2 6d1

where sp is the width of a blank in DotFont. 6d2

16934 Distribution

Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews, Rome Air Development Center (ISIM) , Xerox PARC , Advanced Research Projects Agency ,

Mark Alexander Beach, Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee, Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, James E. (Jim) White, Diane S. Kaye, Paul Rech, Michael D. Kudlick, 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, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor

New Output Processor: Dot Directives

(J16934) 31-MAY-73 15:37; Title: Author(s): Walt Bass/WLB;
Distribution: /SRI-ARC RADC PARC-MAXC ARPA; Sub-Collections: SRI-ARC
RADC PARC-MAXC ARPA; Clerk: WLB;
Origin: <XPORGEN>NEWS.NLS;2, 31-MAY-73 15:28 WLB ;

DSK 31-MAY-73 16:44 16935

Material for Journal Review Team

This is an update of (ijournal,16394) on Carbon Copies.

Material for Journal Review Team

THIS IS AN UPDATE OF 1

<IJOURNAL>16394.NLS;1, 14-MAY-73 11:26 ; 1a

SO-CALLED "CARBON COPY" FEATURE 2

2a

The Journal Design Team proposes the implementation of a new distribution category. What this actually means is that a distribution list may optionally be broken into two sets of idents, namely those for whom the submitted material is an "action item", and those for whom the material is "for your information only" or a "carbon copy" (not necessarily the same thing). The user will receive his mail broken down by categories, each category having its own branch, instead of the one "Journal" category we now have. 2b

3

4

What this feature can do for us 5

5a

There have been complaints that our system has been used quite extensively to proliferate junk mail. This new feature can really help reduce this kind of usage if we make it mandatory to specify separate categories, even though our usage habits might have to change slightly as we are forced to think about what we want from the people to whom we are addressing information. 5b

When reading his mail, the user will be able to determine which items should receive his urgent attention, and which he needs to read to keep abreast of the general happenings. 5c

It seems probable that there will be increased usage of the feature which allows explicit subtraction of an ident (or list of idents) from a group. That such a feature currently exists is apparently not widely known. An example is 5d

nlp(EXECEPT dsk) 5d1

which means the NLS Programmers group minus the ident "dsk". 5d1a

Material for Journal Review Team

The actual benefits to us will ultimately depend on how we choose to use the feature. If we truly have a need for this, it will probably be used properly; otherwise, we can expect junk mail to keep representing itself as "action" items. 5e

General Requirements 6

Submission - We need an easy way to specify the two categories of distribution, one which can also be accessed in Interrogate mode. 6a

Status - STATUS should show the breakdown by category if he has selected the feature: 6b

Action: list of distribution elements, 6b1

Copies: list of distribution elements 6b2

Command Form - Replace the DISTRIBUTION field in Journal Submission Form by "ACTION:" AND "COPIES:" fields. 6c

6d

Mail Delivery - Instead of keeping this new information in the citation, we propose delivering citations to two separate branches.
Action citations will appear under the (Journal) branch, and copy citations will appear under (Jcopies), if the user has such a branch. Otherwise, they will appear in "Journal". 6e

***Review team: do you favor some other approach? RWW does not want it in the citation. 6e1

6f

File Header Addition - It will be necessary to modify any programs (user or system) which would be affected by the addition of a field to the Journal Header. 6g

6h

Proposed External Design Change to DISTRIBUTION 7

Add an additional mandatory parameter to the Distribution

Material for Journal Review Team

Subcommand:

7a

Distribution for †Action <or> Distribution †Copies to: LIT <and/or> BUG1 BUG2 CA

7a1

Both categories would be respecifyable like any other Journal Subcommand.

7a2

Interrogate should prompt for both.

7a3

8

Implementation Considerations

9

Header change - This is okay with JDH

9a

<IJOURNAL>16706.NLS;1, 21-MAY-73 13:18 XXX ; Title:
Author(s): Diane S. Kaye, Elizabeth K. Michael/DSK EKM;
Distribution: /RWW JCN CHI PR BAH; ****NEW FIELD*****CC: /MDK;
Sub-Collections: SRI-ARC; Clerk: EKM;
Origin: <MICHAEL>CALCREPORT.NLS;1, 21-MAY-73 10:24 EKM ;

9a1

16935 Distribution
Charles H. Irby, Michael D. Kudlick, James C. Norton,

Material for Journal Review Team

(J16935) 31-MAY-73 16:44; Title: Author(s): Diane S. Kaye/DSK;
Distribution: /CHI MDK JCN; Sub-Collections: SRI-ARC; Clerk: DSK;
Origin: <KAYE>CARBONCOPIES.NLS;3, 31-MAY-73 16:40 DSK ;

Re 16932. I understand about the process of submitting things through a file (although I didn't realize a "Submit Statement" would be delivered as a message). The problem eas, I didn't realize I was going to be so verbose. Thanks for yur help.
Alex McKenzie

1

16936 Distribution
J. D. Hopper,

(J16936) 1-JUN-73 06:04; Title: Author(s): Alex A. McKenzie/AAM;
Distribution: /JDH; Sub-Collections: NIC; Clerk: AAM;

16937 Distribution
James E. (Jim) White,

MAILBOX ADDRESSES AND OTHER COMMENTS

ALL OUR USERS DESIRE ON-LINE DELIVERY OF NIC MESSAGES
AT THE MIT-DMCG COMPUTER (HOST 70.) tHE MAILBOX ADDRESSES ARE
AC = AC@DMCG
AKB = AKB@DMCG
AV = AV@DMCG
JCRL = LICK@DMCG

IN GENERAL USER IDENTS ARE INITIALS EQUIVALENT TO NIC IDENTS.
OUR FTP/MAIL SERVER WILL RESPECT NIC IDENTS FOR LOCAL
USERS. SO RELAX AND PUT US FOR ON-LINE DELIVERY.
NOTE THAT JCRL IS LICK. CAN HE HAVE NIC IDENT AS LICK.
HE PREFERS THAT TO JCRL.
I WAS AMUSED BY YOUR USE OF FAVOURITE TENEX .. HOW ABOUT
ITS.....HUH...
NOTE THAT SURVEY IS UP.
YOU CAN USE NETWRK AT DMCG BY TYPING NETWRK TO MONIT
AFTER LOGGING IN.
I WILL GIVE YOU A DETAILED LIST OF MAILBOX ADDRESSES, PREFERENCES
AFTER CIRCULATING INTERNAL MEMO. WE WOULD ALSO ADD NEW
USERS TO NIC COMMUNITY.

