APPENDIX A: NIC Development -- Function and Operational Delivery

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [1]

APPENDIX A: NIC Development -- Function and Operational Delivery

Network Information Center 1

At present we view the Network Information Center (NIC) as a reference and dialogue support service. It has provided these services oodpprinffline since the Fall of 1970; on June 18, 1971, we will begin to provide services online as well. The Augmentation Researchji 1f5 Center (ARC), of which NIC is a part, has been developing a wide range of capabilities. We only consider those capabilities which are directly related to the reference and dialogue support functions. as part of NIC The services of the NIC are available to all network sites and to stations not on the network which are participating in the network design or operation. 1a

We plan to offer other services, such as system documentation aids, over the network to the network participants. However, because of limited people and hardware resources, we can not make them generally available. We plan to work with sites or groups, such as Educational Information Network (EIN) which may assist sites on the network prepare documentation, where these services can have the greatest value and impact. These types of services we do not consider a direct part of NIC. 1b

The network is a distributed collection of people and computer system resources. 1c

A function of the NIC is to help this geographically distributed group collaborate with each other. 1c1

A function of the NIC is to help people with needs find the people, system, or information associated with the Network that can help them. 1c2

During the coming contract period we will propose to continue to improve and expand the online and offline services offered through the NIC. Our present three-stage timetable for providing online service calls for a basic NIC to be operational by September 6, 1971, assuming the Network Working Group (NWG) has established a file transfer protocol early in the summer and this protocol has been implemented by a number of sites by this date. At that time the following are expected to be in operation: 1d

Online Capabilities: 1e

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [2]

We expect to be able to support about 8 network typewriter terminals using the ARC On Line System (NLS).We are currently measuring the system performance and considering ways to increase the capacity either with software system changes or with changes in the hardware configuration. 1e1

Network users will be able to use NLS to prepare messages and documents, such as the NWG, Request for Comments (RFC's), for automatic transmission to people at other sites through their local file system or terminal. 1e2

These documents will be automatically recorded as an aid to the cataloging process. 1e3

The above online capabilities form a basic dialogue support system which provides for collaborating groups a place to record their plans and designs, annotate contributions of others, make synopses of records relevant to specific issues, and to make contributions to the evolution of plans and intellectual formulations that are efficiently and appropriaately integrated and connected to the entire record of their groups activity. 1e3a

They allow using the facilities of NLS, they allow people to browse in the record to arrive quickly at the status of a formulation that is being documented through the dialogue support system. 1e3a1

Using the basic catalog facilitheyies they allows others to find out who is interested in what subjects and to be quickly brought up to date. 1e3a2

Interspersed with the above capabilities extended NLS features enable people to retrieve information from the record, to modify it, update it,and return it to the record without destroying the original. 1e3a3

We also plan to allow users to prepare documents either on their local systems or offline and then have them transmitted to NIC for further manupulation, distribution, and cataloging. 1e4

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Documents prepared at NIC or transmitted to NIC will be stored on the NIC disk or on archive tape files at NIC or on archive files at other sites, offering file storage services. These documents can be retrieved for online browsing or for transmission to files at other sites for printing and other uses. (Work in this inter site file transfer area will probably continue into the next contract period.) 1e5

Reference files which will be online are: 1e6

The ARPA Network Resource Notebook. 1e6a

The listings and indexes in the Catalog of the NIC Collection. 1e6b

The Directory of Network Participants. 1e6c

Documentation of NIC services. 1e6d

Host Status. 1e6e

Other files which are needed for network reference can also be created and be made available online. 1e7

Initially our surveys of network users show that access to the NIC will be predominately through the slow limited-character-set model 33 teletype. This will restrict use of our system for extensive online browsing and general reading of online documents, therefore hardcopy production and distribution will be a vital function for some time. 1e8

Offline Capabilities: 1f

We will continue to offer the following offline services. 1f1

Dialogue support in the form of hardcopy duplication and transmission to the NIC Station Document Collections at remote sites and to the Technical Liaisons. 1f1a

Assistance to Station Agents in handling their hardcopy collections and in other NIC related matters. 1f1b

Hardcopy distribution of the NIC Collection Catalog, Network Protocols, ARPA Resource Notebook, Directory of Network Participants, Mailing List, and other network-wide Functional Documents. 1f1c

Distribution and updating to Station Collections and cataloging of Functional Documents, documenting facilities and services available at each site. Such documents could also be transmitted to us for online storage and retransmission to files at remote sites.(The latter after Sept 6) 1f1d

A full hardcopy NIC collection at ARC containing documents considered to be of interest to network participants. Those documents not in the station collection can either be obtained from NIC or a reference can be given on where to obtain the document directly. Policy in the area of the extent of the NIC Collection and whether or not we should be involved in the distribution of books and reports needs to evolve. 1f1e

Another service provided is training in the use of NLS and other NIC facilities. A two day course for initial users of the NIC is to be given at SRI on June 16-17. 1f2

The above offline and online services are a basic, but useful set, but will not meet the needs of the expanding community of network users without continuous improvement in our NIC operating procedures, evolution and expansion of services and support facilities. 1f3

It is important to emphasize strongly that NIC is a very general Information Handling Service which requires both people and computers to support its functions. Computer people often tend to ignore the amount of effort required to handle and process information before it gets into the machine and when it comes out. There is also much effort required to work with both the originators of the information and the end users of the information. (See branches 3a10 and 3a11 for examples of people effort required for an effective Information Service) 1f4

The NIC is communicating, recording, retrieving, reformatting, proofing, and recommunicating information in several media: telephone, in-person, online and offline typewriter, online CRT console, computer and non computer printed documents.Procedures for performing these activities in an integrated fashion have not been done by other information services. These procedures must be worked out in a rapidly changing environment. Therefore people must be aware of the man time required to work out appropriate procedures and methodology. 1f5

APPENDIX A: NIC Development -- Function and Operational Delivery

Between Sept. 6 and the end of the current contract period. 2

One interesting problem we are going to face: 2a

We can provide some limits on file space a site can have and we can limit the number of lines active at any moment from a given site, but we can have little control over what individual users do when they come into us. 2a1

We would like to encourage people to send short messages or small documents and not use the NIC facilities, without special arrangement, to write PhD dissertations, write extensive manuals of their systems etc which would tie up network lines for long periods of time and thus keep others with messages off the system. 2a2

During this period we will: 2b

Continue to gain operational experience and improve our operational procedures. 2b1

Continue work on handling remote and archival files. 2b2

provide access to the display version of NLS (DNLS)- initial access will be for sites with IMLAC displays, later we will produce specifications which will allow sites with other types of displays to gain access to DNLS. 2b3

Begin planning for the new contract period in more detail 2b4

Directions for the next two year contract period. 3

Major points of emphasis: 3a

Continue to work with the Network Working Group, particularly in those areas vital to the NIC such as graphics, file transfer, distributed data management, and accounting. 3a1

Expansion of our ability to provide basic reference and dialogue support for the increasing numbers of network users and groups who will be coming on the net. 3a2

This expansion will require development of: 3a2a

Methodology 3a2a1

Procedures 3a2a2

Training of new operational staff 3a2a3

Modifications to systems and other tools to meet the increased use. 3a2a4

One can not over emphasize the effort that is required to scale up a pilot or prototype function to real operational use by many people. 3a2b

