Note on Removal of Expedite Command and Time for Hardcopy
Distribution of Journal Documents

Just a note to record what we discussed yesterday about when the
Journal hardcopy process (hcdist) should be run.   1

   I think your plan for starting hcdist up automatically early
in the AM (5?) sounds good. The operator we plan to hire will
probably work hours like 4 am to 1pm and would be here to
check the printer paper and stop the process and restart it if
the paper jams in the printer.   1a

Eliminating the Expedite command from the on-line submission
process probably mskes sense, since it was not used properly
when we had it in before.. everyone used it too much. The plan
for having users call the operator directly when they want
immediate hcdist is OK, but too bad its not through the
system.   1b

   Perhaps we'll get to the point where there is an operator at
a consloe most of the time who can get the request through a
link or such.   1c

   Of course, we could try the Expedite command use sometime
with the development of better habits by the users.. not
sending everything Expedited..keeping a record of such sends
and analyzing for aparently unnecesssary uses of Expedite.   1d

   For now, the telephone or in-person request for quick hcdist
will be OK (with me, at least).   1e

Note on Removal of Expedite Command and Time for Hardcopy
Distribution of Journal Documents

(J7847) 21-OCT-71 7:34; Title: Author(s): James C. Norton/JCN;
Distribution: William S. Duvall/WSD; Sub-Collections: SRI-ARC; Clerk:
JCN;

Forms for Updating User Documentation?

I read your proposal for procedures for user documentation
(7703).   1

What bothers me is the whole question of instituting forms,
particuarlly for a service organization.   2

The trouble with forms is they are relatively easy for a central
organization to creat and relatively hard for scattered,
inexperinced users to fill out. For this reason most forms
reduce the quality of life. If I may sepak in fashioanble terms,
they are a kind of intellectual poollution, The formmaker
scatters his drudge work out over the world of people unprepared
to handle it.   3

NIC has the alterntive of setting up an onlline file and asking
people to put the same information in the file, free form.   4

Let me try to analyse the choice with rough numbers: If it takes
the central formaker 4 hours to creat a form, and he sends out
500, and each user spends 20 minutes filling it out, and the
form maker spends fine minutes processing it, the cost in tme is
203 hours.   5

    If the scattered users take 10 minutes to send in the
    information raw and the central information handler then has
    to take 10, minutes to handle te information, the saving in
    time is 80 hours and we gain good will among the scattered
    users.   5a

Forms for Updating User Documentation?

(J7848) 21-OCT-71 9:37; Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Marilyn F. Auerbach, Richard W. Watson, James C.
Norton/mfa rww jcn; Sub-Collections: SRI-ARC; Clerk: DVN;
Origin: <VANNOUHUYS>JOURDRAFT.NLS;5, 21-OCT-71 9:18 DVN ;

Two Nights and one Day Making NIC Catalogs

Monday Night -- Dave Hopper made a program today to sort the titleword files which were unsortable because NICPROG titleword had bombed out, after creating a statement for each titleword but before sorting or deleting the keys. I created the complete set of titleword statements Sunday night, but Dave's sorter program didn't compile Sunday night because of an undefined symbol. During the day Monday I talked to Dave who said that the undefined symbol was deleted in his partial copy of the file, but he had forgotten to update it so I didn't see the deletion. Monday night I started out to find Dave's program. I had forgotten to write down the file name and had some difficulty finding it, but did. It still would not compile. He had still not updated it. I tried to come in as Dave, but he has an odd password (Dave, as I later discovered). By that time I knew enough to copy the file and delete the symbol myself and it compiled. I then loaded a titleword file I had created Saturday night, a file of about 350 pages, and tried to run the sorter on it. The system replied, "I/O data error." File Verify showed it was a bad file. Successive file verifies showed all the files of the titleword sort of Saturday night to be bad. I deleted them.   1

I did an output processor on the author format file. I then decided I would try to do the listing sort. I tried compiling NICPROG formatter a couple of times, and the system responded after "compiling user program" plus a few seconds "I/O Data Error, type CA". Both NICPROG and the source file, OCTCAT verified. Then the ten o'clock dump message came.   2

Tuesday -- I can't give as detailed account of my work during the day because I don't have the terminal printout. Early Monday morning the system was down so I didn't try any early morning runs. During the day I learned that the heading I had used in doing output processor on the formatted author file Saturday night was wrong and that it would have to be processed over and that Walter had improved the format put out by format number so I would have to run that over. In the afternoon Jim Norton suggested that the file be sorted backwards to show the most recent document first. Jeanne and I agreed that it was a good idea, but it will be another step. The version of keyprogram that Dave made for me that skips the first two characters will do it. I spent most of the day on other things. About 3:30 Jeanne came and said that she wanted to add footnotes to the header to explain the asterisks and backarrows that appear in the number files. We spent most of the rest of the afternoon trying to get the header back right with the space for the footer. During that time Walter came in and we had a chat about what he had really done and what the formatter program should do exactly. I think everybody agrees that what we now have is the right thing, but it

means that I will have to rerun author formatter and the output
processor from author formatter. At 5:30 we still had not gotten
the footer just right, and I gave up and went home.   3

As soon as I got home I logged in, but there were 14 users and
the load average was still over two, so I decided not to try
anything until after dinner. Various people had dropped in for
dinner, so I logged in about eight. I intended to run the new
formatter on the sorted number list but, discovered first of all
that I had deleted the file sorted by author. It must have been
one of the times when the disc was full and I was desperate for
space. That is one of the less demanding programs, so I
foolishly decided to try to run author sort anew rather than get
the old one off the dump the next day. In 44 minutes clock time
it reached the point of giving the sort running time (502
seconds, quite a bit longer as I remember than the other times I
had run it) it said I/O Data Error. I was left in some kind of
bad file. I checked the disc. There were a couple of thousand
pages free. I decided I would try to format the number sort file
so Jeanne would have something to work on tomorrow. After I put
it in I was away from the terminal about 20 minutes. Some time
during the 20 minutes it responded, bad file. It was 10 minutes
to ten so I didn't even look to see what file it was, if any, and
logged out.   4

The days reported here were bad rather than good days in catalog
making, but they're not unusually bad days.   5

I intend to continue to keep a diary on this project, but I'm not
going to journalize it further unless a need for a journalized
version appears.   6

(J7849) 22-OCT-71 8:48; Title: Author(s): Dirk H. van Nouhuys/DVN;
Distribution: Richard W. Watson, Jeanne B. North/RWW JBN;
Sub-Collections: SRI-ARC; Clerk: BER;
Origin: <ROW>CATALOG.NLS;1, 21-OCT-71 15:46 BER ;

Visit log, 21 Oct 71:   Kjell Samuelson, Associate Professor of
Research, Information Processing-ADP, Royal Institute of
Technology, Stockholm University, Sweden.

Main activity of KS: 1

   Chairs the FID/TM Committee (Theory and Methods of Systems,
   Cybernetis and Information Networks)   1a

      Since 1966 this Committee has been mainly interested in
      automated international information networks.   1a1

      Kjell wrote a chapter in this last Annual Review (Carlos
      Cuadro's Volume 6) on "Internatonal Information Transfer
      and Network Communications."   1a2

   Lectures in Information Science   1b

      Put together a one-year program for Information Science,
      and is presenting a paper on this for the forthcoming ASIS
      Annual Meeting in Denver (Under Curriculum Development).   1b1

   He does part-time consulting on application-oriented
   projects, such as: 1c

      Action-oriented data-base design form bio-medical
      purposes.   1c1

      Information networks as an aid for the improvement of
      environmental quality. (An ASIS paper coming out by KS on
      this -- JBN would know.)   1c2

Regarding ARPA-Net development, and KS/RIT: 2

   A leg of the Network is being installed to England -- and
   assumedly will grow toward Norway and Sweden (a persistent
   rumor).   2a

      I believe thta a TIP is being installed at London Univ
      (We were visited yesterday by Peter Kiestein of LU, who
      apparently will be directly involved).   2a1

      We were simultaneously visited by Roger Scantlebury, NPL
      (who are also very interested).   2a2

   I would expect that, in ARPA's eyes , RIT would be a prime
   sort of candidate for Network participation.   2b

      Larry Roberts (ARPA), who manages the evolution of the
      Network, has announced that the Network has been opened to

Visit log, 21 Oct 71:   Kjell Samuelson, Associate Professor of
Research, Information Processing-ADP, Royal Institute of
Technology, Stockholm University, Sweden.

almost any applicant who has the money -- including
commercial "resource" and industrial R&D groups.   2b1

I furnished Kjell with Larry's full address, and I urged
him to write a letter as soon as possible expressing
interest in exploring RIT's possibly joining the Network.   2b2

I think that the arrangements are something like this for a
new participant: 2c

He leases a TIP or IMP (equivalent to a capital price of
$50-100K);   2c1

pays some annual flat fee for attachmet to the Network (a
figure of $20K/yr comes to mind);   2c2

pays a fixed rate per message packet for his part of the
Network traffic;   2c3

Particpates in a financial exchange system enabling him to
use and be filled for the services of the various resource
sites on the Network.   2c4

A bit about our hopes for a Bootstrap Community.   3

I outlined briefly to Kjell what the BC would be after -- a
collaborative bootstrap operation for sugmentation-sytems
developement (and developers).   3a

I told him that to me the possibilities of BC collaboration
with RIT would be most interesting.   3b

Miscellaeous Note: Borje Langefors (Sp?), a colleague of
Kjell's, has written a book that would likely be of interest to
us: "Theoretical Analysis of Information Systems,"
Studenthillerature, Lund, 1971 (Kjell thinks that there is an
English or American publisher, too).   4

Kjell and Borje are collaborating upon another book, planned
to be finished next summer.   4a

Visit log, 21 Oct 71: Kjell Samuelson, Associate Professor of
Research, Information Processing-ADP, Royal Institute of
Technology, Stockholm University, Sweden.