1

MAILBOX ADDRESSES AND OTHER COMMENTS

(J16937) 31-MAY-73 19:21; Title: Author(s): Abhay K. Bhushan/AKB;
Distribution: /JEW; Sub-Collections: NIC; Clerk: AKB;

JEK 1-JUN-73 06:41 16938

Manual request

I tried logging in under AFDSC at 6:00 on 1 June, but just get a ? as a response. 1

If you haven't already, could you please install a user AFDSC with password HRP. 2

In addition, the AFDSC is very interested in NLS and requests 4 copies of the reference manual (of course we are willing to pay). 3

I understand from Sue Poh that you prefer to have only one copy at a site. 4

If You prefer to send only one, we can work from that. 5

Thank You - John Kohl 6

16938 Distribution
Michael D. Kudlick,

Manual request

(J16938) 1-JUN-73 06:41; Title: Author(s): John E. Kohl/JEK;
Distribution: /MDK; Sub-Collections: NIC; Clerk: JEK;
Origin: <GUEST>AFDSCMEMO.NLS;3, 1-JUN-73 06:37 JEK ;

16939

Ken, See you were successful. GREAT If convenient for you, you are welcome to continue using our directory.
Regards, Jean

1

16939 Distribution
A. Kenneth Showalter,

(J16939) 31-MAY-73 20:28; Author(s): Jean Iseli/JI; Distribution: /AKS; Sub-Collections: NIC; Clerk: JI;

Thanks

Jake,

Thanks for the information and help. As you can see (assuming this gets to you) i've already managed to get a copy of P3 to look at and use.

Take care, keep in touch, and thanks for the help.

Hopefully in the future i'll become i little more cordinated with this monster, it's too much like work to use it the way i am.

See you around.

jim calvin

CALVIN@CASE-10

16941 Distribution
Elizabeth J. (Jake) Feinler,

Thanks

(J16941) 1-JUN-73 04:05; Title: Author(s): Jim O. Calvin/JOC;
Distribution: /JAKE; Sub-Collections: NIC; Clerk: JOC;
Origin: <CASE-10>NOTE.NLS;2, 31-MAY-73 14:40 JOC ;

Aids to the Publication Process

some user programs which might help in creating and publishing NLS files

Aids to the Publication Process

Four user programs are available which might help you in the publication process: 1

1) INDEX creates a word index for a statement, branch, group, or plex, with links to the statements including the word. It does so by comparing every word against a list of "un-important" words, and if the word doesn't match it goes in the index. So this program is slow and usually creates an index unduly large, but it is valuable in providing a starting point for index generation. 1a

2) MAKEREF creates a bibliography for all catalog links in the file. Three formats are available for the references. 1b

3) TOC creates a table of contents to the file, to any given level of depth. In doing so, it offsets statement numbers by creating a level one branch at the beginning of the file. 1c

4) FORMAT creates a title page (at the end of the file so as not to disturb statement numbers) and inserts Output Processor directives. A number of formats are available, and the number will be growing. A sample book will be available soon. 1d

index Creates a word index for st/br/plex/group E
(user-progs,index,) 2

Buffer pages required: 2 2a

Execute. Creates a word index for a statement, branch, group, or plex. Inserts the Index as a branch after a group, at end of plex, down from a statement, and at end of plex down from branch. Respects viewspecs. This program is slow, and creates a large index. The index may have to be hand edited after creation to shorten it. It excludes all words in a list in the file <user-progs>index.nls;, all numbers, all words less than or equal to two characters, and all words ending with "ly". Candidates for the exclusion list are more than welcome. Send a message to Dean Meyer. 2b

makeref Scans for journal links and makes ref branch E
(user-progs,makeref,) 3

Buffer pages required: 3 3a

Execute. Available formats of references are: 3b

0 (Ref#####) Author, "Title", Date. [Cited in StNum:(JOURNAL, #####,--)] 3b1

1 (#####,) Author. Title. Augmentation Research Center,

Stanford Research Institute, Menlo Park, California 94025.
Date. 3b2

2 (StNum) Author. Title. Augmentation Research Center,
Stanford Research Institute, Menlo Park, California 94025.
Date (JOURNAL, ##### --) 3b3

toc Generates Table of Contents with stmnt num refs E
(user-progs,toc,) 4

Buffer pages required: 1 4a

Execute. It will ask for a file selection and the number of
levels of depth you wish included in the contents. Note that, by
creating a table of contents branch, it offsets statement
numbering throughout the file. 4b

format Add print directives to a file E
(user-progs,format,) 5

Buffer pages required: 5 5a

Execute. It will ask for the information it needs. Samples of
the COM formats are available in ------. (You will have to be in
Browse mode to alter a journal file.) +++format samples not
ready yet+++ 5b

0: blank format (just does title page) 5b1

1: simple printer format 5b2

2: journal format 5b3

3: 8 pt News Gothic single columns, level one titles 5b4

4: 8 pt News Gothic two columns, level one titles 5b5

5: 8 pt Times Roman, indented pargraphs, no st numbs 5b6

See (user-progs, -contents, 1) for other user programs. 6

16942 Distribution

Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews, Mark Alexander Beach, Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee, Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, James E. (Jim) White, Diane S. Kaye, Paul Rech, Michael D. Kudlick, 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, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor

Rough Draft of SUR Bibliog. Letter

The SUR Bibliographic Collection

The NIC will help us create and update a SUR bibliography. The NIC itself will take care of entering these references into the system. People at the various sites can submit entries as described below.

(A number of references are already on the NIC, and need not be submitted. See your station agent for the list.)

1. Format of Submitted Material

The NIC wants a copy of any article entered, so that it can mail copies out in response to requests. Therefore, send either:

A) a reproducable (ie. good contrast) xerox copy of the article, togther with the following information:

-exact title of journal (from masthead)

-volume number, issue number

-complete date (ie. 31 March 1973, or May 1973, or Winter 1973)

-inclusive page numbers (ie. p. 19-21)

(This information can be written above the title.)

Also, if there are any particular keywords you would like to associate with the article, write them on an attatched sheet (but NOT on the article itself).

or B) (if it is in a widely available journal), a note stating where the article can be found

2) Mail the material to:

Marsha Keeney at the NIC

and indicate that it is for the SUR Biograhic Collection.

3. Requests for information and help can be made to

Mil Jernigan at the NIC (tel. Enterprize 0740).

21

The NIC has cross-indexing facilities available which will be available online. It will also periodically produce hard copy listing of th bibliography. 22

PLM 23

ps. Mil- here is a rough draft of the letter I will be sending out- Perry Miller (PLM). 24

25

16943 Distribution
Mil E. Jernigan,

DSK 1-JUN-73 08:25 16944

answer to 16918, TNLS help inconsistancy

You're right. I fixed it in the experimental system this morning. 1

16944 Distribution

David H. Crocker, Diane S. Kaye, Harvey G. Lehtman, Charles H. Irby,

DVN 1-JUN-73 09:15 16945

Impediments before Teaching TNLS at UCLA

This responds to (16931,)

DVN 1-JUN-73 09:15 16945

Impediments before Teaching TNLS at UCLA

From our point of view two problems have arisen about any more offsite TNLS classes this summer. First is our heavey teaching load these days. We taught a class in Washington in May, are going to teach another there next week, one in Boston the following week, and in Chicago the week after that. It is a strain on the machine and the humans particuarlly since MFA has quit and we have not yet trained some one to take her place as teacher. 1

Second we are planning some changes in the command language (irby,comlang,). These are not deep changes in NLS, but they make the language look different in several ways. I think you know enough to study the design document cited above and get some sense of what they will mean to users. It is not now clear how soon the change will be up and running. Documentation is the bottleneck. Three months is an educated guess, but not an answer. When the changes come into operation, I expect the old system will run in parallel for a while. 2

So do we want to commit ourselves to any new TNLS courses before the new version of the language is avaialble to teach? 2a

For the moment I suggest you glance at the changes and form an opinion on whether you would want people to learn the old language, and I will wait until dates are set for bringin up the new language. Then (about 10 days?) you and I can communicate again. Late July would be the earliest in any event. 3

16945 Distribution

David H. Crocker, Marilyn F. Auerbach, Michael D. Kudlick, James C. Norton, Charles H. Irby, Susan S. Poh, Nancy J. Neigus, James H. Bair,

DVN 1-JUN-73 09:29 16946

We will Get Idents for Boston Students

I got your sndmsg listing names and reporting your over work and the manual situation. We'll take care of it. We will call the people who are not in the ident file and will send manuals to a selected few.
later Thanks and,
D

1

16946 Distribution
Nancy J. Neigus, Mil E. Jernigan, Marilyn F. Auerbach,

ARCG 1-JUN-73 09:41 16947

Usage at ISI

Ken:

This is Lee Richardson at ISI. John Melvin here says he can tolerate a nearly unlimited number of message users on the system, but we can't
let many more programmers on the system because the load avg during the
day makes the machine nearly unusable as it is now.