Examples of groups who will want to collaborate like the Network Working Group is now doing are: 3a2c

the meterlogical community planning to use the Illiac 3a2c1

The speech recognition community 3a2c2

The graphics community 3a2c3

The various subgroups of the system design community 3a2c4

Reorganize our hardware and software system to enable smooth expansion as the need arises. 3a3

Get our resource accounting of both people and machine resources in shape so as to be able to know what each operation and sevice is costing. 3a4

As new dialogue support functions are developed and tested on the research side of the house move them into operation in the NIC. 3a5

Examples of functions under development or being considered. 3a5a

Sets-the ability to find those items in the dialogue universe relevant to ones interest and view them in many ways 3a5a1

Backlinks- to findout which other items are referencing each item 3a5a2

Split screen- for DNLS users- to study two or more items at once and operate on them 3a5a3

Ability to build sub catalogs of dialogues- related to sets. 3a5a4

Dialogue with files distributed in many hosts throughout the network- There are many problems which would have to be solved such as assuring that files did not get deleted and keeping track of where things are in our catalog.-to help reduce the load on NIC 3a5a5

Action items- ways to enter a dialogue item requiring action by a certain date and having the system remind the sender to follow up or check to see if the receiver responded 3a5a6

Provide improved querying capabilities for the online reference files such as the: 3a6

NIC catalog 3a6a

ARPA Network Resource Notebook, 3a6b

Records of site status, 3a6c

Documentation of site facilities and services 3a6d

Networkwide and personal files of people interested in various research topics. 3a6e

For example the Illiac IV project has 2000 people on their mailing list of interested people. 3a6e1

Question- is it likely as time goes on that a project such as Illiac would want an organization such as NIC to take over their printing and mailing to all these people? 3a6e1a

We have already been approached by a person from MAC to find out if we could handle a similar function for them. 3a6e1b

We may want to provide a facility to ask questions for online updating of site status or other files which are changing over a short period of time. 3a7

Continue to improve making information available by preparing weekly notices of new additions to the NIC collection. 3a8

Preparation of specializedd bibliographies for subjects of wide interest. 3a9

The above services as well as evolving the NIC collection require considerable effort to: 3a9a

Monitor current literature to select, collect, abstract, and catalog 3a9a1

Design and program to produce such listings from catalog input items 3a9a2

Preparation and distribution 3a9a3

Improved ways to handle hardcopy at sites: 3a10

As the number of users grows and the number of available services increases, the size of the collections at local sites will increase. 3a10a

The problems to be solved here are many: 3a10a1

Getting out a dynamically changing catalog on a Monthly basis 3a10a1a

This item requires attention to the design of listings and indexes for maximum usefulness 3a10a1a1

Liason and supervision of hardcopy production 3a10a1a2

Recording and proofing 3a10a1a3

Preparation and distribution 3a10a1a4

Continual improvement and evolution in the tools required to assist the catalog input and production process. 3a10a1a5

Handling obsolete items 3a10a1b

This function requires continuing manual effort to review the collection 3a10a1b1

Distribution of hardcopy over the network to standard printers (This item will require an ARPA decision. We recommend a system involving a mini computer and modified printer such as the Clevite. The standard Clevite does not have adequate resolution.) 3a10a1c

Training and assistance to station agents 3a10a1d

People will not be willing to have just one collection at their site if they have to go any distance to get to it. 3a10a1e

This item requires additional recording and hardcopy production and distribution 3a10a1e1

The documents relevant to a meteorologist are not those relevant to a member of the Network Working Group and therefore groups will want subcollections tailored to their needs. 3a10a1f

This item implies selective dissemination of information 3a10a1f1

A design based on existing systems is required 3a10a1f1a

Close liason with users 3a10a1f1b

Preparation and distribution 3a10a1f1c

More recording 3a10a1f1d

The size of collections will probably require use of microfilm techniques and readers. 3a10a1g

Microfilm will be easy and less expensive to produce and take up little space. 3a10a1g1

Associated hardcopy facilities are required at sites and bulk hardcopy facilities are probably required at NIC. 3a10a1g2

There are many interesting possibilities with microfilm including: 3a10a1g3

Computer controlled frame jumping. 3a10a1g3a

Overlay of microfilm and graphic display. 3a10a1g3b

The ability to keep track of a wide variety of media such as slides, audio tapes, video tapes. 3a10a1h

Allow individuals and groups the capabilities of NIC to create and manage their own private collections of information with catalogs and capabilities for entering and proofing items and querying the catalogs. 3a11

This item requires basic bibliographic tools beyond those used for producing the standard NIC catalog 3a11a

It places more requirements for training and close liaison with users 3a11b

Since these users will have online items, possibly scattered in files on other hosts, it would be desirable to provide ways for retrieving them through their catalogs in NIC. 3a11c

Learning to use all the varied systems on the network is not going to be possible by sending all potential users to each remote site for training or by always bringing instructors to the users site. 3a12

Computer assisted instruction is going to be required. 3a12a

The NIC could provide some basic facilities to enable sites to create data bases for a NIC supplied teaching program. 3a12a1

An important point not to be lost in all this is the great amount of work required to take many of these obvious ideas and to turn them into smoothly running services. There are many details at each level in the system which must be worked out for these facilities to go together properly. 3a13

APPENDIX A: NIC Development -- Function and Operational Delivery

<JOURNAL>7279.NLS;1, 12-JUN-71 23:50 JCN ; (Expedite) Title:
Author(s): Richard W. Watson/RWW; Distribution: Jeanne B. North/JBN;
Keywords: ; Sub-Collections: NIC ; Clerk: JCN;
Origin: <WATSON>PRO.NLS;18, 12-JUN-71 23:47 RWW ;

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [0]

APPENDIX E: Software-Engineering Augmentation System

APPENDIX E: Software-Engineering Augmentation System

Introduction: 1

Once a remote site has established a DNLS station that can work with our system through the Network, it would be directly feasible for software engineers, working on other computers with other languaes than ours, to use our DNLS system to considerable advantage as a workshop in which to compose, modify, and study their (integrated) source code and documentation, and to participate in computer-aided, collaborative dialogue over this material. 1a

With straightforward utilization of our compiler-compiler techniques operable through DNLS, they can easily build special-purpose languages that match to other computers, to other purposes, at binary or assembly-language levels. 1b

We hope to encourage some experimetation in this direction, and intend to round out the prototypical set of conventions, aids, principles, etc. within our application areas that will make such application relatively direct. The extent of such experimentation will of course be limited to what we can manage to support, both with computer service and with people interaction. 1c

Basic setup for use of NLS by a remote software engineer 2

He has his own compilers and debuggers. 2a

We offer him a facility for writing, modifying, documenting his programs. 2b

Assume that he has high bandwidth path to us (i.e. the Net), so that 2c

display information may be sent to him, and 2c1

files may be transmitted to us for initial insertion into NLS, and 2c2

back to his site for compilation or printing. 2c3

The remote user would use display NLS over the Network. (Perhaps with the interactive parts of NLS running on his own machine to give better response.) 2d

His source code would be held in NLS files which he would edit and study using NLS. 2e

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [2]

Listings can be obtained through the facilities developed for local printing of NLS files for the NIC. This will include formatting by our Output Processor. 2f

Compilation will involve production of a sequential file that can be sent over the Net to his site for use with a local compiler. 2g