(J7850) 22-OCT-71 9:07; Title: Author(s): Douglas C. Engelbart/DCE;
Sub-Collections: SRI-ARC; Clerk: DCE;

A Note on Base Line Planning Files

Bruce--   1

    I have update my base line.   1a

    I have put some references in it to a long range baseline plan
    which I am currently evolving in cooperation with JCN.   1b

    A Note on the format of the Base Line Planning File: 1c

        I found it convenient to re-order the task branches so that
        all tasks for which I am pusher appear first, all tasks for
        whch I am possibly pusher (i.e. <WSD?) appear next,
        finally followed by tasks in which I am involved, or
        possibly involved.   1c1

        This might be a reasonable thing to do when generating the
        file.   1c2

        Also, for TNLS Users, the dates could be easily modified by
        a substitute if there were different symbols for the 'No
        Date' option, e.g. ??? for start and *** for finish, or
        some such thing.   1c3

A Note on Base Line Planning Files

(J7852)   22-OCT-71 12:36;   Title: Author(s): William S. Duvall/WSD;
Distribution: Bruce L. Parsley, James C. Norton/blp jcn;
Sub-Collections: SRI-ARC; Clerk: WSD;

Jim...You could not use the Journal because the new NLS was not
brought up as the running system in the proper manner Friday.
That may have also caused MITRE's problem (7853)   1

Note to JCN

(J7855)   24-OCT-71 21:03; Title: Author(s): William S. Duvall/WSD;
Distribution: James C. Norton/JCN; Sub-Collections: SRI-ARC; Clerk: WSD;

Some Thoughts on ARC and the EMC

This is basically a note to Doug in response to his expressed
friendly impatience with the EMC in some areas. I'm delighted
with the impatience because to me having come in from the outside
it means that problems which have been obvious for some time are
now coming to be obvious to others, such as who is pushing DEX in
the full sense.   1

ARC has many strengths and accomplishments to its credit acquired
over many years and months. These in turn have attracted the
interest and potential and real support of outside groups.   2

This interest by outside groups is presenting opportunities to
ARC, which mean increasing pressure on ARC.   3

The increasing pressure is making clear some real weaknesses in
equipment, attitudes, procedures, management, people etc. These
weaknesses did not spring up over night, but have been building
for many years and months.   4

Much of the credit for ARCs strengths and accomplishments
belongs to you, but you can not escape the other side of the coin
and not accept an equivalent percentage of the responsibility for
the weaknesses.   5

There is no magic in the EMC and it cannot solve in a few days
situations and attitudes etc. which have been building over
months and years.   6

The concept of the EMC makes alot of sense and I think offers a
sound mechanism to help solve some of our problems in close
cooperation with you.It needs your advice and patience, but
mostly some time. You could jump back in and relieve pressure on
some area of concern at this time, but there is no reason to
believe that over the long haul that such an approach will solve
the problems which have been building for so long. The present
arrangement offers the best immediate chance of harnessing the
strengths of several people to cover each others weaknesses and
to reinforce each others strengths which is really what a team
does best.   7

Enough on defense of the EMC concept. While I am spouting let me
reiterate what I believe is the fundamental mistake I keep making
and to which one can trace many of ARCs present problems. This
error is in not following ones best judgement at all times for
various reasons of expiediency such as trying to be a good guy or
save a buck in the short run etc.   8

If one follows the above principle of going with ones intuition

Some Thoughts on ARC and the EMC

and best judgemet even at the cost of some short term loss I find
things always work out. To ignore the principle just puts off
until tomorrow magnified problems.   9

The implications of following the above principle for management
are many, but the ones I ignored in Shell most often and got into
problems as a result and I see ignored here on occassion are: 10

   1) One insists that manufacurers and other vendors supply
   well thoughtout and documented products and honor promply and
   continuously their maintenance obligations.   10a

   2) People on the project must recognize the importance of
   working on those problems which are generally considered to be
   the most important . People must recognize that the project
   will try to have them work on things of prime interest to
   them,but that this is just not always possible and they should
   be flexible and do their best on each assignment.   10b

   3) That if someone is felt not to be fairly and fully
   contributing they be asked to leave even if that would cost
   some short term setback on a particular program or personal
   emotional strain. My experience is that this principle works
   best for the individual asked to leave and for the project
   because he either ends up someplace where he can be more
   productive or is forced to come to grips with some significant
   problem. Clearly this is always done after a period of some
   time spent working on the problem with one or more people from
   the project, this trial period should not be allowed to go on
   and on however.   10c

   5) That one does not accept financial support from any group
   if one feels it in anyway indangers or compromises ones
   goals.   10d

   6) That one expands only as fast as the foundations will
   safely allow.   10e

(J7872)   27-OCT-71 14:55;   Title: Author(s): Richard W. Watson/RWW;
Distribution: Douglas C. Engelbart, James C. Norton, Charles H. Irby, Ed
K. Van De Riet, William H. Paxton/DCE JCN CHI EKV WHP; Sub-Collections:
SRI-ARC; Clerk: RWW;

Need for a Logging Terminal for the Journal

Bill We should establish a logging terminal to record Journal
activity.
Each entry would be the author or clerk ident number, partial
tile and date which can fit on one line.   1

Need for a Logging Terminal for the Journal

(J7883) 28-OCT-71 15:31; Title: Author(s): Richard W. Watson/RWW;
Distribution: William S. Duvall/WSD; Sub-Collections: SRI-ARC; Clerk:
RWW;

DRAFT SRI-ARC Resource Notebook Entry

Alex Please make any changes desired and return to Jean North
through the journal

DRAFT SRI-ARC Resource Notebook Entry

SRI   IMP #2
Augmentation Research Center (ARC)   Host #0
Network Information Center (NIC)
PDP-10   1

I. Personnel   2

   All of the people listed may be contacted by telephone at SRI
   at (415) 326-6200 plus extension listed.   2a

      A. Administrator: 2a1

          Dick Watson   Ext. 2013   2a1a

      B. Software: 2a2

          John Melvin   Ext. 4328   2a2a

      C. Hardware: 2a3

          John Melvin   Ext. 4328   2a3a

      D. NIC Station Agent: 2a4

          Cindy Page   Ext. 3007   2a4a

      E. NIC Technical Liaison: 2a5

          John Melvin   Ext. 4328   2a5a

      F. Information and Agent Coordinator: 2a6

          Jeanne North   Ext. 4119   2a6a

   These people may also be contacted through the use of
   ENterprise phone numbers. NIC has arranged for Sites to
   have phone service to the Center with all tolls billed to
   NIC. The phone numbers to be used by Sites are given below.
   To call NIC, a Site member should give his local operator
   the appropriate number. If the operator is unfamiliar with
   the arrangement, the caller should ask to speak to the
   phone supervisor.   2a7

   Ident   Site   Phone   2a8

   AMES-CD   NASA Ames   dial direct, 329-0740
                CD Group   2a9

AMES-ILLIAC	NASA Ames ILLIAC Group	dial direct, 329-0740	2a10
ARPA	Advanced Research Projects Agency	Ent 1-0740	2a11
BBN-NET	B. B. and N. Network Group	Ent 0740	2a12
BBN-TENEX	B. B. and N. TENEX Group	Ent 0740	2a13
CASE	Case Western Reserve Univerity	Ent 0740	2a14
CMU	Carnegie-Mellon University	Ent 9074	2a15
HARV	Harvard University	Ent 0740	2a16
ILL	University of Illinois	Ent 1074	2a17
LINC-67	M.I.T. Lincoln Lab 67 Group	Ent 0740	2a18
LINC-TX2	M.I.T. Lincoln Lab TX-2 Group	Ent 0740	2a19
MIT-DMCG	Project MAC DMCG Group	Ent 0740	2a20
MIT-MULTICS	Project MAC Multics Group	Ent 0740	2a21
MITRE	MITRE Corporation	Ent 1-0740	2a22
RADC	Rome Air Development Center	Ent 0740	2a23
RAND	Rand Corporation	Zenith 9-0740	2a24
SDC	System Development Corporation	Zenith 9-0740	2a25
SU-AI	Stanford University dial direct 329-0740 AI Group		2a26
UCLA-CCN	UCLA Campus Computing Network	Zenith 9-0740	2a27
UCLA-NMC	UCLA Network Measurement Center	Zenith 9-0740	2a28

UCSB	Univ of Calif at Santa Barbara	Zenith 9-0740	2a29
USC	Univ of Southern Calif	Zenith 9-0740	2a30
UTAH	University of Utah	Zenith 9-0740	2a31

The ARC mailing address is: 2a32

    Stanford Reserch Institute
    Augmentation Research Center
    333 Ravenswood Avenue
    Menlo Park, California 94025   2a32a

II. Installaton Type   3

The ARC site encompasses both research and service functions.
Network users will be concernedjtinitially with only the
service function, which is the Network Information Center, or
NIC.   3a

III. Equipment   4

A diagram of the ARC computer facility is available. (See
NIC-- Journal,7736,)   4a

    A. The ARC host is a PDP-10 with 128K of 1 microsecond
    36-bit core, BBN TENEX is the operating system. (Over the
    Network, the ARC host appears as a TENEX-based timesharing
    system.)   4a1

    B. Supporting equipment includes: 4a2

        1.5 million words of Bryant paging drum   4a2a

        96 million characters of Bryant disc file   4a2b

        2 mag tape drives   4a2c

            7 track   4a2c1

            200/556/800 bpi   4a2c2

        2 DECTAPE drives   4a2d

        24 line teletype scanner   4a2e

            full USASCII for 10, 15, 30, and 60   4a2e1

character/second devices   4a2e2

paper tape reader and punch   4a2f

12 NLS display workstations   4a2g

   upper/lower case   4a2g1

   keysets   4a2g2

   mice   4a2g3

line printer   4a2h

   upper/lower case   4a2h1

   132 columns   4a2h2

   300 lines/minute   4a2h3

remote devices interface   4a2i

   IMLAC support   4a2i1

IV.   Consoles   5

The system is capable of interacting with both half-duplex
and full-duplex consoles. For network interaction,
transmission will be treated as half-duplex unless the system
is advised otherwise via the Executive Language "Full Duplex"
command.   (For local users, full-duplex operation is the
default mode.)   5a

The "attention-getting" character is ETX (frequently called
control-C, hexidecimal 03).   5b

For NETWORK interaction, SRI-ARC assumes that the user is at a
"physically" half duplex terminal. The user may change the
way in which the system treats echoing and output through the
use of EXEC level commmands. A brief scenario for entering
the system as both a half- and full-duplex user is shown in
(8).   5c

Specifics of network console support will be Presented in the
NIC TNLS User Guide (see NIC # --journal,7470,).   5d

V.   Physical Resources   6

A. Available Network Connections   6a

  8 Network user limit initially   6a1

  Dynamic allocation of all resources   6a2

  Access for Network users will be biased by various factors   6a3

    System loading, time of day, file requirements, etc. If
    there are no Network connections available, the user
    will be notified appropriately by the system when he
    attempts to connect.   6a3a

B. Resource accounting   6b

  To be defined   6b1

D. File Storage for Network Users   6c

  Long term file storage will be available for network users   6c1

VI. Interests and Capabilities   7

The Augmentation Research Center (ARC) is dedicated to
exploring the possibilities for augmenting the intellectual
activities of people working in complex problem-solving
situations.   7a

  By "augmentation" we mean increasing the capability of a
  person or organization to approach complex situations and
  identify problems present there, to gain comprehension of
  the nature and context of these problems, and to derive
  solutions satisfying given constraints.   7a1

ARC's approach to augmentation research has two essential
aspects: the externalization of intellectual structures in
symbolic form, making use of highly interactive computer
systems, and the application of a bootstrapping strategy in
the research program for developing augmentation systems.   7b

  The purpose of externalization via computer systems is to
  make it possible for people to work with intellectual
  structures (such as computer programs, highly
  interconnected bodies of textual information, design
  requirements, plans) of much greater size and complexity
  than can be effectively handled with traditional
  techniques.   7b1

The bootstrapping strategy (evolution by actual daily use
of the systems developed) has been used to assure tight
feedback in the development process.   7b2

Some current tasks being pursued under the above goals and
strategy include: 7c

1) Development and operation of the ARPA Network
Information Center to aid people in finding information,
people and systems associated with the network which can
help them and to provide services to support dialogue, and
collaboration of geographically distributed special
interest groups within the network community.   7c1

2) Development of documentation production and control
techniques and procedures.   7c2