If you want the account mainly for message sending, we can probably put you in the system directly. For programming of any substantial amount, the administrators-that-be here say to go through ARPA office (Dolan and successors).

Sorry I can't be more helpful, but that's policy (which I don't make).
Best of luck,
Lee
RICHARDSON@ISI

1

16947 Distribution
Kenneth L. Bowles,

Thanks for answering so quickly. The particular day I sent all those messages I was upset because I was trying to find out why one of the guys here couldn't get any journal delivery (it turned out his identfile entry was screwed up). Any how, after playing for about an hour and a half (including looking through local and your online documentation), the fact that folklore was not online really got me mad.

1

16948 Distribution
Charles H. Irby,

MEH 6-JUN-73 08:29 16949

Hardware, How I see our Hardware Support

INTRODUCTION 1

This is a general description of our Hardware Teams support and manpower needs, and a request to hire Ed's replacement. 1a

CONTENT: 1b

<R1> Summary 1b1

<R2> How our Operation compares to others 1b2

<R3> The 2 Troubleshooters and 1 technician 1b3

<R4> The Manager 1b4

<R5> My Request for Ed's Replacement 1b5

<R6> Our Work Load Picture 1b6

(R1) Summary 2

In order to provide adequate hardware support for our computer facility I've concluded it requires 2 full-time troubleshooters, 1 technician, and 1 manager. 2a

Since Ed will be leaving soon (3mo leave of absence then a reduced work week when he returns), I request we hire his replacement now (Technician). 2b

If by some miracle we got rid of Tasker we would still have plenty to do to keep 4 hardware men busy for at least 1 year. 2c

This blessing would allow us to catch up (build proper documentation and maintenance tools). we could get more involved in software and assist in or write our Hardware diagnostics. (Not only do we need to improve what we have but we need more.) 2c1

If by another miracle we got all this done, we would probably by then have more toys to support. If not, we could think of transfers as ideal time developed. 2c1a

If dumping Tasker is a possibility we should discuss it in more detail. There are other alternatives and I must admit that if I knew for sure it was to leave at the end of this contract period (Feb 74) and we could let its upkeep slide till then, I would seriously reconsider the need for Ed's replacement. 2c2

Hardware, How I see our Hardware Support

The problem is we need to do the work we have now and not the work we will have in the future. 2c2a

I feel very strongly about the need for a 4 man team to support our present hardware configuration. If it is decided that we cannot hire Ed's replacement soon, then I request you formally relieve me of my responsibilities as Hardware Pusher, Manager, Supervisor, or whatever you call it. 2d

The reason is, I feel the loads and the mix of the Hardware team is as it should be and necessary if we are to maintain and improve our present level of support. And if we cannot continue this way, I do not want to manage it. 2d1

ie: If we do not hire a replacement for Ed I will have to do more actual maintenance things and less management things. And the management things I feel have contributed much to getting us to where we are now, in fact; I am convinced we would not have gotten this far without them; Consequently, I am not willing to give them up and continue to be responsible for the Hardware support. Further, I know I cannot adequately do both so I am not willing to try. 2d1a

Hardware, How I see our Hardware Support

(R2) How Our Operation Compares to Others 3

Hardware tasks do not have the same face value as other ARC tasks. For instance, Software tasks are in general goals of the project. (ie: They are software tools that address users needs, which is where it's at.) Therefore, users' can see the apparent value. Further they were generally involved in their selection. Consequently, these tasks have high face value. 3a

Operator tasks and other people support tasks are similar. Though they are in general not goals of the project. They do directly affect users because they are needed to complete their daily work. Therefore, they too have high face value. 3b

In general Hardware tasks (personnel) have little face value. For instance, if we improve the maintainability of a device it is difficult for a user to realize what that is worth, even though it really means more up time. They cannot see the "X" amount or "X" achievement clear enough to attach value. Further, when we are doing those things that improve maintainability; like documenting, black box building, reading device descriptions, fixing cables, etc, it is even harder to see. Hence, a wide gap develops from this lack of understanding. 3c

This is unfortunate since all we are trying to do is provide to the project reliable user Hardware tools, and to us reliable methods and maintenance tools by which we can support them. People should realize these facts and take them into account when viewing us or judging our appearance. 3c1

I expect we do not spend more than 25 or 30% of our time actually fiddling with the hardware which is the only visible evidence by users that we are repairing. The rest of our time is spent doing things that support providing maintenance service. People must accept this for this is the way it must be in our particular situation. 3c2

If we took a detailed look into our DEC support I'm sure it would exhibit the same results. I personally have taken a glance and I'm convinced if I added up all their actual logged man-hours repairing it would not amount to more than 30% of the full time staff man-hours afforded by the contract monies we pay them ($5k/mo). 3c2a

Hardware support is like the chair we sit in or the table we write on or the building we live in; it is overhead. The difficulty is it must be paid for by project funds as you very well know. And since overhead has no tangible sellable product to pedal to the client, it represents a burden that is hard to justify. 3d

Hardware, How I see our Hardware Support

(R3) The 2 Troubleshooters and 1 Technician 4

It goes without saying what the 1 technician (Jake) is doing. 4a

The two troubleshooters must spend at least 80-90% of their time doing things directly associated with maintenance. Things like investigating problems, documenting, preparing upgrades, implementing upgrades, designing and building things that assist in troubleshooting problem devices. 4b

ie: Like the little box we recently built that proved X-Core was not the failing device causing non-xm's, and the circuitry we now have wired into our Network interface to try to pinpoint an intermittent failure, or the trouble lights and step switch we added to tasker. 4b1

Equally important in our particular situation is training. We will have to spend much of our time training (perhaps 50%). This is the only way we have to keep familiar with our devices and we must keep familiar if we are to provide adequate support. 4c

Some of this training energy will eventually become PM work. We should periodically check power supplies, pulse widths, waveshapes, and the like in our devices. As of yet we are not doing this. 4c1

Our Troubleshooting team is not like factory teams (DEC for instance). Factory teams keep familiar because they service a family of similar devices. We support only one facility with single devices that in general are non-standard. Consequently, we must rely on documentation study to provide the necessary experience. 4d

It appears wasteful in view of so many other things that need to be done, but it is a necessity if we are to provide reasonable service support. 4d1