During the production of the sequential file, analysis and reconstructing of the text may be done. 2h

This allows the use of source language conventions that take advantage of NLS without changing the local compiler. 2i

For instance, 2j

the compiler may not accept lowercase letters, so on output all letters would be capitalized, or 2j1

the syntax for naming locations can be modified to correspond to NLS's naming of statements, then on output, converted back to the form recognized by the compiler, or 2j2

procedure calls may be expressed as NLS links in the source and converted to simple identifiers on output. 2j3

It is worth noting that a methodology similar to that described above was used successfully by ARC in transferring NLS to the PDP10. 2k

The main difference was that the compiler was at a remote site rather than NLS. 2k1

During the time that ARC was still using the XDS940, compilers developed at ARC were used remotely on Utah's PDP10. 2k2

The compilers were first produced at ARC, then transmitted over the Net to Utah. 2k3

Programs using those compilers were written with NLS. 2k4

They were tested by the steps described above: 2k5

production of a sequential file from the NLS file, 2k5a

transmission over the Net, and 2k5b

compilation and debugging at the other site via the Net. 2k5c

When changes were necessary, the source code was modified with NLS, a new sequential file produced, sent to Utah, compiled, etc. 2k6

This mode of operation was quite productive in spite of the problems caused by the inexperience with Network use. 2k7

More advanced use of the software tools at ARC 3

The above has described how the software engineer at another location might use NLS for writting his programs. 3a

It will also be possible for the remote programmer to use other software augmentation tools developed here. 3b

For instance, the TREE META compiler writting system could be modified to produce code for another machine (this was in fact done as part of the transfer of NLS from the XDS 940 to the PDP10). It could then be used to develop experimental compilers which would run on a PDP10 (or through further modifications and bootstrapping, on another machine) and produce files which could be sent over the Net for loading. 3b1

The feasibility of such an undertaking will be greatly increased with the development of the Modular Programming System described in another appendix. 3c

The compiler-compiler will be composed of modules, so that the code production can be more easily replaced without requiring a detailed understanding of large sections of a complex program. 3c1

When it is operational, the MPS itself will be a very powerful tool and of interest to other programmers. 3d

In addition, it will open up new ways for the remote programmer to access and use the other tools at ARC. 3e

It will become possible for the programmer to create a personal version of NLS by the replacement and addition of modules so as to better match his needs. 3e1

Other aspects of the Augmentation System 4

APPENDIX E: Software-Engineering Augmentation System

Independent of the software tools, there is a large incentive for the remote programmer to make use of NLS. 4a

It is important to remember that the programmer is also a manager, if not of a group, at least of himself. 4b

As a manager, he can expect to benefit from using the planning/communication/dialog tools which are being developed at ARC. 4c

In conclusion, it seems both feasible and desirable for the software engineer at another site to make use of NLS in a wide range of his activities. 5

Interfacing another compiler, adapting thei source code to NLS files, introducing new syntactiacl and structural conventions, producing a specil sequence generator, reformatter to feed their cmpiler... how tie in with various debugging modes tey might use?? 6

CHI make a little writeup here -- to explain briefly what approach might be made to support programmrs in anoher mchin o language, the advantages... 7

APPENDIX E: Software-Engineering Augmentation System

<JOURNAL>7280.NLS;1, 13-JUN-71 1:12 JCN ; (Expedite) Title:
Author(s): Charles H. Irby, William H. Paxton/CHI WHP; Distribution:
James C. Norton/JCN; Keywords: ; Sub-Collections: NIC; Clerk: JCN;
Origin: <NORTON>APPE.NLS;1, 13-JUN-71 0:54 JCN ; .

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [0]

APPENDIX C: Documentation Production and Control System

APPENDIX C: Documentation Production and Control System

We plan to set up and really shake down within ARC a separate PLACE, TERMINAL CONFIGURATION, and STAFF -- a system (DPCS) expressly to support production and control of information-systems' documentation -- where the support work for developing and controlling ARC's documentation will all be done. 1

If we need more throughput to shake down the system, and/or if through NIC's activity or through special arrangements with Network groups there is reasonable sense to do so, I'd like to consider our supporting of other-group (Network) documentation production and control. I'd like to have a humming "business" in this kind of service, to serve well as a test bed for the successive stages of DPC System developments we want to go through. 1a

This support of other groups could be on sort of a shakedown basis, like prior to their setting up a PLACE, TERMINAL CONFIGURATION, and STAFF for local support of their own work (making use of computer-support from ARC). 1b

In support of this approach, we intend to provide ourselves locally with a hard-copy printout system capable of making good-quality mixed-text/graphic drafts. 2

We want to coordinate this system with parallel use of a high-quality COM system for final publication of documents and microfiche. We expect to use a COM service bureau for such production, but we want our local hard-copy system to be able to produce drafts that are completely accurate representations of all that will be on the final output. 2a

We hope to be able to purchase the front end of an FR-80, up to but not including the high-quality D/A and analog circuitry that drives thei high-precision CRT, leaving off these circuits, the CRT, and the camera and film-handling gear. Instead, lower-quality D/A and analog circuits, compatible with the resolution of a Princeton Scan-conversion Tube, whose output would be used for remote video viewing (at one of our video-DNLS consoles), or for driving a local Xerox LDX printer. 2b

See (7273,) for our thinkpiece regarding this approach. 2b1

With this approach we gain the full precision and flexibility of what seems to be the best COM on the market, enabling us to explore completely the range of graphic represenations useful for complex-systems documentation. 2c

It would also allow us to experiment with merging scanned photographic images into our documents, from digitally stored representations, or from film-scanned signals. This provides a potential for programatic control of image selection from microfiche (microfilm) archives, image magnification and trimming, page-cut positioning, and image overlaying. 2c1

This seems to be an important part of the problem of computer-accessed full text of library materials. 2c2

The earliest form of a DPCS would have authors working mostly off line. 3

Clerical support staff can take rough-draft material in any form (e.g., hand written, typewritten, marked-up computer printout, and/or dictation) and quickly type into a local spooling device the text and directives for our DEX (Deferred-EXecution) batch processor to operate upon and produce clean, formatted, up-dated printouts. 3a

The computer aids available to the clerical staff make it very easy for them to follow complex alteration markups on prior-printout drafts. In our experience, the total time required for a trained secretary to type the new text/editing input for a significant alteration job, and to take care of rolling and feeding paper tape (if that is the spooling means), is considerably less than the on-line time required by our best-performance DNLS operator to do the same work. 3a1

Authors can learn to work quite effectively in this mode for doing their original writing. Usually it can beat longhand, if their aren't too many alterations of prior content an organization. It isn't nearly as effective, of course, as composing original material with DNLS. 3a2

The modification directives used for DEX provide consistent and very effective notation for a longhand writer to use in his script to direct the transcribing secretary in performing the structural re-organizations that come to mind as the writing progresses. A bit of indoctrination in this respect actually provides a good deal of help to the author. 3a3

APPENDIX C: Documentation Production and Control System

An initial, self-contained DCPS would contain spooled-input typewriters (off line into cassettes or paper tape, or on line into a local computer), a means for batch transmission of spooled jobs to ARC (or a DEX processor in another TENEX), and a means for local hard-copy printout of the fresh drafts. An on-line typewriter would probably be involved as a minimum support aid, for using TNLS to do miscelleneous immediate editing and controlling tasks. A DNLS console would be an even more useful adjunct. 3b

In our various developments for NIC, DSS and RINS, we have a number of cataloging and indexing techniques that provide extensive help in documentation control. In studying various documentation-utilization environments, we'd expect to make steady improvements. 3c

We expect that our prototype DPCS could be mapped across to serve other documentation teams to very good advantage. It should be fairly easy to install an appropriate computer-service support system in another TENEX. 4

For some such groups, we would like to contract to provide this support as well as the user-system guidance -- we believe this approach to have strong advantages toward advancing a coherent domain of computer-aided documentation, 4a

We hope also that some of the early uses of our multi-party NLS-system development system could be in having other parties around the network working on special representations and techniques for types of system documentation of their particular interest. 4b

Subsequent evolution of our prototype DPCS would be towards such as providing automatic concordance-type indexing, cross-reference control, glossary control and production, and towards extended representations, new forms of portrayal for use in documenting complex systems, extended facility for composing

and modifing the exotic representations and high-quality font/formatting.