3) Development of computer aided dialogue support systems.   7c3

4) Development of project management techniques and
systems.   7c4

5) Development of further facilities to augment the
software design and implementation process.   7c5

6) Development of a research intelligence facility to hold
information needed by research communities about hardware,
software, research results of interest.   7c6

7) Development of techniques for design, implementation and
maintenance of handbooks of information defining the
state-of-the-art in a subject area.   7c7

VII. Login   8

A user may enter the system in either half- or full-duplex
mode.   8a

A. Half-duplex (default condition)   8a1

ARC TENEX xxxxx   date ARC EXEC time   8a1a

@LOG sitename CR password CR sitename-username CR   8a1b

JOB xx ON TTYxx date time   8a1c

@NLS CR   8a1d

ID: ident CR	8a1e
DEVICE: N[ET-TTY]	8a1f
A. Full-duplex mode	8a2
ARC TENEX xxxxx date ARC EXEC time	8a2a
@FULLDUPLEX CR	8a2b
@LOG sitename CR password CR sitename-username CR	8a2c
JOB xx ON TTYxx date time	8a2d
@NLS CR	8a2e
ID: ident CR	8a2f
DEVICE: T[I-TERMINAL]	8a2g

VIII. Computer Operator   9

For assistance call NIC at the numbers listed above.   9a

IX. Miscellaneous   10

Documents of interest to network users include: 10a

NIC TNLS User Guide   (see NIC # -- Journal,7470,)   10a1

User level guide to the facilities of TNLS   10a1a

NIC Journal System User Guide   (see NIC # -- Journal,7635,)   10a2

User level information on usage of the Journal,
Identification, number Subsystems.   10a2a

The above documents are available in hardcopy as parts of the
NIC User Guide (see NIC # -- Journal,7590,). Copies have been
distributed to each site and an online copy is available
through Locator (see below).   10b

Locator   10b1

The Locator (see NIC # -- Journal,7735,) consists of
tables of contents for selected NIC documents. The
tables of contents extend to two or three levels and

provide a means whereby, with few commands, the user can
reach useful parts of online documents.   10b1a

The file locator may be accessed by entering NLS and
issuing the command "l f <nic>locator CA" where "l f" is
the load file command and CA (command accept is a CNTRL
D or EOT depending on terminal type.   10b1b

Once you have accessed the Locator file, use the
following command to print instructions on using
locator.   10b1c

   "p b .l CA CA" where "p b" mean print branch   10b1c1

Schedule for Network Users   10c

  The NIC provides service for Network users on a regular
  basis Monday through Friday.   10c1

  The daily schedule for Network users is: 10c2

    (times are Pacific Daylight/Pacific Standard Time)   10c2a

    0500 to 1200 system available   10c2b

    1200 to 1300 system not available   10c2c

    1300 to 1800 system available   10c2d

    1800 to 2200 system available on an irregular basis   10c2e

    2200 to 0500 system not available   10c2f

  This schedule is temporary and subject to change.   10c3

  The system is available on an irregular basis on weekends.   10c4

  Those periods marked as available on an irregular basis are
  generally devoted to system development. Any user may be
  asked to log off on short notice.   10c5

DRAFT SRI-ARC Resource Notebook Entry

(J7884)   28-OCT-71 16:49;   Title: Author(s): Richard W. Watson/RWW;
Distribution: Alex A. McKenzie/AAM; Sub-Collections: SRI-ARC; Clerk:
RWW;

Draft DSS Baseline

Basic Objectives   1

  In the context of a research activity   1a

    To devise, build, and evaluate prototypical systems,
procedures, and concepts which augment Dialogue between two
or more teams.   1a1

    Dialogue is interpreted to be any communication which has
the purpose of collaboration (cooperation) with regards to
a common problem.   1a2

    There are two aspects of dialogue which are of especial
interest to the DSS activity in the coming 30 month period.   1a3

      (1) Recorded Dialogue.   1a3a

        This is dialogue via an intermediary, which has the
characteristic of retaining the content of a specific
dialogue session, and cataloging it in a manner such
that it may be used as a permanent reference base for
future dialogue.   1a3a1

        The interest of the DSS in Recorded dialogue includes
not only the dialogue itself, but techniques for
manipulating the dialogue, and using it as a base for
subsequent dialogue.   1a3a2

        Currently, our Journal is used as a repository for
recorded dialogue.   1a3a3

      (2) Developmental Dialogue.   1a3b

        This is dialogue directly between two or more teams,
which will serve as a base for recorded dialogue
after suitable development.   1a3b1

        The DSS has several interests in this area.   1a3b2

          It is interested in providing augmentation tools
for developmental dialogue.   1a3b2a

            This involves a large spectrum ranging from a
simple linking mechanism through systems which
help maintain the status of a developing
dialogue and thence onward to complicated
voice/display interaction systems.   1a3b2a1

Included in these tools will be convenient
techniques for extracting recorded dialogue from
developmental dialogue.   la3b2b

It has a common interest with recorded dialogue in
providing suitable search and retrieval tools for
allowing the utilisation of recorded dialogue as a
base for developmental dialogue.   la3b2c

In the context of a service activity   1b

As other activities develop needs for Dialogue tools, the
DSS will respond with proposals to suit those needs.   1b1

These proposals will, insofar as possible, attempt to
embody techniques and tools which have already been tested
in prototype form by the research DSS activity.   1b2

Proposals may then be followed by contracts for building
the systems, etc. described by the proposals.   1b3

It is clear that the research activity must anticipate the
needs of the service activity, and as such will frequently
interact closely with the activities creating the needs.   1c

Features   2

The features are divided between the service activity and the
research activity.   2a

In order to be a feature of the service activity, a task
must either be well-defined itself, or be relatively
well-defined with respect to an existing service, e.g. the
Journal.   2a1

Some of the tasks in the service activity may require work
under the research activity, just as many of the features
in the research activity section will be moved into the
service activity section as they become solidified, and
specific service contracts are made for them.   2a2

The tasks in these groups are not ordered according to any
meaningful scheme.   2b

Service Activity   2c

Journal System   2c1

Generic Tasks (Tasks which are ill-defined and
relatively large in scope)   2c1a

   Improve efficiency and response   2c1a1

     Specific areas for improvement include: 2c1a1a

       Open file machinery   2c1a1a1

       Breaking up and grouping of Journal files used
       in interactive portion of the system   2c1a1a2

       Running Journal execution as background fork if
       we decide it is desirable   2c1a1a3

       Reducing redundancy if/when reliability
       improves   2c1a1a4

   Improve reliability   2c1a2

     This generally means find better ways of
     recovering from file system errors.   2c1a2a

     Some possibilities are: 2c1a2b

       Develop a system which reconstructs Journal
       files from other files using the redundancy
       which exists in the files.   2c1a2b1

         Associated with this is a procedure which
         verifies the consistancy of the Journal
         files.   2c1a2b1a

       Move the Journal files onto te Drum to reduce
       the error rate   2c1a2b2

   Integrate the Journal into the Master Catalog System.   2c1a3

     Two stages: 2c1a3a

       Develop satisfactory procedures for converting
       JCAT into MCAT entries and process.   2c1a3a1

       Eliminate JCAT when the MCAT system gets built.
       This includes the necessary speed and
       reliability necessary to the Journal.   2c1a3a2

   Integrate the File System into the Journal   2c1a4

This should be taken care of by the MCAT system,
but if we are slower with the MCAT system than the
File System, the Journal will need to use the File
System on its own.   2c1a4a

It may even become necessary to develop an interim
file system to fullfill the Journals needs if
activity is high enough.   2c1a4b

Implement New delivery techniques as they become
necessary.   2c1a5

  On-line delivery over the Network   2c1a5a

  Delivery to Station Agents over the NET.   2c1a5b

  Hard Copy via the NET   2c1a5c

Convert delivery to be compatible with DPCS as it
evolves.   2c1a6

General evolution and maintenance.   2c1a7

Specific Tasks   2c1b

Implement a capability for editing Messages, titles,
comments, keywords, etc. before 'Go is executed.   2c1b1

Change command language according to (7822,)   2c1b2

Implement tools for aiding the recovery of Journal
files   2c1b3

  for example, a Re-lock file command would be
  useful   2c1b3a

Delete redundant delivery request id distribution
files.   2c1b4

  This is a problem when one person belongs to
  several groups in a distribution list.   2c1b4a

Implement some sort of on-line delivery for Author
Copies   2c1b5

Implement a re-enter capability for when a user gets
bombed out of the Journal, fixes whatever was wrong

(.e.g directory full), and does not wish to re-enter
all of the information and get a new number.   2c1b6

Implement option for hard copy delivery by sender
rather than destinee, plus overide for destinee   2c1b7

Change order of updates in slinker etc. so that
system has time to put thngs onto the disk.   2c1b8

   This could probably be done by cycling through
   list twice   2c1b8a

Make Procedure for entering tapes of meetings, etc.
into Journal   2c1b9

Diddle Journal Formatting Directives to conform (in
some manner) with RFC Format   2c1b10

   Network Working Group   Richard
   W. Watson
   Request for Comments #273   SRI-ARC
   NIC 7837   18
   October 1971
   Categories:
   Related: 7625, 7626, 7661, 7688, 7650, 7646
   Obsoletes: 7662   2c1b10a

Develop routines to make the distribution file,
number file, and catalog file compatible after
errors, i.e. the situation where an aborted entry has
been made in one of the files, and not the others.   2c1b11

Make the Background Job run Catalog upte (cleanup).   2c1b12

Eliminate the asynchrony between Tjcat and Jcat.   2c1b13

   Currently a document used as a link or in
   secondary distrubution may be erroneously not
   found, because it is in tjcat rather than in Jcat.
                                                              2c1b13a
Delete master, access and engelbatt copies from
secondary distribution.   2c1b14

Consider modifications to Hard Copy Delivery to allow
special handling, e.g. Airmail, Special Delivery,
etc.   2c1b15

Develop Journal for DNLS   2c1b16

This should fall out of a SEAS project to enable
TTY simulation while in DNLS.   2c1b16b

Identification System   2c2

   Change get/set Routines to: 2c2a

      Mebbee work without using T-pointers   2c2a1

      Provide logical fields.   2c2a2

   Make a major revision of IDENT System   2c2b

   Improve verification techniques for new entries   2c2c

   Improve file handling, specifically, break up identfile
   into more effeciently handled segments.   2c2d

      Give a lot of consideration to speed.   2c2d1

   Implement Status Command   2c2e

   Implement capabilities   2c2f

Number System   2c3

   Change Pre-assigned number machinery to look more like
   RFC number stuff, i.e. get Title, distribution, etc.   2c3a

   Provide necessary tools for manual operation of Number
   system.   2c3b

      For example, we need a way of pre-assigning a number
      on a 'Dummy' basis to a custodian, and subsequently
      allowing the custodian to 'give' the number to
      someone, and then fill in the title, distribution,
      author, etc. fields.   2c3b1

   Implement a Number Status command.   2c3c

      This needs to allow the user to get the status of any
      number (if he knows the owner).   2c3c1

      It additionally needs a facility whereby a user can
      see the status of all numbers pre-assigned to him.   2c3c2