These 2 troubleshooters I speak of are repairmen. They are not Design or Research engineers and must not be thought of as such. If we want that kind of support we must get it from somewhere else. 4e

Any load not directly related to maintenance support must not be allowed to become the prime responsibility of these men. If it does it will only distract and disgrade their maintenance support effort. 4f

Hardware, How I see our Hardware Support

(R4) The Manager 5

In order to provide proper support to the project the hardware team needs a manager. He is needed to provide: direction of efforts, how much, with what control, and provide a link to other project operations. Without this, maintenance support will never become aligned to project needs and will exist only on individual stamina and perseverance. And, in my opinion, in the long run will not work. 5a

Repairmen are repairmen. Someone needs to know the worth of these repairs and provide the check and balance between them and the other operations and goals. A repairman doesn't know how important a device is to the project. He doesn't know where he should be spending his efforts to help avoid critical hardware dilemmas that might directly affect the project momentum or efficiency. 5a1

Only when a dilemma occurs (breakdown of a critical device like the drum, net interface, etc.) does he become aware of it. And then the tension is high and the probability of a speedy repair is low. (It usually becomes a very long drawn-out affair that makes the repairman look bad and the user unhappy.) 5a2

I am not saying here that a manager will eliminate this situation from ever happening. (Since our project is research, the environment will continually change and we will never stop growth long enough to catch up and become stable.) 5b

What I am saying, though, is a manager interactive at the project level with responsibilities and commitments to set priorities at the repairman's level could indeed minimize these situations. 5c

Someone needs to listen to the repairmen, sympathize with them and understand their problems. They are doing an extremely frustrating job of maintaining equipment under the worst possible conditions (poor documentation, poor service tools, lack of cooperation from users, some equipment that will never work well, and worst of all, no thanks). In addition to giving them hardware responsibility and alot of blap about the Hardware discrepancies someone needs to tell them thanks and give them encouragement. Why do you think people have left our maintenance team and the AI's? Why do you think our maintenance appears so bad? Without someone actively performing this function, you will have confusions, disorder and misunderstanding no matter how small the team is. 5c1

Hardware, How I see our Hardware Support

(R5) My Request for Ed's Replacement 6

As you know in mid June Ed is planning to take 3 mo leave of absence. And when he returns he will work a reduced work week; 4 days/wk then 3 days/wk till he leaves permanently around June 18/74. 6a

Because of this and my conclusions that we need a 4 man maintenance team, I would like to hire his replacement now (Senior Tech, Asst Eng, or Assoc Eng). If I could send to Bob Wing a copy of our last Ad along with a request to hire we could perhaps find a person in time to assist us during his leave, and provide a smooth crossover. 6a1

Hardware, How I see our Hardware Support

(R6) Our Work Load Picture

HARDWARE SUPPORT	EKV		JR		RB		MEH		JP	
work type	(A)	(N)	(A)	(N)	(A)	(N)	(A)	(N)	(A)	(N)
TROUBLESHOOT/REPAIR/UPGRADE										
COMPUTER DEVICES Drum, Xcore, IDC, A/D con, I/O box, CLK, Mux, DC, Patch, Modems, LPT,	-	5-	40-	-	-	10-	40-	10-	0-	- -
TASKER	-	20-	10-	-	-	60-	20-	-	-	- -
GENERAL TV	-	0-	5-	-	-	10-	5-	-	-	- -
COMPUTER TV	-	40-	5-	80-	60-	10-	10-	-	-	- -
SUB UNITS mouse, keyset, keyboard, display table, cards, etc	-	5-	5-	5-	10-	0-	5-	-	-	- -
PREVENTITIVE MAINTENANCE	-	0-	5-	0-	20-	0-	5-	-	-	- -
TRAINING	-	20-	10-	0-	10-	20-	10-	-	-	- -
ASSISTANCE others	-	20-	20-	5-	20-	10-	10-	-	-	- -
NEW EQUIPMENT investigating, designing ordering, etc	-	0-	10-	-	-	-	-	30-	30-	- -
USER INTERFACE hardware problems, device operation, etc	-	0-	10-	5-	10-	0-	5-	20-	20-	- -
house CLEANING TV screens, printer, hardware tool, storage areas	-	-	-	-	-	-	-	-	-	5- 20-
DOCUMENTATION collect, organize, design, review	-	0-	10-	0-	5-	0-	20-	20-	10-	- -
TV PROJECTOR	-	-	-	5-	5-	-	-	-	-	- -
MANAGING	-	-	-	-	-	-	-	60-	60-	- -
TOTALS	110/130		100/140		120/130		130/120		5/ 20	

(A) = percent we are currently appling = 465
(N) = percent we should be appling = 540

**MEH 6-JUN-73 08:29 16949
Hardware, How I see our Hardware Support

16949 Distribution
Douglas C. Engelbart, Richard W. Watson, James C. Norton,

Motor Generator, Request to Purchase

The following is a request to purchase a 150KW Motor-Generator unit that will provide primary power to support ARC's, AI's, and the PDP-11 computer facility. These facilities are located on the second floor of Engineering building 30, room K-2089. 1

CONTENTS: 1a

Motor Generator, Request to Purchase

(S1) Introduction 2

Frank Cannon (SRI purchasing agent) in May requested bids from several suppliers for 3 different power units. The 50 KW is the minimum necessary to support ARC. The 100 KW is the minimum necessary to support ARC, AI, and the PDP-10. The 150 KW is what I consider the minimum necessary to provide reasonable expansion capabilities for these 3 facilities, and as can be seen is the most economical. General Electric was the lowest bidder in all cases. 2a

returned bids: 2a1

50 KW =	$14,257.00	:	$27,018.00 2a1a
100 KW =	$20,855.00	:	$36,621.00 2a1b
150 KW =	$22,638.00	:	$42,410.00 2a1c

This purchase order does not include off loading costs from nearest rail or installation. A Work Order will be submitted to cover these costs upon purchase approval. 2b

Jim Hansen (Dir. Maintenance Service) estimates installation costs between $3,000. and $6,000. 2b1

It is intended that the unit be installed in our basement facility of Engineering building 30, room L-0006, with the monitoring devices and switch controls centrally located in the computer area (K-2089). 2b2

General Electric's quoted delivery dates are 4 to 6 months. 2c

(S2) Justification 3

This motor generator unit is needed to improve the reliability of our computer facilities. It will eliminate equipment breakdowns due to transient noise and outages (normally experienced on PG&E lines) by effectively isolating and stabilizing the equipment's primary supply from the PG&E primary supply, thereby improving equipment reliability. Most all computer facilities trying to provide reliable computer service have motor generators, see (13585,3:g). 3a

Motor-Generators support computer facilities in several ways: 3a1

1. They provide a damping effect to PG&E line transients. 3a1a

2. They provide systematic power shut down when an outage does occur. (Not an erratic down/up, down/up, down procedure normally associated with PG&E outages.) 3a1b

3. They provide ride through for outages that might normally crash a system. 3a1c

4. They pre-notify, thus allowing a software monitoring subroutine to clean up current states and come to a gentle halt. 3a1d

I found very little factual evidence supporting the necessity for Item 1, but there is a very strong general feeling and consensus among those who service computer equipment that many failures are due to PG&E line transients and fluctuations (Some measured data shows these transients can be as high as 300 volts on a 110 volt line.) 3a2