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [h]

APPENDIX C: Documentation Production and Control System

<JOURNAL>7281.NLS;1, 13-JUN-71 2:06 JCN ; (Expedite) Title:
Author(s): Douglas C. Engelbart/DCE; Distribution: James C. Norton/JCN;
Keywords: ; Sub-Collections: ARC; Clerk: JCN;
Origin: <WATSON>APPC.NLS;1, 13-JUN-71 2:04 JCN ;

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [0]

APPENDIX G: Collaborative System-Evolution System

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [1]

APPENDIX G: Collaborative System-Evolution System

Introduction (DCE) 1

A fully-developed augmentation system of a few years hence will have a very large repertoire of commands, representing a rich vocabulary for eliciting help from the computer system. To experiment meaningfully with any one subset of commands, designed to support a special kind of intellectual task, the evaluation must rightfully be done within a working environment in which the subjects are doing all of their associated work in the way they would do it in the "complete workshop." 1a

This means that to provide a progressive research environment in which rapid and significant evolution can take place, some sort of a "latest thing in complete workshops" must be maintained as a laboratory for each experimenter. To maintain this in separate installations is quite impractical. 1b

The computer network offers an important hope here, in that it makes it possible for people at distributed locations to share a "latest thing in complete workshops" as an environment for their different, specific "tool-development experiments." 1c

For several years ARC has been aiming toward an experimental future in which this was the way in which our work on augmentation systems would be done -- as part of a larger community in which many more people than we could marshal would be working on different fronts (and at different levels). 1c1

For instance, much of our motivation toward the Dialogue Support System has been to facilitate close collaboration between such distributed system-development participants. 1c2

Besides being able to sustain collaborative dialogue, the participants would be much helped if each could view a relatively stable system as the background in which he experimented with a new tool, and if he could very rapidly and independently create and modify new tool features. 1d

Our launching of a Modular Prgramming System was done explicitly to serve this end. When NLS has been modularized, it will be possible for instance to permit a worker at Utah to be given "custodianship" of a private subset of modules pertaining to the manipulation of one kind of graphic-data packet in our file data nodes. 1e

He would be given his private copies of the source-code files for these modules, and could add and/or modify them at will. His modules can be independtly compiled by him at any time; and when he wishes to experiment with the resulting "new tool," his compiled modules can be linked into the rest of the NLS compiled-code module set at run time, perhaps in place of some modules that the standard version of NLS offers but that he is re-doing. 1e1

To experiment with his tool, he can use it in the midst of processes, methods and information that are part of a busy (and evolving) working life in the whole workshop. 1e2

Each person can do his private development with minimal burden on the support system, and with maximal protection to the other workshop users. 1e3

The standard-NLS Module Set would be controlled and updated by a central communiy process, steadily integrating the improvements of the trial tools as they become thoroughly checked out. 1e4

General notes about the Modular Programming System (WHP) 2

What we are looking for from MPS 2a

improved design -- modularity 2a1

control structures that encourage modular design 2a1a

runtime entities, called processes, correspond to modules 2a1a1

control is passed among the processes 2a1a2

control structures that encourage simple interfaces 2a1b

processes communicate by messages sent over "ports" 2a1b1

improved debugging 2a2

source language debugging 2a2a

integrated with NLS 2a2b

ease of modifications 2a3

APPENDIX G: Collaborative System-Evolution System

ability to interface special purpose "subsystems" to NLS 2a8

may interface modules responsible for NLS file handling, display generation, etc. to new modules to make special subsystems of NLS 2a8a

transportability 2a9

language for MPS and the system primitives should be relatively easy to move to other machines 2a9a

very few primitives written for the base machine 2a9b

most of MPS written as modules by bootstrapping 2a9c

a restricted MPS for the NOVA minicomputer has already been partially designed 2a9d

ability to access remote systems 2a10

can build module which will run with NLS and drive another system over the Net 2a10a

may interact with NLS user, format request, send over Net, get response, format for insertion into NLS file or for NLS display 2a10b

ability to move modules to other computers 2a11

such as interactive parts of NLS 2a11a

communicate thru Net 2a11b

collaboration with other groups on software development 2a12

well defined interfaces, dynamic loading, modularity make it possible for other groups to build modules to run with NLS 2a12a

this obviously will be combined with ability to have modules communicating over the Net 2a12b

Why do we think it will work 2b

APPENDIX G: Collaborative System-Evolution System

The modularity/process/port/virtuality ideas have been successfully used by Rudy Krutar in several systems including a parser for an interactive extendible programming system. 2b1

Somewhat more grandiose schemes have been considered by Bob Balzer and others at Rand. 2b2

The segmentation/compilation/debugging ideas have been worked out by Peter Deutsch and company and at least partially tried out in SPL for the BCC machine or various LISP implementations. 2b3

Peter Deutsch and Jim Mitchell will be involved with the design and implementation of the system. In addition, Butler Lampson and Alan Kay will be contributing to the design. 2b4

APPENDIX G: Collaborative System-Evolution System

<JOURNAL>7282.NLS;3, 13-JUN-71 2:28 JCN ; (Expedite) Title:
Author(s): William H. Paxton, Douglas C. Engelbart/WHP DCE;
Distribution: James C. Norton/JCN; Keywords: ; Sub-Collections: NIC;
Clerk: JCN;
Origin: <WATSON>APPG.NLS;2, 13-JUN-71 2:24 JCN ;

Part of an ARC/IPT, Project-Continuation Thinkpiece, see (7271,) [0]

WSD 14-JUN-71 12:52 7284

Response to Journal COmments, 7266

Dick... 1

With respect to (Journal, 7266,), Jounal Comments, I get the impression that I have been communicating much less to you than what I had intenned or thought. 1a

In an effort to clarify, I will try to comment on each of the points you made. 1b

RFC's belonging to NIC / NNWG subcollections 2

Documents with RFC numbers are automatically entered into the NWG subcollection. 2a

I asked you if you also wished them entered into the NIC sub-collection, and you said no. 2b

Does this comment mean you have changed your mind?? 2c

Catalog enttry format 3

There is a conversion program for converting Journal format catalog entries into the format required by the master catalog. 3a

This has not been done automatically, because there is no support machinery for the Master catalog. 3b

When the master catalog machinery exists, an entry will be made in it automatically which conforms to the desired format. 3c