   Provide a mechanism for re-using lost numbers.   2c3d

Lost numbrs are generated when a user bombs out of
the Journal.   2c3d1

Perhaps we could consider these numbers pre-assigned
or ???.   2c3d2

This relates to the question of whether or not we are
really concerned about keeping our numbers in order.   2c3d3

Research Activity.   2d

  Flexible Document System   2d1

    A system for supporting developmental dialogue.   2d1a

    Similar in appearance to the Journal, except that a
    document entered into the system is not frozen.   2d1b

      Rather, it serves as a dynamic base for dialogue
      until such time as a significant milestone os
      reached, in which case a copy of it may be frozen
      into the Journal system.   2d1b1

    The Flexible Document system also has the capability of
    dealing with groups of documents as single 'Functional'
    documents.   2d1c

    Action requests   2d1d

  Set Manipulation   2d2

    There are two projects under the set system.   2d2a

      The first involves a relatively simple...yet
      useful..initial set system, which is relatively
      easily implemented with the current programming tools
      and in te current NLS environment.   2d2a1

      The second is the full blown set system, which has
      been in the process of specification for some time,
      an probably will be for some time.   2d2a2

  Back links   2d3

    This is the so-long planned back link feature in NLS.   2d3a

  File System   2d4

Some part of the specification of the archive file
system falls in the baliwick of the DSS.   2d4a

Master Catalog System.   2d5

   The DSS has a part in the development of the Master
Catalog System   2d5a

Comments on frozen documents.   2d6

Network Dialogue Participation   2d7

   The DSS has an interest in participating in the Network
Dalogue effort, and in participating in the experiments
where it is feasible, justifiable, and relevant.   2d7a

   Currently planned projects include a network facility
for linking and advising, and a base suitable for
subsequent dialogue.   2d7b

   This is an area where I expect a lot of activity,
insofar as the Net/NIC is a prime and willing customer
for the products of DSS.   2d7c

Extended linking and advising capability.   2d8

   I would like to begin work on the problem of
intraction/dialogue on display terminals.   2d8a

   This opens up a large area.   2d8b

   A first step might be the linking of NLS displays and
allowing common cursers.   2d8c

   This project is related to te Network Dialogue effort   2d8d

Introduction of new media into the recorded (and
developmental) dialogue system.   2d9

   One specific possibility in the time frame fo this
document is voice.   2d9a

   Other possibilities include video, various types of hard
copy, and graphics.   2d9b

Needs & Poss.   2d10

   Delpni (see rww)   2d10a

New procedures, methodology, etc.   3

   Remove the irritants from dialogue.   3a

      Dialogue, as it currently exists, contains a number of
      irritants to the participants.   3a1

         Irritants which immediately come to mind are: 3a1a

            The irritating sound of a telephone ringing (for
            voice dialogue)   3a1a1

            Not knowing where another user is with regards to
            telephone (which plays a substantial role in our
            current developmental dialogue).   3a1a2

            The lack of knowledge about the interruptability of a
            person with whom a user desires dialogue.   3a1a3

   Making dialogue attractive.   3b

      In some sense, written dialogue is contrary to the
      inclinations of most programmers.   3b1

      In order to make dialogue effective, it must strive to be
      responsive in a manner such that it eliminates the negative
      vibes.   3b2

   Integration of 'outside world' techniques and knowledge into
   our internal system.   3c

   Setting up a proper feedback loop for improving dialogue
   through the reactions of actual users, particular those
   outside of ARC.   3d

   Consolidation of dialogue systems, so that a minimum of
   systems may suit the needs of a maximum of activities.   3e

   Development of adequate operating procedures for hard copy,
   etc.   3f

Stages of development   4

   Service System   4a

      Journal System running smoothly   4a1

         DNLS Journal operational   4a1a

Reliability no longer a problem.   4a1b

    Crashes and lost files are recovered automatically
    wherever possible, or recovery aids exist where
    automatic recovery is not possible.   4a1b1

All aspects of delivery running smoothly   4a1c

    Hard Copy (but not with DPCS)   4a1c1

    On-Line + Author copies   4a1c2

    Various flavours of over-the-net   4a1c3

    No redundant delivery   4a1c4

Primitive assistance in file handling.   4a1d

Stage II Identification system   4a2

    A revision of the current system which should, with
    evolution, be satisfactory for 1-2 years.   4a2a

    May use property lists and multiple files   4a2b

Journal activity is high, and file system is becoming
urgent because of disc storage problems.   4a3

    The new disk drives will help somewhat, but not for too
    long.   4a3a

    A major file system is almost designed and ready for
    implementation, but interim file system is devised (with
    operator doing some retrieval).   4a3b

    25% of journal activity is coming from the NET.   4a3c

Debugged Flexible Document system.   4a4

    May use some of the stuff in the full blown file system,
    in which case it will not be generally available until
    the stage II file system is   4a4a

Debugged file system   4a5

    The file system has been partially re-written, and is
    now almost bug free.   4a5a

Master Catalog system has been evolving along with file
system, and is also in a relatively debugged state.   4a5b

Journal, which had made nominal attempts at using file
system before (it kept its own backup) now relies on it
and the Master Catalog System.   4a5c

Switch-over to stage II set system   4a6

The set system has undergone debugging and revision, and
is now ready for use within ARC.   4a6a

It deals with real files (e.g. mastercatalog, Journal,
etc.), but is used only by ARC personnel for a while   4a6b

Information and experience leads us to revision and bugs   4a6c

NET switchover to Stage II set system.   4a7

This should go smoothely, due to previous ARC
experience.   4a7a

Research system   4b

Participation in Network Dialogue effort   4b1

The first network dialogue experiment is being readied,
and ARC is a participant.   4b1a

Elementary set system, and backlinks   4b2

This is the first stage set system.   4b2a

Backlinks at this pont may be implemented via catalog,
but not necessarily   4b2b

A first version of the file system should be available
at this time.   4b2c

Flexible Document system--stage I   4b3

Released to ARC only.   4b3a

Serves as a tool, plus a basis for evolution and
debugging.   4b3b

Full blown file system, first pass   4b4

Brought up as operational system before it is really
debugged because of pressing need.   4b4a

much effort will be extended at this point in recovering
files, patching mistakes, etc.   4b4b

May include a revised backlink facility.   4b4c

Should include a comment facility on frozen files   4b4d

Set system...stage two   4b5

The complicated set system which does away with files in
NLS is ready for trial use.   4b5a

An experimental system is available for testing it, but
the overhead is high because of the need of integration
into all of our file-handling systems and the MCAT.   4b5b

The experimental journal makes use of it, but not the
real one.   4b5c

(J7907)   2-NOV-71 10:44;   Title: Author(s): William S. Duvall/WSD;
Distribution: William S. Duvall, Mary S. Church, Douglas C. Engelbart,
Charles H. Irby, Harvey G. Lehtman, James C. Norton, Bruce L. Parsley,
William H. Paxton, Richard W. Watson/DSSIG; Keywords: DSS Baseling
Planning; Sub-Collections: SRI-ARC DSSIG; Updates Document(s):   7821;
Clerk: WSD;

I have created a new group in the SRI-ARC (NIC) Identification
system, the Network Dialogue Interest Group (NDIG).   1

As a member of the group, you will recieve a copy of items
submitted to the Journal and distributed to the group.   2

If you do not wish to be in this group, or think someone should
be in this group whose name is omitted, please send me a note,
and I will change the membership accordingly.   3

The initial group membership is: 4

    Balzer, Robert M.
    (RMB) RAND   4a

    Bressler, Robert D.
    (RDB2) MIT-DMCG   4b

    Crocker, Steve D.
    (SDC2) ARPA   4c

    Duvall, William S.
    (WSD) SRI-ARC   4d

    Engelbart, Douglas C.
    (DCE) SRI-ARC   4e

    Kahn, Robert E.
    (REK2) BBN-NET   4f

    Licklider, J. C. R.
    (JCRL) MIT-DMCG   4g

    Watson, Richard W.
    (RWW) SRI-ARC   4h

Network Dialogue Interest Group

(J7918)   4-NOV-71 15:30;   Title: Author(s): William S. Duvall/WSD;
Distribution: Robert M Balzer, Robert D. Bressler, Steve D. Crocker,
William S. Duvall, Douglas C. Engelbart, Robert E. Kahn, J. C. R.
Licklider, Richard W. Watson/NDIG; Sub-Collections: SRI-ARC NDIG; Clerk:
WSD;

Afterthoughts about NWG Dialogue meeting and Interentity
Communication (7726,)

Following the NWG Meeting of Oct 12, 1971, I have had several
thoughts about the Interentity Communication proposal (7726,).   1

    In order to suitably implement an initial experiment, which
    will allow 'Linking and Advising' between hosts in the
    network, three protocols need to be devised.   1a

        (1) Network user identification   1a1

            In order to select a target for linking, a user or
            process needs to have available a comprehensible list of
            alternatives.   1a1a

            This list may include not only those users actively
            using the net, but it may additionally include
            processes which are available (for example loggers).   1a1b

            As an initial direction for this protocol, I suggest
            that we identify each potential target on the Net by an
            IDENT in the form of NIC IDENTS, and the location (or
            address) by the conventional HOST/Socket, with the
            possible inclusion of a logical address within the
            mother host, e.g. Job Number.   1a1c

        (2) Network Status   1a2

            A Host needs, in order to build the list of available
            linking targets, a way of determining 'who is on' the
            Network, i.e. what the currently available targets are.   1a2a

            Hence, a protocol for interrogating a host for its
            active 'targets' is needed.   1a2b

            Responseds to tis interrogation should be akin to the
            format for target identification.   1a2c

        (3) Linking protocol.   1a3

            A protocol is needed whereby a host may send to another
            host requests for linking, and recieve suitable
            responses in return.   1a3a

            All messages sent under this protocol should specify
            both the source and destination in the format specified
            for target identification.   1a3b

                By including the IDENT in th request, it is possible

for a user to see who is trying to link to him before
that link is accepted or refused.   1a3b1

In future implementations, the Ident may be used as
an index to a great deal of information about the
source of the message, which may be used by automatic
programs for helping him (the Ident may tell the
program his experience, capabilities, etc.), the
information implied by his ident may be used for
computing alternate destinations, for turning on.off
'listening' programs which record the text of the
'Linked' session, and so on ad infinitum.   1a3b2

Offhand, the following types of inter-host link
manipulation messages seem necesary.   1a3c

(1) Request for establishing link.   1a3c1

(2) Respond to link request (yes/no).   1a3c2

We may want to include a capability for responses
other than yes/no, e.g. a destination may want to
respond 'repeat the request to another target
XXX'.   1a3c2a

(3) Break Link.   1a3c3

With regard to the implementation of the 'Switch', a confusion
arose concerning the relationship of it to the NCP.   1b

In order for it to work in a useful manner, it will need to
have input and output channels to a generic entity 'The
Net' which may listen for link requests, and respond or
initiate link requests.   1b1

This thought path leads me to examine closely the
relationship of the 'Switch' to the NCP, with the
possibility that some of the functions are overlapping.   1b2

My first pass through this mess left me feeling a bit
unsure, and I think that it needs more thought before
proceeding.   1b2a

Afterthoughts about NWG Dialogue meeting and Interentity
Communication (7726,)

(J7922)   4-NOV-71 17:20;   Title: Author(s): William S. Duvall/WSD;
Distribution: Robert M Balzer, Robert D. Bressler, Steve D. Crocker,
William S. Duvall, Douglas C. Engelbart, Robert E. Kahn, J. C. R.
Licklider, Richard W. Watson/NDIG; Sub-Collections: SRI-ARC NDIG; Clerk:
WSD;

NIC Course   1

The Network Information Center is planning to run a course on
the use of its Online System (NLS), including use of the
Journal, at SRI. The dates are to be Nov. 29, 30.   1a

We particularly would like this course to be for Station
Agents or Secretaries who could help others at a site use the
NIC and could transcribe documents or messages into NLS.
Anyone is welcome, however. The only restriction is a limit
of 12 people.   1b

Those desiring to attend should contact Dirk Van Nouhuys or
Dick Watson. at (415) 326-6200 ext. 3370 or 2013.   1c

We will be glad to make motel reservations for anyone
attending. We usually use the Mermaid Motel in Menlo Park.   1d

Master Catalog Entry System Design Proposal

This proposal has been obsoleted and is being submitted to the
journal for record only.