The need for Item 2 is well supported. There is substantial evidence that erratic down/up procedures are very bad for systems. See (13585,2c) and (13585,2d). 3a3

G.E.'s motor generators seem to be very reliable. Users I have talked to that use G.E. motor generators to support their computers recommend them. Further, the preventive maintenance requirements of G.E is only twice a year. (Requires only a routine inspection with no facility down time and can be adequately performed by SRI personnel.) Therefore, I recommend we purchase the General Electric unit. 3b

(S3) Abstract and references of facts: 4

(F1) ARC's multishared display system (Tasker) is subject to severe damage due to erratic power fluctuations or outages. (13585,2d) 4a

(F2) Digital Equipment Corp's disk controllers and drives are sensitive to fluctuations and erratic outages. This is our main data base and program storage area. (13585,2c) 4b

(F3) ARC's and AI's drum storage devices (Bryant) are sensitive to power outages and fluctuations. These devices are our intermediate storage areas and are vital to system operation. 4c

(F4) All reliable computer systems have motor-generators. (13585,3) 4d

(F5) Motor-generators are dependable and reliable devices. (13585,4a) 4e

(F6) There presently does not exist, in Engineering building 30, a Motor-generator that meets our power requirements and is sharable. (13585,3b) 4f

(F7) ARC requires at least 50KW, 3 phase power with its remote controls mounted in our computer room. (12615,2d) 4g

costs of a 50KW approximately $15,000 4g1

Jim Hanson (Dir. Const. and Maint. Ser.) estimates installation costs between $2,000 and $5,000. 4g2

(F8) To supply both PDP-10's and the PDP-11 system we would need G.E.'s 100 KW or 150KW unit. 4h

Reason: Total measured power for these combined systems is approximately 70KW plus expansion needs. (At least 30KW?) 4h1

costs of a 100KW unit is approximately $21,000. 4h1a

costs of a 150KW unit is approximately $23,000. 4h1b

Since cabling must now go to 3 systems, installation cost will be more, estimate is $3,000 to $6,000 4h2

16950 Distribution

Douglas C. Engelbart, Richard W. Watson, James C. Norton,

Motor Generator, Request to Purchase

(J16950) 20-JUN-73 15:32; Title: Author(s): Martin E. Hardy/MEH;
Distribution: /EMC; Sub-Collections: SRI-ARC EMC; Clerk: KFB;

Modems, a correction to Don Andrews connection

The recent journal item [16189,) I wrote regarding possible high speed 1200 baud full duplex modem hook-ups for Don Andrews is in error. 1

<R1> THE ERROR
<R2> THE 1200 BAUD FULL DUPLEX SYSTEM WE WILL INSTALL FOR DON. 1a

(R1) THE ERROR 2

It turns out the Telephone coordinator I talked to really didn't know modem equipment. After some exhaustive discussions with him he finally gave up and put me in contact with a data systems representative. 2a

This data systems representive told me what I suspected in the first place, but was talked out of by the coordinator. 2b

The Telephone Company does not have a 1200 baud modem that will run full duplex over standard dial-up lines. You must use 2 modem systems (4ea; 202 or 201). 2b1

One system for send and one system for receive. On the user end they install a black box with a switch to connect both together. You must switch it after making connection to the 2 dial-up modems on the other end, (you dial 2 numbers). The switch effectively connects the 2 systems (send/rec) to the terminal 2 wire system. Neat huh . 2b1a

(R2) THE 1200 BAUD FULL DUPLEX SYSTEM WE WILL INSTALL FOR DON 3

The outcome of my discussions with Jim Norton was to purchase 2 full duplex modems manufactured by Vadic for $750. ea. We will have the telephone company install a Data Access box (DAA) on Don's SRI extention. This will provide the connection for the Vadic modem to the dial net. On this end we will have an identical system but with a different extention number. 3a

The Vadics are really full duplex 1200 baud dial-up units, I think the only ones on the market. The Xerox connection is with Vadic equipment and as far as I know there has been no problems with them. 3a1

The approximate costs look like: 3b
2ea Vadic's = $1500. 3b1
2ea DAA's = $10./mo 3b2
Don's ext = $350./mo 3b3

16951 Distribution

Donald C. (Smokey) Wallace, Richard W. Watson, Don I. Andrews, Mark Alexander Beach, Judy D. Cooke, Marcia Lynn Keeney, Carol B. Guilbault, Susan R. Lee, Elizabeth K. Michael, Charles F. Dornbush, Elizabeth J. (Jake) Feinler, Augmentation Research Handbook, Kirk E. Kelley, N. Dean Meyer, Kay F. Byrd, James E. (Jim) White, Diane S. Kaye, Paul Rech, Michael D. Kudlick, 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, William H. Paxton, Jeffrey C. Peters, Jake Ratliff, Edwin K. Van De Riet, Dirk H. Van Nouhuys, Kenneth E. (Ken) Victor

Line Processor and related issues, includes terminal specifications

Hi Rick --- Martin, some replies to your journal 18377 questions. 1

P.S. Hope this resolves some and I'm sorry I'm so late in replying but been very busy getting "line processor #1" built for Doug's use in England. If I can be of any further help please do not hesitate to ask. 1a

contents 1b

<L1> line processor 1b1

<L2> your utility link bandwidth 1b2

<L3> our utility bandwidth 1b3

<L4> 1200 baud full duplex modems 1b4

<L5> line processor terminals 1b5

<L6> I/O slowdown 1b6

(L1) LINE PROCESSOR 2

There will be a Copy Printer RS-232 port in all line processors as an option. It will be selectable to 9600 baud, perhaps higher? 2a

AVAILABILITY 2b

I have located a company that is willing to build and maintain them. Preliminary costs are guessed at $2k with delivery starting in 6 mo. after working out details. To fill gap we expect to build some here. Working out details now. (9/21). 2b1

There still are numerous unsettled things to iron out (funding, personnel to build, etc.) but these I expect will fall into place quickly, as we get to them. Target date for our units is Dec. We should discuss your needs. 2b1a

BUILDING YOUR OWN 2c

You could build your own from the drawings we provide, they will probably be the first ones, therefore I recommend you let us. There will be unforseeable bugs in circuit layout signal coupling, PS noise, etc. and we should confront first before others. 2c1

I will send you drawings as soon as they become available. I intend to hold off as long as possible so not to propagate a premature and unreal set. 2c2

Line Processor and related issues, includes terminal specifications

COPY PRINTER PORT 2d

We haven't resolved the software for it yet. It is low priority till after Sept. We expect this port to operate in a multiplex mode sharing character with the video terminal. This way a user could "output quickprint" then without waiting for hardcopy completion continue with other display work. 2d1

(L2) YOUR UTILITY LINK BANDWIDTH 3

Since you know best what's available to you and at what costs, you will have to use your own judgment in determining your utility link bandwidth, My recommendation would be minimum 1200 baud, maximum 9600 per NLS terminal. 3a

All the low cost terminals we have looked at thus far have a highspeed limit of 9600 baud, therefore from the standpoint of user response a 9600 baud link between line processor and external processor (utility) would be adequate. Our current experiments are showing that the display appears quite responsive and snappy to most users at 1200 or 2400 baud. The lower bound seems to be 300 baud and at this rate the response is quite noticeably sluggish when in an interactive mode like jumping to a file link, but it is still quite usable. 3a1