I have some questions about using the popular citation entry format for a long-range master catalog entry format. 3d

There seems to me to be a lot of innformationn in there which is sub-collection specific. 3d1

I think that the format of the JOurnal catalog (as opposed to the master catalog) should remainn in a form convenient to Journal use, as that is the intentionn of allowing separate sub-collections catalogs. 3e

I have read the JOurnal section of the TNLS guide and commented once. 4

Do you want me to look at it again?? 4a

I believe the Group Identification System proposal (Journal, 6215,) answers most of your questions about Groups. 5

Response to Journal COmments, 7266

There is, however, a need which you imply and is not mentioned there for giving a new user group membership without explicitly changing the group membership records. 5a

RFC Numbers currently appear in the Header statement fo the JOurnal document. 6

They can be printed on the address page, in the page header, or anywhere else that you desire with relative ease. 6a

With respect to your comments on reliaility, etc. 7

I here the call of a frustrated user here. 8

Admittedly, the Journal has been less than wonderful. 9

Some of this has been due to initial design flaws. 10

These are hopefully being corrected through the process of evolution. 10a

The Journal, after all, is a research project, which means that we (I at any rate) did not know all of the answers when we began. 10b

The Journal has also been an experiment in using Higher Level Processes. 11

As such, it has had to cope with the problems inherent in debugging a concept such as HLP's. 11a

The fact that NLS has been in an extreme state of flux, and many library routines were constantly being changed (sometimes without notification) has not helped consistancy or reliability. 11a1

Simultaneous entry if documments into the Journal works, and has worked since shortly after its inception, so far as I know. Please let me know if you find otherwise. 12

The solution to the space problem is the long awaited file system. 13

If I could ever get some time away from baby-sitting the Journal, this might get done. 13a

Speeding up th JOurnal is a problemm which is currently being worked on. 14

Response to Journal COmments, 7266

I think that you will find that the current version is two to three times faster than the previous version, as well as being much less delicate with respect to system problems such as no file space, etc. 14a

With respect to pre-assigned numbers, etc. 15

I think that too much emphasis is being put upon the 'Manual Number Assignment' system. 15a

There are most of the handles necessary for lettin the user (Network or otherwise) handle all of his own numbers. 15b

What ones are not there are probably relatively trivial to write. 15c

FOr example, we could easily ask the person getting a number to enter a description of what it is to be used for, and then carry that with the number. 15d

Pairing RFC and NIC numbers automatically is a little more difficult, but not bad. 15e

The current number system will not allow multiple assignment of a number. 15f

There are mechanisms (Execute Number System Unlock) for unnlock catalog numbers which have beenn locked by an aborted JOurnal entry. 15g

I thouht I would allow immediate unlocking..as for RFC numbers--if people agreed it was desirable. 15g1

The reason for not allowing it originally was to provide an extra protection against using the samm number as another person. 15g2

In general, I feel that there is a poor understanding of the existing number system and its use, and much too much of what it does is being duplicated manually. 15h

The only place where a manual system should be used is in the event of the system being unavailable. 15i

The sort bug you referred to I assume was the incorrect sorting with respec to length, i.e. shortest first. 16

This is (I think) fixed in the current system. 16a

WSD 14-JUN-71 12:52 7284

Response to Journal COmments, 7266

(J7284) 14-JUN-71 12:52; Title: Author(s): William S. Duvall/WSD; Distribution: Richard W. Watson, Harvey G. Lehtman, James C. Norton, Jeanne B. North, Douglas C. Engelbart, Bruce L. Parsley/RWW HGL JCN JBN DCE BLP; Sub-Collections: ARC; Clerk: WSD;

DIA 14-JUN-71 16:25 7285

minor system changes for KEV to put in at next assembly

minor system changes for KEV to put in at next assembly

Note to KEV about several system patches 1

The qbase values we have now seem to be generally too small. The following values were patched in for the afternoon of 9 JUN and seem to be better: 1a

qbase: 0. 60. 460. 2500. 4500. 14500. 1a1

tbase: 1000. 3000. 8000. 10500. 16750. 1a2

lowqt= 6000. 1a3

You recall the crash (indirect loop) because a queue number was smashed in the FKSTST table? A patch to check for that is: 1b

After corfct+4, insert 1b1

```
CAIL 2,0                                1b1a
CAIL 2,5                                1b1b
JSR BUGCHK    ;bad queue number         1b1c
```

This may be worthwhile putting in the system permanently. It's up to you. 1b2

The check at NEWST should be: 1c

Replace the SUBI 1,2 at NEWST+24 by 1c1

```
CAIL 1,2                                1c1a
CAIL 1,5                                1c1b
JSR BUGCHK                              1c1c
SUBI 1,2 ;bump up at least one          1c1d
```

Please include the following patches to the code I inserted in SCHED.MAC last week (2 JUN): 1d

At STBAL1+3: change TLNN 2,500000 to TLNE 2,100000 1d1

At STBAL1-7 remove ADD 1,rdip 1d2

Replace at .WSIZ+2: MOVE 1,FKNR(1) by : 1d3

minor system changes for KEV to put in at next assembly

```
        HLL 1,FKSTAT(1)  ;queue number in left half                    1d3a
        HRR 1,FKNR(1)  ; reserved page count                           1d3b
```

The follwing patch at the end of .WSI keeps work station type-ahead people from looking computebound. It puts them on queue one without changing their time-on-queue parameter, and forces rescheduling. It does not increase the number of times through the sched much at all. The patch was tried 9 JUN also. 1e

Replace the JRST MRETN at WSIA+19. by 1e1

```
        HRLI 1,1                                                       1e1a
        MOVE 3,FORKX   ;put this fork                                  1e1b
        HRR 1,qbase+2                                                  1e1c
        MOVEM 1,FKSTAT(3)  ;on queue one                               1e1d
        AOS ISKED   ;request resched                                   1e1e
        AOS SKEDF2  ;really                                            1e1f
        ISB SCDCHN  ;and reschedule now                                1e1g
        JRST MRETN  ;return                                            1e1h
```

There is a glitch in the EXEC that is giving the statistics stuff a piece of trouble: When the exec takes the ↑C, it resets the subsystem name to EXEC with SETMN JSYS. Then is the user does a CON the EXEC does a SETNM again with the subsystem name. But it uses the name the user typed in not the name that was in JOBNAM when the ↑C was typed. DNLS sets the subsystem name to DNLS rather than NLS. If the user does ↑C CON the name is set back to NLS, not DNLS, and the statistics gathering per subsystem stuff is messed up from there on. 1f

The EXEC should do a GETAB on the JOBNAM table indexed by the job number, when it takes the ↑C. Then the CON command should set JOBNAM back with SETNM. 1f1

DIA 14-JUN-71 16:25 7285

minor system changes for KEV to put in at next assembly

<JOURNAL>7285.NLS;1, 14-JUN-71 16:27 DIA ; (Expedite) Title:
Author(s): Don I. Andrews/DIA; Distribution: Kenneth E. Victor, John T. Melvin, William H. Paxton/KEV JTM WHP; Keywords: response;
Sub-Collections: ARC; Clerk: DIA;
Origin: <ANDREWS>MEMO3.NLS;3, 11-JUN-71 14:14 DIA ;