Master Catalog Entry System Design Proposal

This is the 20 Oct 71 design proposal for the Stage 1 Master
Catalog Entry and Update System called for in <7632,1>. The
basic requirements to be met are: 1

   (1) To accommodate entry and edit input from (initially) two
   sources: 1a

      The Journal System   1a1

      An ARC Clerk-Typist.   1a2

   (2) To produce the following output files: 1b

      A new "Master Catalog" -- i.e., a new version of each
      master catalog file.   1b1

      An "Update Work" file, produced each time the Update
      Processor is run and retained for cumulative use in
      updating subcollections (i.e., if Master Catalog updating
      is done daily, and sub-collection updating is done weekly,
      the sub-collection update process needs Update Work files
      from each of the seven previous MC updates).   1b2

      An "Update Record" file containing a record of all changes
      made in the Master Catalog during a single running of the
      Entry/Update processor -- i.e., a listing of all new
      entries along with old/new listings of all updated entries.
      This file would be used for manual proofing of the update
      process.   1b3

   (3) To maintain absolute integrity of the Master Catalog file
   set as well as the input file(s).   1c

   (4) To provide maximum flexibility in recovering from errors,
   handling automatically those conditions which reasonably can
   be anticipated.   1d

The Entry and Update System will consist of two program modules
(written in L10 to be compiled and run from NLS) which can be run
either in tandem or alone depending on whether intermediate
manual proofing is desired.   2

   The "Transaction Processor" will read transaction records (in
   the format specified below) from one or more input files and
   will generate an Update Work file based on the transacton
   records along with relevant information extracted from the
   master catalog itself.   2a

The input file may be read "through" an analyser/formatter
program to compensate for differences in input source
format -- i.e., the incremental journal catalog could be
read through an AF program to convert it into MC format.   2a1

The "Update/Merge Processor" will take as input the most
recent Update Work File and the old Master Catalog and will
produce as output the new Master Catalog along with the Update
Record file.   2b

Both Processors will interact with a "Process Control" file
(or branch) which will contain links to all the files which
are involved in the Catalog Entry and Update Process along
with sufficient "state" information to permit recovery from
most catastrophies.   2c

The format for input for the Transaction Processor is as follows: 3

There are nine transaction types permitted, one for each
operation of Inserting, Deleting, or Replacing a catatlog
Entry, Field, or Subfield.   3a

Examples of each transaction type: 3b

    Add entry 9999: <text>   3b1

    Replace entry 9999: <text>   3b2

    Delete entry 9999   3b3

    For entry 9999 Add field a3: <text>   3b4

    For entry 9999 Replace field a3: <text>   3b5

    For entry 9999 Delete field a3   3b6

    For entry 9999 For field a3 Add subfield 5: <text>   3b7

    For entry 9999 For field a3 Replace subfield 5: <text>   3b8

    For entry 9999 For field a3 Delete subfield 5   3b9

The actual syntax rules will allow for as much abbreviation as
the entry clerk desires, e.g.:   3c

    R 9999: <text>   3c1

    f 9999 i a3: <text>   3c2

1

Master Catalog Entry System Design Proposal

F 9999 F a3 D 5   3c3

9999 a3: <text>   3c4

    (Interpreted as "For 9999 Replace a3" -- note that "Add"
and "Replace" will be implemented by the same function
so as to preserve consistency in the Master Catalog even
if the clerk specifies the function incorrectly.)   3c4a

Outline of Processor Operation: 4

  Transaction Processor   4a

    Check Process Control File to determine state of
Transaction Process and Quit if consistent state can not be
determined.   4a1

      (All significant steps will be noted on a logging
teletype to provide additonal reliability and
recoverability.)   4a1a

    Check current Master Catalog files (using File Verify).   4a2

    Iterate over all input files listed in the Process Control
file: 4a3

    Compile relevant analyser/formatter program, if any.   4a3a

    Check input file (using File Verify).   4a3b

    Process Transaction Records one-at-a-time.   4a3c

      Read record and (if syntactically correct) make
proper modifications to the Update Work file. (If
editing a MC entry, check Update Work file first --
to determine if the entry is already being modified
-- if not, copy entry from MC to Update Work file and
edit it there.)   4a3c1

        Entry deletion will be accomplished by copying the
entire MC entry into the Update Work file and
marking it in some way such that when the Update
Work file is later merged into the MC, the
merge-selection program will know to cause the
entry to be deleted. This way, the fact that an
entry has been deleted can be easily propogated
into the subcollections and indices.   4a3c1a

Check Update Work file (using File Verify), and, if OK then
update input files to new, blank versions and update
Process Control file to indicate new state. If Update Work
file is bad, then delete it and try again.   4a4

Update/Merge Processor   4b

Check Process Control File to determine state of
Update/Merge Process and Quit if consistent state can not
be determined.   4b1

Sort the Update Work file.   4b2

Copy the MC files to new versions, and merge the sorted
Update Work file into the MC.   4b3

Check MC files: if OK, then update the Process Control
file; if not, delete the new versions and try again.   4b4

Enclosed:

NIC 7970   UCSB Online System Manual, Revised 1 September 1971

This updates NIC 5748 of the same title, and should be interfiled with
NIC 5748, according to the list of pages shown in NIC 7970.

c: Liaisons

(J7996)   9-NOV-71 7:16; Title: Author(s): Douglas C. Engelbart, James
C. Norton/DCE JCN; Distribution: Richard W. Watson, Charles H. Irby, Ed
K. Van De Riet, James C. Norton, Douglas C. Engelbart/EMC DCE;
Wub-Collections: SRI-ARC EMC; Clerk: JCN;

:

```
ACTIVITIES >  NIC +  DSS + DPCS + SDIS + PBMS + SEAS + HAND +
+? <                                                              1a


DEVELOPMENT:
                                                                 1b


  Functions > **** + **** + **** + **** + **** + **** + **** +
<                                                                1c


  Delivery  > **** + **** + **** + **** + **** + **** + **** +
<                                                                1d


  Marketing > **** + **** + **** + **** + **** + **** + **** +
<
                                                                 1e


OPERATIONAL SERVICE:
                                                                 1f


  People Ser> **** +          +        +        +        +        +        +
<                                                                1g


  Comptr Ser> **** +          +        +        +        +        +        +
<
```

```
                                                                 1h
NIC  = Network Information Center                                1i
DSS  = Dialog Support System                                    1j
DPCS = Documentation Production and Control System              1k
SDIS = System Developers' Intelligence Service                  1l
PBMS = Project Baseline Management System                       1m
SEAS = Software Engineering Augmentation System                 1n
HAND = Handbook                                                 1o
```

Note: **** indicates base support from ARPA 2/72 to 2/74.
        (see -- 7404,) Proposal ISU 71-94

Catalog Support System Design Proposal.

This document gives an outline for the design of a Document
Support System, and more detailed designs for various elements
and aspects of the overall system will be forthcoming. Your
comments are cordially solicited.

Catalog Support System Design Proposal

INTRODUCTION   1

This proposal outlines the design of a Catalog Support System
(CSS).   1a

 The Catalog Support System is needed initially to support
clerical processes for maintaining current on-line catalogs
of the Master Collection and several subcollections and for
producing various indices (hardcopy and on-line) to these
collections. Subsequently, support will be needed for
augmenting various on-line user-level information-handling
processes.   1a1

 This design proposal obsoletes those in 7451, 7465, 7483,
and 7938, and proposes an integrated system, working within
the NLS framework, for filling the needs specified in 7263
and 7632.   1a2

The basic conceptual change between this design and previously
proposed designs is that the CSS is now envisioned as an
integral part of the NLS user-environment rather than as a set
of applications programs using, but operating independently
of, core-NLS.   1b

 Thus, we are now commencing the evolution of a coordinated
set of user-level operations dealing with cataloging and
accessing information within the NLS environment.   1b1

 The basic design leaves open the philosophical/policy
decision regarding whether we should support independent
collections of informaton or whether all items should be in
the single Master Collection with subcollection membership
designated by catalog elements.   1b2

  This decision would determine whether the Catalog
Support System would operate on a single known data base
or would be capable of being "pointed" at various data
bases by user commands. This consideration needs to be
examined in the light of long-range planning, and a
design assuming a single master data base is probably
adequate to satisfy our needs for the foreseeable
future.   1b2a

Initially, the CSS will be concerned with the following
principal processes: 1c

 Input, editing, proofing, and verification of catalog
entries.   1c1

Updating of the Master Catalog and subcollection catalogs▫   c2

Production of incremental and cummulative, hardcopy and
on-line indices to various collections.   1c3

INPUT, EDITING, PROOFING, AND VERIFICATION OF CATALOG ENTRIES   2

  These are the major interactive processes to be supported at
  this time, and the basic goals relevant to providing aides to
  these processes are: 2a

    Maintining integrety of the master catalog files with
    maximum protection from both human and mechanical errors.   2a1

    Making possible a smooth flow of input from ARC clerks with
    good facilities for proofing and correcting all clerical
    input.   2a2

    Removing as much load as possible from the system during
    prime times through the use of Deferred Execution
    techniques.   2a3

  These functions will be provided by elements of the CSS which
  we will refer to as the "Entry Processor" (EP). The EP will
  appear to the clerk-user as a set of TNLS and DEX commands
  (specifications forthcoming in a seperate memo -- 8005,)
  providing the following capabilities: 2b

    Inputting a new entry to the catalog.   2b1

    Editing (including replacing or deleting) an existing
    catalog entry (including new entries which are awaiting
    proofing or verification).   2b2

    Examining the status of any catalog entry (either in the
    master catalog itself or living within the entry
    processor).   2b3

    Verifying an entry (or set of entries) for final merging
    into the MC.   2b4

    Starting up a proofing processor to generate hardcopy
    listings of selected entries for proofing (probably done by
    an operator during non-prime times once the DSS becomes
    operational).   2b5

    Setting various parameters governing the operation of the
    EP -- e.g., the frequency of execution of certain cyclic

1

processes and the names of formatting programs used in
producing proofing copy.   2b6