(L3) OUR UTILITY PORT BANDWIDTH 4

We will at first come up with 2 110 baud ports and the remainder fixed at 300. The reason for this is we do not expect to have in the beginning line processor software running on the utility. It must first be thoroughly tested on our local ARC-10. We should by then know what bandwidth you can come in on and can determine port equipment needed. 4a

This may all have changed by now (9/21), therefore you should discuss with JCN. 4a1

(L4) 1200 BAUD FULL DUPLEX MODEMS 5

We have received our 2 Vadic 1601 modems. As soon as we test them, and have time, I would very much like to make some tests with you. One problem is we don't have our own terminal to test with. Expect a loaner in a few weeks and ours by Dec. 5a

(L5) Line processor terminals 6

SPECIFICATIONS 6a

Line Processor and related issues, includes terminal specifications

1. 2048 character display memory, minimum 24 lines by 80 chars. of text 6a1

2. 300 to 9600 baud switch selectable serial communications port 6a2

3. Full ASCII upper/lower case display and keyboard including control characters and optional side numerical keypad 6a3

4. Unlimited scrolling where text rolling off top of screen may be lost 6a4

5. Non-blinking cursor 6a5

6. Delete Line 6a6

   Removes one line of text and moves all following lines up one line -- performed in 3-5 ms, absolutely in less than 100 ms 6a6a

7. Insert Line 6a7

   Moves addressed line and all following lines down one, leaving a blank line 6a7a

8. Clear screen -- performed in 3-5 ms 6a8

9. Cursor Addressing 6a9

   Maximum of 4 character 2 for lead in codes. 1 (x) position 1 (y) position, both binary and range in display memory only. 6a9a

10. Cursor interrogate 6a10

11. Move cursor left margin 6a11

12. Move cursor next line 6a12

13. Text Marker 6a13

    A technique that alters only selected text for user identification. (like blinking or reverse video, italics, etc.) Text must remain readable. 6a13a

Items 6-13 must have directive codes addressable "on-line" by an external serial ASCII device such as a computer. Items 7, 9-13 must execute in 1 ms or less. 6a14

SUPERBEE 6b

We have recently tested a Superbee. The outcome was bad and we do not recommend it. 6b1

To address the cursor you must send an 8 character string, 4 is common with most terminals. In addition the cursor addresses all of memory, meaning the line processor must be smarter. Also blink control characters take up displayable memory. 6b1a

DELTA DATA 6c

Thus far the Delta data 5200 is the only terminal we have found that is adequate for line processor use with NLS. 6c1

address 6c1a

Phillip L. Friedman or James T. Humberd
22142 Archwood St.
Canoga Park Ca. 91303
phone (213) 883-1661
I have mentioned your name to them, they are the Western regional people, but will put you in contact with reps in your area. 6c1a1

(L6) I/O SLOWDOWN 7

The standard DEC line scanner does not permit this. We are still thinking in terms of using a high speed line processor (Intel 8080) to do multiplexing. Will talk more about this after Sept. If interested sponsoring please make known. 7a

MEH 26-SEP-73 10:02 16952

Line Processor and related issues, includes terminal specifications

(J16952) 26-SEP-73 10:02; Title: Author(s): Martin E. Hardy/MEH;
Distribution: /RLT JCN RWW CHI DCE DVN JML; Sub-Collections: SRI-ARC;
Clerk: JML;
Origin: <LEAVITT>ORANGE.NLS;10, 25-SEP-73 08:26 MEH ;

16952 Distribution

Ric L. Treleaven, James C. Norton, Richard W. Watson, Charles H. Irby, Douglas C. Engelbart, Dirk H. Van Nouhuys, Jeanne M. Leavitt,

utility, bell canada link

Jim: This is in response to your request to obtain a clear picture of Bell Canada's data link connection to the Utility. 1

(What will be their equipment configuration?, will it mate with our Utility equipment?, what's the time schedule?, related problems?, given one must connect via PT&T: is their configuration what we want to recommend to others?) 1a

I am still compiling information relevant to the last question. Expect completion in about a week (10/24?), will communicate then. --Martin 2

contents 2a

<L1> What They Plan to Do (as of 10/17/73) 2a1

<L2> Timing 2a2

(L1) What They Plan to Do (as of 10/17/73) 3

Bell Canada will be paying for 1 NLS and 2 TNLS terminals, right?. Their physical connection to the Utility will be through a port Multiplexor (TDM). This will reduce their monthly overhead costs by reducing the required port connections (leased lines) from 3 to 1, They have selected to operate this multiplexed link (trunk) at 2400 baud (NLS at 1200, the 2 TNLS's at 300, leaving a bandwidth excess of 600 baud for future expansion). 3a

Bell's multiplexor dimultiplexed ports and the Utility's Data Line Scanner ports are both asynchronous, therefore will connect satisfactorily. 3b

They will reevaluate system in 6 mo for cost-effectiveness and future needs. 3c

Data Link configuration: 3d

(Utility) 3d1

3 asynchronous computer ports 3d1a

(1 1200 baud, 2 300) 3d1a1

1 TDM multiplexor 3K 3d1b

General Data Corp 3d1b1

Type 1202 (max 5 ports up to 2400 baud) 3d1b1a

utility, bell canada link

1 modem	3K		3d1c
PT&T, or equivalent			3d1c1
type 201-B1 (2400 baud sync)			3d1c1a
(Interestate)			3d2
1 4 wire trunk (.80/mile for 2,100 miles)	1,680/mo		3d2a
nonconditioned voice grade lines			3d2a1
(Bell Canada)			3d3
1 modem	3K		3d3a
PT&T, or equivalent			3d3a1
type 201-B1 modem (2400 baud sync)			3d3a1a
1 TDM multiplexor	3K		3d3b
General Data Corp			3d3b1
Type 1202 (5 port max, any combination up to 2400 baud)			3d3b1a
3 terminals			3d3c
(1 1200 baud, 2 300)			3d3c1
TOTAL = 12K + 1,760/mo trunk charges			3d4
(These costs reflect typical and not actual for Bell Canada)			3d5

(L2) Timing 4

Bell expects link to be operational earliest mid DEC latest mid JAN (it will take 8 wks after go ahead). They will want to connect and start using the Utility as soon as it becomes available. Thus some interim arrangements will have to be made (assuming Utility scheduled uptime is 1 Nov.) 4a

The interim arrangements 4a1

Mike Marrah is having installed a 300 baud rotary dial up system (home number: 408 996-2300) to 6 ports of the Utility's Data Line Scanner (the Data Line Scanner can have any multiple of 8 ports, up to 64, the Utility will start

with 8, 2 will be for inhouse use). Bell Canada will be allowed 3 of these ports on a dial in scheduled basis. When their link system comes up Mike will remove 3 of the rotary dial up modems and connect the Data line scanner ports (serial E1A, R5-232B) directly to Bell's Multiplexor. At that time 1 port will be jumpered for 1200 baud 10 unit code and the others 300 baud 10 unit code. 4ala

16953 Distribution
James C. Norton, Richard W. Watson, Ferg R. Ferguson, Charles H. Irby, Ric L. Treleaven, Donald M. Atkinson, A. Jim Blum, Michael L. Marrah,