DIA 14-JUN-71 16:34 7286

system changes on 2 JUN 71 by DIA

system changes on 2 JUN 71 by DIA

The following changes were made to the system on 2 JUNE by DIA in order to collect information on memory control, drum and disk usage, etc. 1

At APCLK1, when the two clocks are sync'ed every 50 ms., a sampling loop was introduced. The sampling code is only executed is STFLG is non-zero. The sampling loop sums the number of reserved pages, replacable pages, writes in progress, and number of pages in the ballance set. 1a

New storage cells were introduced to accumulate these sums. A counter contains the number of samples included in the sums so that the average values may be obtained. 1a1

The system accounting of page faults per subsystem in (SPFLTS) was changed to count four types of page faults: shared not in core, private not in core, copy-write, and all others. The faults are accumulated in SSFLTS, SNFLTS, SWFLTS, and SPFLTS respectively. The exec commant STATISTICS should be changed to reflect this. 1b

Bump incstructions were added to count various events: 1c

The number of pages DDMP writes on the disk. 1c1

The number of pages the garbase collector writes on the drum, disk and the number of flushed pages (separately). 1c2

The number of times XGC is called (he smashes a working set down to size). 1c3

Three JSYS'S were added: 1d

STAT1 (# 412B) returns information in the registers. 1d1

STAT2 (#413B) returns information in the registers. 1d2

WSIZ (414B) returns in 1: # of reserved pages for current fork. And in 2: tav,,wsorking set size. Tav is the average time to page fault in ms. 1d3

All of the above are fast JSYS's. For the exact contents of registers, see DIA. 1d4

DIA 14-JUN-71 16:34 7286

system changes on 2 JUN 71 by DIA

<JOURNAL>7286.NLS;1, 14-JUN-71 16:36 DIA ; (Expedite) Title:
Author(s): Don I. Andrews/DIA; Distribution: Kenneth E. Victor, John T.
Melvin/KEV JTM; Keywords: response; Sub-Collections: ARC; Clerk: DIA;
Origin: <ANDREWS>SYSCHG.NLS;1, 11-JUN-71 10:57 DIA ;

response study memo

DIA 14-JUN-71 16:46 7287

response study memo

Response study happenings 1

General Plan 1a

The general plan we are following includes the following points: 1a1

Develop statistics gathering machinery in order to study the behavior of the system. We are working in three areas: 1a1a

Hardware measurements 1a1a1

Software mesaurements (primarily sampling) taken from within the monitor 1a1a2

and software measurements (primarily timings) taken from within NLS. 1a1a3

Develop a method of providing a controlled load to TENEX, so that we can simulate our daily use of the system. 1a1b

Use the controlled loadng of the system to test proposed system changes, compare drums, etc., and evaluate the performance using the measurements. 1a1c

What has been done so far: 1b

Hardware area: 1b1

Hardware measurements have been made (with a strip recorder and % meter) to record drum, disk usage along with several other indicators of system usage. 1b1a

need to correlate the redording with software measurements. But useful in studying operation of the system. 1b1a1

Found out that disk activity seems to be as much a bottle neck as drum activity. Need to understand page flow in the system (core - drum - disk). 1b1a2

Hardware measurements of the average disk transfer time were made. The result of 178 ms indicates that there is no effort being made by the system to minimize head movement. BBN confirmed this. This is important since we do so much disk IO. 1b1b

In NLS: 1b2

A few timings within NLS have been made. 1b2a

Found out that the RUNTM JSYS is not accurate enough when the system is loaded. 1b2a1

An approximate spread of run times for NLS interactions and executions was obtained (with no system load). 1b2a2

An accurate run time JSYS was put into the system. 1b2a3

A command was added to put the average character activation time in the message area. EXECUTE W CA displays the number, EWR resets the averaging. 1b2b

This is the length of time between typing the chracter and the NLS fork being activated. It has nothing to do with execution time. 1b2b1

NLS has been changed to tell the system which subsystem to charge runtime, faults, etc. to. 1b2c

As a result, statistics will be accounted separately for L10, Journal, DNLS, TNLS, the output processor, etc. 1b2c1

In TENEX: 1b3

Found out may details about how the system works. 1b3a

The scheduler has been altered to put forks waiting for work station characters on queue zero. 1b3b

The results were not very astounding since everybody generally types ahead and their NLS fork then never waits for a character. 1b3b1

A change in the WSI JSYS will be made to put forks that read characters from a non-enpty buffer on queue one and then reschedule. 1b3b2

The queue times were altered to correspond to NLS interaction times, and command execution times. 1b3c

It appears that we over did it, probably because the system is charging forks for various things and NLS

is taking longer to complete commands (in the eyes of the system) than we thought. A second stab at queue times is being made. 1b3c1

Statistics gathering code has been added to the system (see (ANDREWS,syschg,)). A user program collects this information and prints out on a sequencial file (see (ANDREWS,docsamplr,)). 1b3d

We have learned from this that the system seems to make poor use of memory when lots of users are using the same shared subsystem. Also, this indicated that our initial queue lengths were too short. 1b3d1

In progress: 1c

More or less permanent timing code is being incorperated in NLS. 1c1

Under viewspec or some such control, runtime and realtime for interaction and command execution will be accumulated and written on a file. 1c1a

The program to crunch these files (one from each console) and come up with data to compare with the parallel system and hardware measurements is underway. 1c1a1

An ad hoc controlled loading process is being made for TNLS so we can do some meaningful comparisons. To do it for DNLS, we need to get somebody to put in a simulate WSI JSYS. 1c2

DIA 14-JUN-71 16:46 7287

response study memo

<JOURNAL>7287.NLS;1, 14-JUN-71 16:48 DIA ; (Expedite) Title:
Author(s): Don I. Andrews/DIA; Distribution: Kenneth E. Victor, John T. Melvin, William H. Paxton, Richard W. Watson, Charles H. Irby, Douglas C. Engelbart, Roger D. Bates/KEV JTM WHP RWW CHI DCE RDB; Keywords: response; Sub-Collections: ARC; Clerk: DIA;
Origin: <ANDREWS>MEMO2.NLS;6, 11-JUN-71 11:35 DIA ;

New Journal Features

Secondary Journal Distribution 1

A new command has been added which allows distribution of documents which have already beenn entered into the Journal. 1a

Syntax: 1b

E[xecute] Z[Secondary Distribution]
[Document #] (NUMBER CA/ CA)
[TO:] IDENTLIST CA 1b1

Semantics: 1c

The Document indicated by NUMBER is distributed to te persons on the identlist as a non-expedited document. 1c1

Possible errors are: 1c2

Illegal Number 1c2a

No such Document 1c2b

It is possible to get a NO Such Document error if a document has been entered into the Journal relatively recently. 1c3

If this happens, wait a while and try it again, or if immediate response is necessary, ask CXP, HGL, or WSD to run a catalog cleanup. 1c3a

After the distribution has been done, the system will ask for another document number. 1c4

If you wish to distribute another document, respond with the syntax used for the first document. 1c4a

Otherwise, a CA or CD will return you to the TNLS level. 1c4b

The distribution of the documents will be done along with the distribution of normal Journal documents. 1c5

On-Line Distribution of Journal Documents 2

Journal documents addressed to persons who: 2a

(a) Have the affilitaion ARC 2a1

Or (b) Have a flag set in their identification record 2a2

will recieve messages and links to documents sent to them through the JOurnal in a branch in their control (initial) file. 2b