The Entry Processor will exhibit two types of behavior: the
"one-shot" response which is given to individual clerical
commands and the cyclic, periodic, automatic (or
operator-initiated) processing of accummulated entries into
proof copy and into the MC itself. The processing associated
with a typical entry is outlined below.   2c

   Either on-line (using TNLS) or off-line (through DEX) a
   clerk issues a command to add or edit a Master Catalog
   entry.   2c1

      The Entry Processor checks the command for syntactic
      errors and for other errors which would make the command
      invalid (e.g., trying to add an entry with the same
      number as an existing entry or trying to edit a "locked"
      entry [defined below]).   2c1a

         If there is an error condition, the EP gives an error
         message (TNLS) or makes an entry in the DEX error
         branch.   2c1a1

         If the command is acceptable, an entry is made in an
         Entry Processor Work File (EPWF) containing the
         contents of the request along with information on the
         identity of the clerk and the effective time of the
         request.   2c1a2

            This entry will contain the original full text of
            the new or old catalog entry, a list of all edit
            requests affecting that entry which are under
            consideration by the EP, along with the text of
            the entry as it will appear following execution of
            all the edit requests.   2c1a2a

   At this point the entry is considered to be "locked" by
   the clerk who initiated this request.   2c1b

      This means that, until this entry is approved and
      incorporated into the master catalog, no one else may
      edit it without using an appropriate password --
      e.g., the ident of the clerk for whom the entry is
      locked.   2c1b1

         This locking mechanism will serve as a warning
         device rather than an absolute restriction on use

2

of the system, the idea being that the person who
originally locked the entry will retain
"responsibility" for it -- in the sense that
proofing copy for that entry will be directed to
her with verification of the entry expected to
originate from her.   2c1b1a

Locking an entry excludes interference only from
human agents -- i.e., changes can be made to a locked
entry under program control without going through the
unlocking process. Thus, the Journal and other
systems which need to make changes in the catalog
will not be hindered by the locking mechanism
(however, they must be cognizant of the operation of
the EP, and probably will need to effect changes in
the Master Catalog by sending requests through a
special port of the Entry Processor).   2c1b2

Periodically (either automatically or under operator
command) or under special request a Proof-Copy Generator is
run to produce various formatted hardcopy printouts of the
entries residing within the EP.   2c2

For example, each clerk will receive one or more
printouts (in different formats for various proofing
tasks) of just the entries which she has input herself;
and (if desired) a supervisor can receive printouts in
the same or different formats of all entries or of
entries meeting certain specifications.   2c2a

The various formats will be designed to facillitate
the detection of specific, anticipated errors, and
the relevant formatting programs can be changed or
new ones added without a basic redesign of the EP
itself.   2c2a1

When entries for a given period have been processed by
the proof-copy generator, they are "super-locked" to
deter changes being made to them between the time the
proof-copy is generated and the time at which the
entries are verified -- this is to guarantee that the
content of the entry being approved is the same as
appears in the proof-copy. There will be two ways in
which an entry can be unlocked: 2c2b

If the clerk (or an editor-clerk) finds that the
entry is correct, then a command can be given to

"verify" the entry, and it will subsequently become a
part of the updated Master Catalog.   2c2b1

If errors are found, then a command will be given to
"reject" the new entry, and it will then become open
again for further editing (and recycling through the
proofing system).   2c2b2

If desired, an "alarm-clock" feature can be provided
which will produce an error comment in the proofing
copy whenever an entry has remained
"locked-for-proofing" for longer than a specified
time without being either verified or rejected.   2c2b3

When an entry is finally verified, it is either marked
as such in the Entry Processor Work File or moved to a
seperate Update Work File for ultimate merging into the
MC file set.   2c2c

Whether the EPWF and the UWF are seperate files will
be decided primarily on the basis of which setup will
provide the greatest reliability and recoverability
from errors. Ultimately, an UWF needs to be
constructed for sorting and merging purposes, but
whether it is constructed incrementally or only at
actual update time remains to be decided.   2c2c1

In any case, once an entry has been verified, it is
considered to be a part of the Master Catalog, and
processes accessing the Master Catalog must first
check the UWF for an entry before seeking it in the
MC file set.   2c2c2

UPDATING OF THE MASTER CATALOG AND SUBCOLLECTION CATALOGS   3

The Catalog Support System will be responsible for maintaining
file sets for the Master Catalog as well as for various
subcollection catalogs and indices.   3a

Initially, the system will expect all files to be on-line.
However, when there is a reliable archiving mechanism, it
will be reasonable to move most files off-line except
during running of the Update and Catalog Production
Processes.   3a1

At present all subcollections are derived by extraction
from the Master Catalog, and there is no pressing reason

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for maintaining seperate on-line catalogs for every
subcollection.   3a2

> In fact, storage limitations pose good reasons for not
> keeping these files on-line. Accordingly, only a
> "pseudo file set" will be maintained for each
> subcollection catalog in the form of the past few
> subcollection incremental catalog files -- "few" being
> the number that need to be saved for the next running of
> the Catalog Production Process. (Eventually, these
> files could also be kept off-line in the archive
> system.)   3a2a

In order to keep the MC and subcollection catalog and index
file sets up-to-date, new input from both clerical and
automatic processes must periodically be integrated into the
appropriate files.   3b

> Currently, this is done by manually inserting or merging
> new entries into the Master Catalog and then carrying out a
> laborious processes of subcollection extraction and index
> creation. The CSS will augment this process through two
> major features: 3b1

>> An automatic (operator-initiated) Update Processor (UP)
>> will take input from the Entry Processor and use it to
>> update the MC along with the various subcollection
>> catalogs derived from it.   3b1a

>> An automatic (operator-initiated) Catalog Production
>> Processor (CPP) will take the incremental subcollection
>> catalog files, format the entries into the various index
>> formats desired, sort the resulting files to produce
>> incremental sorted indices, and finally merge these into
>> the cummulative indices saved from the last running of
>> the CPP to produce the newest cummulative indices.   3b1b

>>> This process will not only relieve NIC personnel of a
>>> very time-consuming task but, by using an incremental
>>> catalog building process, will provide great
>>> economies in the use of computer resources.   3b1b1

The Update Processor has the following design goals: 3c

> To maintain maximum integrity of the Master Catalog file
> set and guarantee that all entries which reach the Update
> Work File eventually make it into the Master Catalog and
> the various incremental subcollection catalogs.   3c1

Catalog Support System Design Proposal

To carry out the Update Process automatically (or with no more manual processing than can be provided by the system operator).   3c2

To minimize the drain on ARC resources through automation, incremental processing, and use of non-prime time.   3c3

The CSS will provide TNLS commands for performing at least the following operations relevant to operation of the Update Processor: 3d

Starting up the Update Processor (may be done either by the operator or by the Entry Processor after a successful termination).   3d1

Creating or deleting a "supported subcollection."   3d2

Specifying how to determine whether a given Master Catalog entry belongs in a subcollection (by giving a link to an L10 program which will be used as a Content Analyser).   3d3

Setting the frequency of updating for a subcollection (a subcollection need not be updated every time the MC is updated nor with the same periodicity as other subcollections).   3d4

The UP will presumably be run weekly at first, then daily when its reliability of operation has been proven. It will function in the following manner.   3e

Upon being activated, it will perform a status check to see if all its input files are in acceptable states, complaining on the logging teletype and aborting if they are not.   3e1

The UP will take the Update Work File (or produce it from the Entry Processor Work File), format and sort it to produce the Update Record File which will actually be used in subsequent operations.   3e2

At the end of the update operation, after all relevant files have been verified and archived (in some manner), the old Update Work File and/or Entry Processor Work File will be updated to reflect the fact that certain entries have now been moved into the Master Catalog master file set, thus relieving the Entry Processor of "responsibility" for them.   3e2a

The MC Update Record Files will be serially numbered,
the serial number possibly being derived from the
daytime of creation of the file. These MC URFs will be
kept around for as long as they are needed for updating
subcollection catalogs, etc.   3e2b

The MC file set is updated using the URF, with new versions
of the MC files being created and old versions being used
in a read only mode.   3e3

When necessitated by expansion of the MC, additional
files are added to the MC file set according to whatever
plan is chosen for facilitating access to MC entries.   3e3a

A decision needs to be made eventually regarding whether
old catalog files which happen to contain no entries
which have been updated need to be updated to new
versions.   3e3b

Doing so would give a file set with consistent
version numbers at each update, but might someday
become too expensive as the MC grows very large and
begins to contain large quantities of archival
information.   3e3b1

It seems that this problem is probably several years
away, and the initial design will assume that all
files will be updated to new versions for ease in
debugging and recovery from catastrophes.   3e3b2

For each Supported Subcollecton, the UP does the following: 3e4

Internal tables are scanned to determine if this
subcollection should be updated at this running of the
UP. (This is done by checking the periodicity
specifications along with UP records showing when the
last update was performed.)   3e4a

If the subcollection is to be updated, the UP checks to
see if all the needed MC URFs are available and in good
shape (more than one updating of the MC may have taken
place since the last updating of this particular
subcollection).   3e4b

The UP fetches and compiles the L10 program which is to
be used as filter for extracting the subcollection from
the MC and runs it against the relevant MC URFs merging
them together to produce the subcollection URF.   3e4c

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Catalog Support System Design Proposal

After archiving and verifying the subcollection URF, the
UP updates its internal records and procedes to update
the next supported subcollection.   3e4d

PRODUCTION OF CATALOG INDICES   4

The final element of the Catalog Support System Trinity is the
Catalog Production Processor, more accurrately called the
Master and Subcollection Catalog Index and Listing Production
Processor, or CPP.   4a

The CPP is the basic output port of the CSS and is designed
to allow the production of on- and off-line, incremental
and cummulative, indices and listings of various kinds,
using the Master Catalog as the ultimate data base.   4a1

The nature of the CPP, in fact of most of the CSS, is not
to add new basic capabilities to our augmetation system,
but rather to bring together existing ones in such a way as
to reduce our committment of resources to clerical tasks.   4a2

The design goals which the CPP must meet are the following: 4a3

To permit flexible specification of the types and
frequencies of production of the various catalog indices
and listings needed by DSS, NIC, DPCS, etc.   4a3a

To function as automatically as possible and with a
minimum consumption of ARC personnel and equipment
resources.   4a3b

The operation of the CPP is reducible to the execution of any
number of pre-defined "Production Runs," each of which
consists of any number of "Production Run Format Units."   4b

A Production Run (PR) is the unit of processing which tends
to minimize the total ammount of resources consumed by the
CPP in performing its overall duties without requiring
difficult to program automatic optimization.   4b1

Such automatic optimization is not conceptually
difficult, but only difficult to perform while also
allowing maximum ability to recover from the
catastrophes to which our system is prone.   4b1a

It is the intent of this design to modularize the entire
CSS in such a manner that error conditions remain local
to the process in which they occur and, to the largest

extent possible, local to the step in which they occur.
To provide automatic optimization of the overall CSS
operation or even of the overall CPP operation would, I
believe, seriously hamper attempts to minimize the
inconvenience and potential information loss due to
system malfunctions.   4b1b

Nevertheless, some optimization is necessary to prevent
blatantly wasteful use of resources -- hence the unit of
the Production Run.   4b1c