ARC's energy needs

Blipouts, brownouts, blackouts; <L1> .and some question concerning them?; <L2>. 1

According to knowledgable people in the energy field, we will soon be affected by the energy crisis. (our computer electricity will be become less reliable, and turned off at times) If true, we will have to learn how to reschedule our work, or buy an alternate source. In any case we should address and resolve now while there appears to be time to buy an alternate sources, ahead of the rush?, if we so chose. 1a

It is a fact that bay area PG&E people are preparing a plan for controlled Bay Area power shutdowns (brownouts). 1b

My point in bring this up is to ask the question: how do we relate? <L2>. ....Martin. 1c

(L1) To quote a recent article in Modern Data (July 73) concerning electrical power for computer facilities: 1d

"The clarion call at computer centers during this summer of '73 and the remaining years of the decade might well be "Power to the Processor". With the electrical utilities experiencing increased difficulties in meeting public demands and in bringing new generation facilities on-line, deterioration in the continuity and quality of power is a certainty for the future. The country's penchant towards "all electric" living, environmental standards, and shortages in fuel supplies will have a less than beneficial effect on our kilowatt sources. The EDPer is, therefore, well advised to consider supporting his computer with some form of on-site power regulation or supply system." 1d1

"The public's demand for kilowatts has already depleted the safe operating reserves of many local utilities, and the power producers are presently straining their facilities to meet current consumer needs. Coupled with the environmental brouhaha over fuel pollution standards and nuclear power generation, and the critical shortages of "clean" fuel supplies, blackouts and brownouts are bound to increase in frequency for the foreseeable future." 1d2

(L2) Some questions: 2

1. Will our computer be effected? The utility? 2a

If so, should we adjust to?, or buy an alternate source? 2a1

Or is it not relevant to us here at ARC and/or Tymshare? 2a2

ARC's energy needs

2. Is SRI concerned and/or doing anything about it? 2b

3. If we decided we wanted an alternate power source; 2c

Is it SRI's responsibility, ARC'S, or the Project agency? 2c1

4. What relevance does this have to our Utility commitment? 2d

5. Is Tymshare ready for, or committed to, supplying alternate power? 2e

If not, how do we handle our customers? 2e1

MEH 26-OCT-73 10:40 16954

ARC's energy needs

(J16954) 26-OCT-73 10:40; Title: Author(s): Martin E. Hardy/MEH;
Distribution: /SRI-ARC SRI-AI; Sub-Collections: SRI-ARC SRI-AI; Clerk:
JML;
Origin: <HARDY>POWER.NLS;3, 26-OCT-73 08:40 JML ;

Line Processor Evolution

LINE PROCESSOR EVOLUTION <L1>, and next step <L2>. 1

Hopefully these writings will provide the awareness of its growth and the basis for discussion of its future. ....Martin. 1a

(L1) Evolution 1b

Journal (14901,) 1b1

Was the paper addressing and defining a specific device, which we now call the LINE PROCESSOR. This device would allow us to use a Mouse and Keyset with a class of low cost video terminals. 1b1a

The device was conceived to be designed using Random Logic technology for the control sections (Logic that is composed of discrete type components) and LSI and MOS technology devices wherever possible. It would have a Cursor interrogate and addressing scheme with a specific output protocol. The protocol would be initiated with a keyswitch or mouse button change, or cursor interrogate request from the computer. Direction would be under computer control. The paper calls for the use of a restrictive Mouse and keyset code. One with the least amount of code conversion because it is a very expensive to implement code conversion in Random Logic. 1b1a1

Cost was estimated between $500. and $1000. each. 1b1b

Decision to implement L.P. with a LSI MOS Microcomputer unit built by Intel Corp. 1c

Journal (14904,) 1c1

The microcomputer would essentially replace the control logic as defined in journal paper (14901,). The microprocessor would provide greater flexibility in the protocol, mouse and keyset conversion, and cursor addressing and interrogate schemes. 1c2

It was thought we could implement the Ramdom Logic control functions with the minumum of microprocessor sub-assemblies (1 CPU, 1 RAM, 1 ROM). 1c3

Costs were estimated to still be within the original Random Logic estimate of $500. to $1000. each. 1c4

Construction stage 1d

As things developed (Programming and Hardware) it was agreed

that we would implement the Firmware (program instructions that defined the operation of the hardware logic) in PROM (memory that is not volatile and can be erased and rewritten at will without limit). This decision incremented the previous cost estimates by approximately $300. Would require more microprocessor sub-assemble units and Proms cost more per unit than ROM. 1d1

The next major development was we could not (or did not want to because of Ten loading and protocol restrictions) confine the Firmware to within 1 PROM and RAM. Also at this time it was determined we could and would do switch debouncing in Firmware in order to trim hardware. Because of these decisions the Firmware grew to 4 PROM's and 1 additional RAM necessary to support an operational system. This increased the cost by approximately another $600. per unit. 1d2

Unit costs have now risen to between $1500 and $2k. each. 1d2a

The last step and the stage of developement we are now at is the need for 1 additional PROM to implement the copy printer port and additional hardware for status lights, switches, and E.P. speed code decoding. These are things we determined useful and necessary. 1d3

costs now jump to between $2.5K and $3.5k. 1d3a

(L2) I have solicited bids from Cybernex and Comstar, journal (12568,), to build 1 to 5 units. Comstar is bidding using their standard microprocessor line of modules. Cybernex would copy exactly our design using our art work and layouts. When these Bids return (end of this week 10/26?) I will make general notice and solicit a quorum of interested members to discuss the LINE PROCESSOR; what it has developed into and what happened to the $500. unit. 1d4

Line Processor Evolution

(J16955) 26-OCT-73 11:03; Title: Author(s): Martin E. Hardy/MEH;
Distribution: /SRI-ARC; Sub-Collections: SRI-ARC; Clerk: JML;
Origin: <HARDY>ORIG.NLS;5, 25-OCT-73 14:06 MEH ;

Line Processors, 5 Interim Units

I initially felt that we must build interim units here at SRI (12568,) in order to get delivery as soon as possible. Since then I have received bids from 3 companies that could supply units equally as soon. This means then that if we chose one of them a marketable unit could be available sooner than originally anticipated, and with less SRI efforts. 1

The following is a summary of these bids and my inhouse estimate <S>, and some related questions with my ratings <D>. 2

(S) Bid Summary 3

	with CP		without CP	
<L1> Comstar	3,550	------	3,200	3c
<L2> Control Logic Corp	2,600	------	2,500	3d
<L3> Cybernex	1,800	------	1,700	3e
<L4> SRI	1,500	------	1,400	3f

3a 3b 3g

*** Costs are for completed units, but are all conditional, please see links. *** 3h

(D) Discussions 4

Line Processors, 5 Interim Units

(L1) Comstar 4a

Is a company that caters primarily to the industrial control market. They have a microcomputer system using the Intel 4 bit cpu with a large selection of plug in modules. They are a 1970 spin-off subsidiary of Midtex Corp. Their 1972 volume was 1.4 million. Employ 31 people of which 6 are engineers. 4a1