The branch will be named (Journal), and each substatement will represent a document link or message. 2c

The format of a document link is 2d

AUTHOR DATE/TIME NUMBER
TITLE OF DOCUMENT
[Hard Copy Only--]Location Of Document: (LINK/TEXT) 2d1

The Format of a message entry is: 2e

AUTHOR DATE/TIME NUMBER
TITLE OF MESSAGE
Message: TEXT OF MESSAGE 2e1

All documents will initially be distributed both on-line and in hard copy. 2f

If you do not wish one or the other forms of distribution for documents addressed to you, please contact WSD, and he will set up your Identification record to suit your needs. 2g

New Journal Features

(J7288) 15-JUN-71 17:30; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Marilyn F. Auerbach, Walter L. Bass, Roger D. Bates, Mimi S. Church, Douglas C. Engelbart, Beauregard A. Hardeman, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, James C. Norton, Cindy Page, Jeanne B. North, Bruce L. Parsley, William H. Paxton, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Don I. Andrews/MFA WLB RDB MSC DCE BAH JDH CHI MEJ HGL JTM JCN CXP JBN BLP WHP BER EKV DVN KEV DIA; Keywords: Journal Features Distribution; Sub-Collections: ARC; Clerk: WSD;

WSD 15-JUN-71 20:14 7289

Note on Entry of NIC persons into Identification File

Dick... 1

I have put everyone with the exception of John C. LeGates into the Identification file. 2

I did not do John because I could not find the address of EDUCOM. 2a

I will be down this morning (Weds.), and will do it then. 2b

If you would rather do it, then: 2c

(a) Compile Branch 2 in my initial file 2c1

(b) E[xecute] P[rogram] CA
[Ident:] CR
Name: ... 2c2

Answer prompts as you would normally when entering a new person via an identlist. 2d

Terminate with two CA's, and everything will be fine and you will be at the TNLS command level. 2e

If you wish to check all of the initials, simply respond to [Ident:] with an identlist of initials. 2f

WSD 15-JUN-71 20:14 7289

Note on Entry of NIC persons into Identification File

(J7289) 15-JUN-71 20:14; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Richard W. Watson, John T. Melvin, Jeanne B. North/RWW JTM JBN; Keywords: Identification File Entry; Sub-Collections: ARC; Clerk: WSD;

CHI 16-JUN-71 17:42 7290

Multiple Display Areas in DNLS

DOCUMENTATION FOR MULTIPLE DISPLAY AREA FEATURES 1

new commands 1a

Goto Display area control 1a1

Horizontal split 1a1a

splits the display area in which the BUG occured horizontally (into an upper and lower segment) at the bugged location moving the image of the original display area to the upper or lower segment depending on whether the cusor is above or below the bugged position when the final CA is input. 1a1a1

No display area will be created which is smaller then 2 lines by 20 columns (using the character size of the original display area). 1a1a1a

Vertical split 1a1b

splits the display area in which the BUG occured vertically (into a left and right segment) at the bugged location moving the image of the original display area to the left or right segment depending on whether the cursor is to the left or right of the bugged position when the final CA is input. 1a1b1

No display area will be created which is smaller then 2 lines by 20 columns (using the character size of the original display area). 1a1b1a

Move boundary 1a1c

The selected boundary (first BUG) is moved to the new position (second BUG). A boundary will not be moved passed a boundary of a neighbor. A boundary is moved for all display areas for which it is a boundary. Any resulting display area which is smaller than two lines by twenty columns will be deleted. 1a1c1

Format display area 1a1d

Character size 1a1d1

The current character size of the display area which currently contains the cursor is displayed, and the user may type a number (0, 1, 2, 3) for a new character size. The final CA causes the

character size to be changed. The horizontal and vertical increment are automatically adjusted. Different display areas may simultaneously have different character sizes. 1a1d1a

Clear display area 1a1e

The bugged display area is cleared, i.e. the image is erased, the return and file return rings are released, and the association of a file with that display area is removed. The display area itself is not deleted. 1a1e1

syntax: 1a2

```
'g 'd $('h BUG CA/ 'v BUG CA/ 'm BUG BUG CA/ 'f 'c
NUMBER CA / 'c BUG CA);
```
1a2a

One may freely edit and jump using several display areas. The position of the cursor is used to resolve ambiguities. 1b

For example, If one executes a Jump command, the position of the cursor when the final command accept is entered determines in which display area the new image is to appear. 1b1

Also, If one changes viewspecs using the leftmost two buttons of the mouse, the viewspecs of the display area containing the cursor when the buttons go down are used as the initial values and are displayed in the viewspec area. When the buttons are released, the display area containing the cursor receives the new viewspecs. 1b2

Since it seems reasonable to expect further development in this area, all suggestions will be appreciated. 1c

CHI 16-JUN-71 17:42 7290

Multiple Display Areas in DNLS

(J7290) 16-JUN-71 17:42; Title: Author(s): Charles H. Irby/CHI; Distribution: Douglas C. Engelbart, Ed K. Van De Riet, James C. Norton, Roger D. Bates, William H. Paxton, Harvey G. Lehtman, Dirk H. van Nouhuys, Marilyn F. Auerbach, Jeanne B. North, Martin E. Hardy, Walter L. Bass, Kenneth E. Victor, Bruce L. Parsley, J. D. Hopper, John T. Melvin, Richard W. Watson, James G. Mitchell, L. Peter Deutsch/DCE EKV JCN RDB WHP HGL DVN MFA JBN MEH WLB KEV BLP JDH JTM RWW JGM LPD; Keywords: multiple display areas windows; Sub-Collections: ARC; Clerk: CHI;
Origin: <IRBY>DADOC.NLS;8, 16-JUN-71 17:35 CHI ;

Journal Error Recovery Guide

Instructions for recovering the Journal if it is not functioning properly 1

(a) What is done automatically 1a

When the system is initialised, a program is run under user background (it will be named libnls, oljdel, or slinkr depending on what it is doing) which tries to keep the Journal files in reasonable shape. 1a1

When the program is first run, a thorough clean-up and patch-up is done, which will recover almost any error other than TENEX system errors and hardware (e.g. Disk) errors. 1a1a

For each file, a verify is done. 1a1b

If th verify fails, the partial copy is deleted, and the original is verified. 1a1b1

If the verify for the original fails, the file is reset. 1a1b2

Subsequently, the program will activate itself at 1/2 hour intervals, and first do any on-line distribution necessary, followed by a verify of all Journal files. 1a1c

If the files are ok, they are updated. 1a1c1

IF a file is not ok, a bad file message is printed, which will normally cause SLINKER to hang on teletype output, since it is running in a detatched mode. 1a1c2

When SLINKER hangs in this manner, the bad file is left open (and locked), so the Journal is effectively locked from further use. 1a1c2a

This is obviously a clumsy way of doing this, and will be replaced by a more suitable method when the FLAG test/set JSYS' get implemented. 1a1c2b

(b) Symptoms and cures 1b

(1) Locked files. 1b1

(a) Someone else is using the Journal at the same time you are 1b1a

If the entry process bombs out from waiting too long,

either the system is super slow, or this is not the cause. 1b1a1

(b) Slinker (oljdel) is probably hung 1b1b

To find out if slinker is hung you shoul attatch to the job running slinker (under user BACKGROUND--see WSD, KEV, HGL, or BER for the password), and DO NOT TYPE ANYTHING for about 15 seconds. 1b1b1