A PR is essentially a set of index and listing producing
operations which operate on the same catalog (MC or
subcollection) data base and which are to be performed with
the same periodicity. It is described by the following
parameters: 4b2

   "Name" of the PR -- for referencing in TNLS commands.   4b2a

   Name of the collection which supplies incremental input
   to the PR (this will directly or indirectly provide
   links to one or more Update Record Files -- one if the
   PR has the same periodicity as the collection updating,
   more if its periods are longer).   4b2b

   Sort Key and Update Decision programs to be used for
   merging the URFs into a Production Run Input Work File
   (PRIWF).   4b2c

   Periodicity (e.g., daily, weekly, monthly) for
   performing this PR.   4b2d

   "Names" of Production Run Format Units to be produced by
   this PR -- for referencing in TNLS commands.   4b2e

A Production Run Format Unit (PRFU) is a collection of
indices and listings which can be obtained from a single
formatting of a Production Run Input Work File (PRIWF).   4b3

   For example, on- and off-line, incremental and
   cummulative "One-Line Author" indices can all be
   obtained from a PRIWF with a single pass through the
   One-Line-Author-Index formatting L10 program (and
   subsequent processing).   4b3a

The CPP will have associated with it TNLS commands for
performing the following types of operations: 4c

Catalog Support System Design Proposal

Starting up the CPP.   4c1

Specifying the parameters for a Production Run.   4c2

Specifying the parameters for a PRFU, e.g.:   4c3

    Programs needed for producing a Production Run Output
Work File (PROWF) from the PRIWF, i.e.,
Analyser/Formatter and Sort Key programs.   4c3a

    Whether an on-line, incremental index should be produced
and (if so) reference (link) to formatting program (if
any) needed to produce it from the PROWF and file name
to which it should be output.   4c3b

    Whether an off-line, incremental index should be
produced and (if so) reference to formatting program (if
any and if different from on-line formatting program)
needed to produce it from the PROWF and file name to
which it should be output (before and/or after Output
Processoring).   4c3c

    Whether cummulative on- and/or off-line indices of this
type are desired and if so: 4c3d

      Reference to master file set to be merged into.   4c3d1

      References to Sort Key and Update Decision programs
to be used in the update/merging.   4c3d2

      Whether an on-line, cummulative index should be
produced and (if so) reference to formatting program
(if any) needed to produce it and file name to which
it should be output.   4c3d3

      Whether an off-line, cummulative index should be
produced and (if so) reference to formatting program
(if any and if different from on-line formatting
program) needed to produce it and file name to which
it should be output (before and/or after Output
Processoring).   4c3d4

Catalog Support System Implementation Plan

The Catalog Support System (CSS) will consist of three modules
(as described in -- Journal, 8004, 1):   1

    (1) Entry Processor (EP)   1a

    (2) Update Processor (UP)   1b

    (3) Catalog Production Processor (CPP)   1c

The EP is basically an "on-line" module requiring extensive user
features integration with NLS; the UP and CPP are basically
"off-line" modules with incidental on-line parts. I reccommend
the following implementation sequence, allowing for system and
design evolution between steps: 2

    (1) Basic CPP without on-line parts.   2a

    (2) Basic UP without on-line parts.   2b

    (3) On-line parts of CPP and UP.   2c

    (4) EP.   2d

I have an intuitive feeling that the entire implementation /
debugging / trial / revision process will take on the order of
six months -- four months might be possible but seems highly
unlikely; eight months might be even more realistic when we
consider that changes in the CSS to upgrade it using MPS and
property lists might be wanted shortly after completion of the
basic system (or concurrent with it).   3

    In this light, NIC might consider buying the CSS one step at a
    time, as the entire system might be too expensive until other
    buyers (DSS, DPCS, MSR, etc.) become convinced of the
    usefulness of CSS and can be brought in as co-buyers. The CPP
    is clearly the most needed module at the current time and can
    healthily exist without the others.   3a

The CPP will be "table-driven," the tables specifying the
paramenters of Production Runs and PR Format Units as described
in (Journal, 8004, 4b). The cost of making the CPP table-driven
rather than NIC-specific seems to be negligible and will make the
CPP immediately accessible for non-NIC uses.   4

    Input to each PR will be a set of serially-numbered
    sub-collection Update Record FIles (URFs) containing catalog
    entries in standard format. New entries will be distinguished
    from edits of existing entries by examination of the *w6 and

*w7 fields. Secondary input will be in the form of the MASTER
files for each cummulative index, these files having been
initialized by hand before the first running of the CPP.   4a

Output will be in the form of on-line, off-line
(intermediary), and print-formatted versions, as required, of
the various index and listing files specified for inclusion in
the final "catalog."   4b

I think it will take about 15 solid, computer up all day with no
lost files, no other commitment, days to get the basic CPP
implemented and "first-degree" debugged. This doesn't include
writing the myriad of sort-key, update-decision, and
analyser-formatter programs which will eventually be needed, nor
does it include getting the MASTER files formatted and solidly
lodged in the system -- a task essentially equivalent to the old
catalog production chore (but hopefully easier if we can make use
of the files prepared for the most recent catalog). In any
event, with a good deal of luck we should see the first
automatically-produced NIC Catalog about Valentine's Day.   5

Rambling Thoughts on Planning

There have been a number of things about the baseline planning
effort which have not felt right to me, and I would like to
ramble a bit with some thoughts on the subject.   1

I find the baseline record system as it now exists not
particularly useful.   2

I feel that there are a number of reasons for this: 3

  -It concerns itself primarily with tasks, rather than
  baselines.   3a

    I visualise a baseline as being an abstraction of the
    direction in which an activity is moving.   3a1

    The particular tasks which are being done for that activity
    may or may not be closely related with the baseline.   3a2

    For example, A great deal of DSS effort has been spent
    doing little things (fixing glitches, recovering from
    crashes, etc.) for the Journal system.   3a3

      While these tasks have been and are important, they
      relate little to the DSS basenine.   3a3a

      Rather, the broad subjects of Journal Evolution and
      Journal Maintenance describe the relationship of the
      tasks to the DSS baseline.   3a3b

    Perhaps it has been simply the way that I have used the
    extant system, but I have found it difficult to make these
    associations.   3a4

    At any rate, I think that a hierarchical organisation of
    the baseline planning record by activities rather than
    tasks and people would be benificial.   3a5

    For example, part of the DSS baseline hierarchy might
    appeaar something like: 3a6

      DSS   3a6a

        Operations and development   3a6a1

          Journal System   3a6a1a

            Maintenance   3a6a1a1

Bug fixing	3a6a1a1a
Delete redundant delivery requests	3a6a1a1a1
Crash recovery	3a6a1a1b
Make interlocking files compatible after crashes	3a6a1a1b1
Reliability	3a6a1a1c
Development	3a6a1a2
Efficiency improvements	3a6a1a2a
Mebbee move critical files onto drum	3a6a1a2a1
Evolution	3a6a1a2b
Implement new delivery techniques	3a6a1a2b1
Implement a capability for editing messages, titles, etc.	3a6a1a2b2
Documentation	3a6a1a3
Research	3a6a2
Journal System	3a6a2a
Integration into other systems.	3a6a2a1
Master Catalog Production System	3a6a2a1a
File/archive system	3a6a2a1b
New Developments	3a6a2a2
Backlinks	3a6a2a2a
Comments	3a6a2a2b

There are obviously other ways of organising this
hierarchy, but I think that is secondary to the point,
which is that a hierarchical organisation provides a good
view of the baseline of the activity.   3a7

Given that this hierarchy exists, relative effort estimates

at the various branch heads in terms of percentage of
allotted resources to that plex would allow a good feeling
for priorities without actually naming the tasks involved.   3a8

   Additionally, the priority of an entire plex could
   easily be changed by changing the allotment of resource
   to that plex.   3a8a

-The baseline system as it now exists seems to be asking the
ARC members to conform to its (sometimes awkward) standards.   3b

   I believe that any planning effort should proceed according
   to the following: 3b1

      (a) Make as much use as possible of information which is
      currently available.   3b1a

      (b) If this is found to be insufficient, then attempt to
      adapt as much as possible to the current work habits,
      etc. of the persons involved in the effort, an in this
      context, extract more information in as inobtrusive and
      non-disruptive a manner as possible.   3b1b

      (c) As a last resort, ask the planning subjects to
      conform to your way of doing things.   3b1c

-I feel that the current baseline is being wantonly greedy
about gathering all and any information which it thinks it can
get away with.   3c

   In according with the preceding principles, I feel that the
   planning system should ask only for the information it
   really needs and really knows what to do with.   3c1

-With regard to scheduling and planning tasks   3d

   I think that the value of this activity to a high level
   planning effort is over-rated.   3d1

      At a high level, it is difficult to put this information
      in context.   3d1a

         It is particular dangerous to imagine that the sum of
         the costs of the individual tasks is equal to the
         total cost of the project.   3d1a1

      Thus we invent padding factors which are used to make up
      for the lack of context.   3d1b

Rambling Thoughts on Planning

This is a nice artifice to make the figures come out,
but I think we are more interested in eliminating the
need of the artifice than using it.   3d1c

Perhaps a nice idealistic rule of thumb is that task
scheduling and planning is relevant to a nodes parent in
the hierarchy??   3d2

-With regard to people scheduling   3e

This is a toughie when given a bunch of generalists such as
exists in our group.   3e1

It is again convenient to try to do this in terms of tasks,
but futile.   3e2

How, for example, do I explain the fact that I am writing
this note on baseline planning, which it bears little
relation to the actual tasks which I am involved in.   3e3

I think that I would favor an attempt to define catagories
of activity, and relate the people scheduling according to
activity rather than task.   3e4

    For example, a person may be habitually a generalist
    (meaning that he may be working on any ARC related task)
    a certain amount of time.   3e4a

    Another quantum may be spent designing.   3e4b

    Yet another may be spent implementing new things.   3e4c

    And another debugging.   3e4d

    And another doing something which is fun and not in the
    mainstream of ARC (this might be construed as
    relaxation).   3e4e

    And planning   3e4f

    And flicking off   3e4g

    And re-orienting   3e4h

    And bookkeeping   3e4i

    And corresponding   3e4j

Rambling Thoughts on Planning

And onward.   3e4k

we need to try to define a number of these classes of
activity which are reasonable, and sufficiently few in
number so as to be managable.   3e5

They need not be mutually exclusive.   3e6

A persons time may be spent doing more than one thing.   3e6a

In rambling conclusion: 4

Planning is a difficult task in relatively predictable
environments.   4a

In an environment such as ours, which is always changing, and
with a potential for exploding at any given time on any front,
the problem is extreme.   4b

Attempting to stabilise the environment is not the solution.   4c

our environment is the most valuable asset we have, and it
would lose much of its worth if it were stabilised.   4c1

Rather the solution is to develop a planning technique which
is optimum for an environment such as ours...A planning system
in which unexpected change is a boon rather than a villain.   4d

This is clearly a difficult problem, but I feel that it is a
vital one, particularly if we are to attempt to fully utilise
the power available from augmentation systems, rather than
limit that utilisation which an inadequate planning system
will eventually do.   4e