1) Is it a cost + bid? 4a1a

no 4a1a1

2) What is their delivery estimate? 4a1b

Modules off shelf, units 3 mo after go ahead. 4a1b1

3) Are they represented nationally? 4a1c

yes, sales and service 4a1c1

4) Will the unit require some additional SRI work? 4a1d

yes, we will have to build the first unit. There is the possibility that we will have to modify their transmitter/reciever module, we will have to develop new programs because the architecture is different. 4a1d1

5) Do they appear knowledgeable? 4a1e

Questionable, I have had trouble getting info from them. 4a1e1

6) Will company provide hardware maintenance? 4a1f

yes, both in the field and mail order. 4a1f1

7) Will the company provide software maintenance? 4a1g

no 4a1g1

8) Will they program Proms? 4a1h

no 4a1h1

9) Does their documentation appear adequate? 4a1i

no 4a1i1

10) What kind of processor do they have? 4a1j

Line Processors, 5 Interim Units

Intel's 4 bit unit. 4a1j1

Line Processors, 5 Interim Units

(L2) Control Logic Corp 4b

Is a company like Comstar. They too caters primarily to the industrial control market. They are a 12 year self owned company eager to do business with us. They turned 1.7 million last year and employ 50 people of which 10 are engineers. They too have a microcomputer system with a large selection of plug in modules, unit is designed around the Intel 8 bit CPU. 4b1

1) is it a cost + bid? 4b1a

no , but there is a one time setup charge of 600. 4b1a1

2) What is their delivery estimate? 4b1b

same as Comstar's, modules off shelve and first unit 60 days after go ahead. 4b1c

3) Are they represented nationally? 4b1d

yes, both sales and service like Comstar. 4b1d1

4) Will the unit require some additional SRI work? 4b1e

Yes, like Comstar we should build the first unit, though it appears all their modules will work like we require; the microprocssor is an intel 8 bit unit which will require new software development. 4b1e1

5) Do they appear knowledgeable? 4b1f

yes, much more so than Comstar. 4b1f1

6) Will they provide hardware maintenance? 4b1g

Yes, they guarantee units for 1 yr, and will support complete unit repairs at their plant. They have no field service, but are open to discuss if necessary, and could provide it through a 3rd party maintainance co. 4b1g1

7) Will the company provide software maintenance? 4b1h

They said perhaps, but would have to discuss in more detail to define exactly what that means. 4b1h1

8) Will they program Proms? 4b1i

perhaps, again we will have to discuss in more detail. 4b1i1

9) Does their documentation appear adequate? 4b1j

yes 4b1j1

10) What kind of processor do they have? 4b1k

Intel's 8 bit unit. 4b1k1

Line Processors, 5 Interim Units

(L3) Cybernex 4c

Cybernex is a local PA company some of us are familure with (they built our PDP-10 I/O interface). They are the westcost IMLAC maintenace rep, and market mice and keysets. Are primarly a design house very knowledgable in the display feild and trying to find marketable products. Last year they almost closed the door because of discourgement with the way things where going (seemed not to be because of lack of funding), since have decided not too and have aquired AWARE SYSTEMS, a consultant co. expect to turn about .2 millon this year abd .5 millon next. They employ 12 people of which 4 are engineers. 4c1

1) Is it a cost + bid? 4c1a

yes, their bid is 550. plus parts. 4c1a1

2) What is their delivery estimate? 4c1b

dependent on parts delivery, 3mo for Intel's cpu. 4c1c

3) Are they represented nationally? 4c1d

no 4c1d1

4) Will the unit require some additionalna SRI work? 4c1e

yes, we queried their bid assuming we would do all the repackaging and art work for the units, which means building the first unit, like with the others, but with more involement on our part. 4c1e1

3 MW (RDB) + hardware costs (about 3,000), (includes card layout costs). 4c1e1a

The unit's architecture would be exactly the same as our present line processor, therefore should not have to do any additional software developement, (except for CP). 4c1e2

5) Do they appear knowledgable? 4c1f

yes 4c1f1

6) Will company provide hardware maintenance? 4c1g

yes, definently mail order and possibly nationally if it warrents, need to dicuss in more detail what the big picture looks like. 4c1g1

We will also have to develope some software (PROM'S) to help troubleshoot the hardware. 4c1g2

7) Will the company provide software maintenance? 4c1h

most likely not, they will troubleshoot devices as far as possible. 4c1h1

8) Will they program Proms? 4c1i

perhaps, if we make arrangements to do so (money). 4c1i1

9) Does their documentation appear adequate? 4c1j

will be provided by us 4c1j1

10) What kind of processor do they have? 4c1k

Intel's 4 bit unit 4c1k1

Line Processors, 5 Interim Units

(L4) SRI 4d

The unit we would construct would be identical to the Cybernex one. 4d1

Cost is the same less my estimate of their overhead fee. 4d1a

(parts + 300. labor) 4d1a1

Requires the same in house design efforts and costs. 4d1b

(3,ooo, + 3 MW) 4d1b1

Delivery would also be about the same. 4d1c

(3 mo) 4d1c1

16957 Distribution
James C. Norton,

Line Processors, 5 Interim Units

(J16957) 2-NOV-73 11:21; Title: Author(s): Martin E. Hardy/MEH;
Distribution: /JCN; Sub-Collections: SRI-ARC; Clerk: JML;
Origin: <HARDY>COSTS.NLS;9, 2-NOV-73 10:02 JML ; Title:

COMPCON 74, Letter to Session Chairman

Augmentation Research Center
Stanford Research Institute
Menlo Park, California 94025

Dean C. Bowman, Manager
Terminal Engineering
Peripheral Operations Oklahoma City
Honneywell Information Systems Inc.
P.O. Box 12313
Oklahoma City, Oklahoma 73112

Dear Mr. Bowman:

Received your letter dated Dec, 7, 1973. Enclosed is a copy of my paper "Microprocessor Technology to Extend The Utility of Computer Peripherals". 1

I am looking forward to meeting with you during your COMPCON 74 visit to San Francisco. In order to facilitate your schedule planning, let me just say that my time schedule is completely open during the conference week and the week preceding it. Also, meeting with you in San Francisco will be fine. May I suggest breakfast, or perhaps lunch, together? 2

As an alternative, I would like to offer you an invitation to visit and have lunch with me, and a few of my associates, here at SRI. We are located just thirty minutes from the San Francisco airport, and even less from San Jose's. This would give you the added opportunity of seeing our facility first hand, and the work we are doing related to terminal engineering. 3

Sincerely,

Martin E. Hardy
Augmentation Research Center

COMPCON 74, Letter to Session Chairman

(J16958) 4-JAN-74 16:14; Title: Author(s): Martin E. Hardy/MEH;
Sub-Collections: SRI-ARC; Clerk: JML;
Origin: <HARDY>LETTER.NLS;13, 4-JAN-74 16:07 JML ;

DHC 1-JUN-73 12:15 16959

Classy class

I have read chi's things now and agree that nls will appear significantly different. I appreciate the warning. Perhaps what we can do, vfor interim purposes at least, is for me to hold a small calss for the people who really need to learn soon (e.g., our new secretary who starts the 15th of June). Could I get some assistance from y'all for that? (for starters, what asistance would you recommend?)

Thoughts?
--Dave

1

16959 Distribution 1

Dirk H. Van Nouhuys, 1a