Rambling Thoughts on Planning

(J8032)   11-NOV-71 16:14; Title: Author(s): William S. Duvall/WSD;
Distribution: Charles H. Irby, Douglas C. Engelbart, James C. Norton,
Bruce L. Parsley, Richard W. Watson/CHI DCE JCN BLP RWW;
Sub-Collections: SRI-ARC; Clerk: WSD;

Response to DSS Meeting Announcement and Meetings in General

In response to WSDs message concerning the DSS Meeting to be held
on 18 November (Journal,8034,1):   1

   It is apparent that such a mode of operation-- i.e.,
collective discussion and planning , is especially attractive
for all ARC subgroups in this time of reorganization and
expansion. In fact, it is the type of thing we are planning
to do next week in PSST in order to alleviate some of the bad
feelings generated in yesterday's PSST meeting. It seems to me
that most of those were created because of poorly defined
roles and various misunderstandings.   1a

   I have found such meetings of use in the design of DEX.   1b

   The only hesitation I have, in fact, is the possibility of
spending all of our time in meetings. However, considering
the unusual state we find ourselves in now (growing and
developing), a period primarily devoted to meetings would be
beneficial to all in the long run if not the short run.   1c

(J8040)   12-NOV-71 10:22;   Title: Author(s): Harvey G. Lehtman/HGL;
Distribution: William S. Duvall, Mary S. Church, Douglas C. Engelbart,
Charles H. Irby, Harvey G. Lehtman, James C. Norton, Bruce L. Parsley,
William H. Paxton, Richard W. Watson, J. D. Hopper, John T. Melvin,
Harvey G. Lehtman/DSSIG JDH JTM HGL; Sub-Collections: SRI-ARC DSSIG;
Clerk: HGL;

NETWORK WORKING GROUP   Abhay Bhushan, MIT-DMCG   1
Request for Comments #278   Bob Braden, UCLA-CCN   2
NIC 8056   Eric Harslem, RAND   3
Catories: A.5, 0.7   John Heafner, RAND   4
Obsoletes RFC 221, NIC 7612   Alex McKenzie, BBN-NET   5
                                   John Melvin, SRI-ARC   6
                                   Bob Sundberg, HARV   7
                                   Dick Watson, SRI-ARC   8
                                   Jim White, UCSB   9
                      17-Nov-1971   10

REVISION OF THE MAIL BOX PROTOCOL   11

The file transfer committee met and discussed the Mail Box
Protocol RFC 221, NIC 7612. The potential utility for the
mechanism was confirmed and a couple of changes suggested. We
first give the changes and then restate the Protocol.   12

CHANGES   13

1) The Mail Box Protocol is only to allow ASCII strings of
text formatted for a network standard line printer rather than
allowing other data types.   13a

2) A new command is to be added to the File Transfer Protocol
called "Append with Create" which appends to a file if the
file exists, and creates a file if it does not exist.   13b

3) The standard path name for the mailbox is to be, using
conventional metalanguage symbols,   13c

    "MAIL" <separator> ("PRINTER"/<ident>)   13c1

    <separator> is the ASCII GS, octal 035. The semantics of
    the above are the following: 13c2

    <ident> is a NIC IDENT.   13c3

    "MAIL" <separator> "PRINTER" would be interpreted by the
    receiving site as meaning Append with Create the
    transmitted file to a bulk mail file to be printed or
    directly output it to a printer.   13c4

    "MAIL" < separator> <ident> would be interpreted to mean
    either   13c5

1) The same as "MAIL" <separator> "PRINTER" i.e., ignore
<ident> or   13c5a

2) Append with Create the following file to a file
specifically for the person designated by <ident> for
either online access or printing or both.   13c5b

The problem of delivering mail to TIPs was discussed.   13d

At the moment TIPs support only the Telnet Protocol, but it is
planned to support the Data Transfer Protocol. TIPs will have
an ASCII line printer available as an optional device. People
desiring to send a mail item to a TIP with a printer can open
a standard published socket and transmit to it with Telnet
Protocol now, later also with the Data Transfer Protocol. The
NIC's plans with regard to TIPs is not to do automatic network
delivery to them. Messages to people using TIPs can be sent
to them through the NIC and will be delivered as with everyone
else directly to the person's initial file at the NIC. The TIP
user can read the item online or obtain a hardcopy at his
terminal with the Output Device Teletype command of NLS.   13e

                    MAIL BOX PROTOCOL   14

The Mail Box Protocol will use established network
conventions, specifically the Network Control Program, Initial
Connection Protocol, Data Transfer Protocol, and File Transfer
Protocol (as described in Current Network Protocols, NIC
7104).   14a

The transmission is to be Network ASCII. The standard
receiving mail printer is assumed to have a print line 72
characters wide, and a page of 66 lines. The new line
convention will be carriage return (Hex 'OD'), (Octal '015')
followed by line feed (Hex 'OA') (Octal 012') as per the
Telnet Protocol, RFC 158, NIC 6768. The standard printer will
accept form feed character (Hex'OC') (Octal'014') as meaning
move paper to the top of a new page.   14b

It is the sender's responsibility to control the length of the
print line and page. If more than 72 characters per line are
sent, of if more than 66 lines are sent without a form feed,
then the receiving site can handle these situations as
appropriate for them. These conventions can be changed by
control codes as described below. At the head of the message
or document sent there is to be two copies of an initial
address string each terminated by a form feed. This address
string is to contain the sender's name and address, and the

                              1

receiver's name and address formatted in some reasonable,
easy-to-read form for a clerk to read and distribute. Comments
could also be included in the address string. The requirements
for two copies are to make one readable from a fan fold paper
stack without effort.   14c

Initial Connection   15

    Initial Connection will be as per the Official Initial
    Connection Protocol, Document #2, NIC 7101, to the standard
    File Transfer socket #3.   15a

File Transfer   16

    The mail item (file) to be transferred would be tranferred
    according to the File Transfer Protocol.   16a

    As per the File Transfer Protocol, a file (mail item) can be
    sent in more than one data transaction as defined in the Data
    Transfer Protocol. End of file is indicated by the file
    separator (as defined in Data Transfer Protocol) or by closing
    the connection.   16b

Order of Transactions   17

    The only basic operation required is an Append with Create.   17a

                        Append with Create Request   17b

    (Mailer) User ----------------------> Server (Mail Box)   17c

                        <File - data>   17d

                    ---------------------->   17e

                        End of File indication   17f

                    ---------------------->   17g

                        Acknowledge   17h

                    <----------------------   17i

    The data type default is network ASCII. The standard line
    printer default is as defined above. Other control
    transactions can be used.   17j

                    CONTROL TRANSACTIONS TO BE USED   18

OP CODE			19
Hex	Octal		20
09	011	Error or unsuccessful terminate	21
0A	012	Acknowledge or successful terminate	22
05	005	Append with create request (add to existing file or create file if none exists)	23
5A	132	Change printer control settings	24

                              ERROR CODES   25

All error codes defined in the File Transfer Protocol could be
returned.   25a

                        PRINTER CONTROL CODES   26

Hex	Octal		27
D1	321	Meaning: Set line width to 72 characters	28
D2	322	Meaning: Use the full width of your printer	29
03	323	Meaning: Set page size to 66 lines	30
04	324	Meaning: Set page size to infinite	31

Other virtual printer control codes can be added in the
future.   31a

Other classes of control codes can be added as the need
arises.   31b

<WATSON>J6056.NLS;1, 17-NOV-71 14:22 RWW ; Title: Author(s): Richard
W. Watson/RWW; Distribution: Steve D. Crocker, Thomas F. Lawrence, John
W. McConnell, John F. Heafner, Robert E. Long, Ari O. J. Ollikainen,
James E. White, A. Wayne Hathaway, Dan L. Murphy, Patrick W. Foulk,
Richard A. Winter, Harold R. Van Zoeren, Alex A. McKenzie, Robert L.
Sundberg, James M. Madden, Joel M. Winett, Abhay K. Bhushan, Peggy M.
Karp, Thomas N. Pyke, Abe S. Landsberg, B. Michael Wilber, James A.
Moorer, Edward A. Feigenbaum, Robert T. Braden, James M. Pepin, Barry D.
Wessler, John T. Melvin, John C. LeGates, Art J. Bernstein, C. D.
Shepard, Robert F. Hargraves, William S. Duvall, Harvey G. Lehtman/NWG
WSD HGL; Sub-Collections: NIC NWG SRI-ARC; RFC# 278; Clerk: RWW;

1

The enclosed list of host names is a draft. The hosts with an *
next to them indicated that this is the name they desired. The
others are names assigned. If I do not hear from representatives
at the hosts to change or correct the names in this list by
December 3, I will publish a list which we all can consider
official.   2

Formal Name	Nickname	Network Address	
			3
Formal Name	Nickname	Network Address	4
*AMES-ILLIAC	I4		5
*AMES-67		16	6
*AMES-TIP		144	7
*BBN-NCC	NCC	5	8
*BBN-TESTIP		158	9
*CMU-10		14	10
*MIT-DMCG	DMCG	70	11
*MIT-MULTICS	MIT-M	6	12
*MITRE-TIP		145	13
*RAND-CSG		71	14
*RAND-RCC		7	15
*SRI-AI		66	16
*SRI-ARC	NIC	2	17
*UCLA-CCN	CCN	65	18
*UCLA-NMC	SEX	1	19
*UCSB-MOD75	MOD75	3	20
*USC-44		23	21
BBN-TENEX	TENEX	69	22

BBN-TENEXB	133	23
BURR	15	24
BURR-TEST	79	25
CASE-10	13	26
ETAC-TIP	148	27
GWC-TIP	152	28
HARV-1	73	29
HARV-10	9	30
HARV-11	137	31
ILL-11	12	32
ILL-6500	76	33
LL-67	10	34
LL-TSP	138	35
LL-TX2	74	36
MCCL-418	22	37
MIT-AI	134	38
NBS-11	19	39
NBS-TIP	147	40
NCAR-7600	25	41
NCAR-TIP	153	42
RADC-645	16	43
RADC-TIP	146	44
SDC-75	8	45
SU-SAIL	11	46

TINK-418   21   47

USC-TIP   151   48

UTAH-10   4   49

<WATSON>J8060.NLS;1, 17-NOV-71 16:29 RWW ;   Title: Author(s): RWW
Distribution: Steve D. Crocker, Thomas F. Lawrence, John W. McConnell,
John F. Heafner, Robert E. Long, Ari O. J. Ollikainen, James E. White,
A. Wayne Hathaway, Dan L. Murphy, Patrick W. Foulk, Richard A. Winter,
Harold R. Van Zoeren, Alex A. McKenzie, Robert L. Sundberg, James M.
Madden, Joel M. Winett, Abhay K. Bhushan, Peggy M. Karp, Thomas N. Pyke,
Abe S. Landsberg, B. Michael Wilber, James A. Moorer, Edward A.
Feigenbaum, Robert T. Braden, James M. Pepin, Barry D. Wessler, John T.
Melvin, John C. LeGates, Art J. Bernstein, C. D. Shepard, Robert F.
Hargraves/NWG; Sub-Collections: NWG NIC; RFC# 280; Clerk: RWW;