This gives TENEX a chance to set up its internal tables and make you really attatched. 1b1b1a

At this point, SLINKER will normally type something to you, e.g. a bad file or similar error message. 1b1b1b

If nothing is typed after a suitalbe period of time (you might even wait a minute if the systemm is slow), SLINKER is probably not the problem if the SYSTAT command consistently shows it to be in the subsystemm SLINKER rather than OLJDEL. 1b1b1c

In any event, you are now attatched to slinker and must do something about it. 1b1b2

If nothing was typed, try a ↑T. 1b1b2a

If the status is printed, then everything is cool, and you may simply ↑C out, detatch, and continue. 1b1b2a1

Wait a while after detatching before typing another ↑C. 1b1b2a1a

Otherwise the ↑C will go to SLINKER rather than your new job. 1b1b2a1b

Do a SYSTAT after re-attatching to another job to make sure that slinker is still running. 1b1b2a1c

The usual status from a ↑T will be IO WAIT. 1b1b2a1d

If the status is not printed, SLINKER is running under the MINI exec, and everything is not cool. 1b1b2a2

Go to another TTY and do a systat. 1b1b2a2a

If the background job is running OLJDEL, wait for a minute or two, and try it again. 1b1b2a2b

If the job is still running oljdel, it is probably safe to assume that it is hung in that state, and you mmy proceed. 1b1b2a2c

The reason for waiting, is that SLINKER is more vulnerable when running oljdel than when running SLINKER, so we would rather kill it during slinker if possible. 1b1b2a2c1

Now type ↑Z. MINI EXEC will respond with a period. 1b1b2a2d

Type R[eset].
E[xec] 1b1b2a2e

This will call the regular EXEC. 1b1b2a2f

If there was a message typed 1b1b2b

Type a ↑C. If nothing happens, you are in the MINI EXEC, and should get to the exec as per instructions for nothing typed--Mini Exec. 1b1b2b1

If the error message typed appears to be recoverable, you may simply detatch and continue, and slinker will go on its merry way. 1b1b2b2

If you get to here, either SLINKER was running under the MINI EXEC, or a non-recoverable error was encountered. 1b1b2c

In order to restart SLINKER, simply type
RUN <BACKGROUND>SLINKY CR 1b1b2d

This will start slinker, which will proceed to verify all of the files, and type messages to the TTY concerning the verification. 1b1b2e

When all of the files have been checked, it will detatch itself from your teletype, (and type a message), and go on to run on-line dist, etc. 1b1b2f

If there are any serious errors, e.g. IO DATA

ERROR, there is a real problem, and no automated recovery procedure exists at this time. 1b1b2g

The best thing to do in this case is to go back to previous versions of the bad file, and start SLINKY again. 1b1b2h

If the bad file is TJCAT, TCNUMBERS, or JRNL2 (or 3, etc.), the problem is more severe. 1b1b2h1

You should go back the same number of versions in all of these files. 1b1b2h1a

Save the versionns you deleted somewhere, so we can let people know that their messages did not make it. 1b1b2h1b

When you have gone back the correct number of versions in each of these files, the date/time in the origin statemnts should almost match, i.e. they should only differ by a minute or so. 1b1b2h1c

Donn't forget to try to recover partial copies if possible, and write the next number in the free list down somewhere, so we know how far back we went. 1b1b2h1d

(c) A user has bommbed out of the JOurnal with a system error, and has not reset, leaving files open. 1b1c

This has not happenned for a long time, but I suppose that it is always a possibility. 1b1c1

Go around and look for a user in this state. 1b1c2

(d) A partial copy has spontaneously disappeared. 1b1d

Who knows why this happens, but it seems to occaisionnlly. 1b1d1

If this happens, attatch to slinker and restart him as per instructions in (b). This will fix everything up. 1b1d2

Make sure no-one else is using the Journal when you do this, though, until we get flag system going. 1b1d3

(2) Other error messages 1b2

I don't know what other errors one should expect, but the best policy is to try it aagain, an if it is recurrent, run slinker (if that seems appropriate) as per the instructions in (1). 1b2a

Random JSYS errors are known to occurr, such as illegal CHFDB. 1b2b

Mebbee try connecting to another user or something. 1b2c

WSD 17-JUN-71 11:47 7291

Journal Error Recovery Guide

(J7291) 17-JUN-71 11:47; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Mimi S. Church, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, John T. Melvin, James C. Norton, Bruce L. Parsley, William H. Paxton, Richard W. Watson, Kenneth E. Victor, Don I. Andrews/MSC JDH CHI HGL JTM JCN BLP WHP RWW KEV DIA; Keywords: Journal Error Recovery SLINKER; Sub-Collections: ARC; Clerk: WSD;

Suggestion towards fixing FIND confusion in L10

Bill... 1

With respect to the FIND thingy, I thought that the folloing might be reaasonable: 1a

(a) When a FIND faiils, restore SWORK and scndir, but do not call fechc1. 1a1

(b) When any FIND statement does not set the pointer as the first thing, call fechc1 with the current contents of swork and scndir. 1a2

I believe that doing this will solve the problem so far as I amm concerned, while nnt affecting any code which counts on the swork-restoring feature. 1b

If the above is not to your liking, I would be willing to modify the NLS code necessary to allow FIND to fail without restoring SWORK. 1c

WSD 18-JUN-71 14:43 7293

Suggestion towards fixing FIND confusion in L10

(J7293) 18-JUN-71 14:43; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: William H. Paxton, Harvey G. Lehtman, Charles H. Irby, Mimi S. Church/WHP HGL CHI MSC; Sub-Collections: ARC; Clerk: WSD;

Implementation Description of On-Line Journal Distribution, Secondary Distribution

If the file is successfully opened, a check is made as to whether a PC exists. 1a2b3

If not, a PC is created under the connected directory (rather than the login directory). 1a2b3a

The connected directory will normally be Journal. 1a2b3b

The initials in the PC are those of the current user. 1a2b3c

It really doesn't matter where the PC is or what th initials are, so the above are chosen as being roughly appropriate. 1a2b3c1

The PC will only have the file header at this point. 1a2b3d

Finally, the stid for the origin statement of the file is returned. 1a2b4

Slinker 1b

In order to compensate for the reduced protection of the new file handling scheme, and to keep deleted files expunged from Journals directory, a background process 'SLINKER' activates itself every 30 minutes. 1b1

The functions performmed by slinker are: 1b1a

(a) Open file JFILES, which is a list of files to be checked and cleaned up 1b1a1

(b) For each file listed in JFILES, 1b1a2

(1) Open file (with openlock) 1b1a2a

(2) Execute file verify 1b1a2b

(3) Update to new and close file (closeu) 1b1a2c

(c) Expunge the connected directory (Journal) 1b1a3

Slinker is not allowed to type anything to the controlling tty, because it is running in detatched mode and will hang if it tries to do so. 1b1b

If a file is bad, it will hang trying to type a 'Bad File' message, with the file is a locked state. 1b1b1

Thus further use of that file will be prevented until manual intervention is taken. 1b1b2

On Line Distribution 1c

The On-line distribution routine (oldist) is called from slinker each time it is activated and before it cleans up any files. 1c1

In order for the on-line distribution to work properly, it must run under a user with the WHEEL capability (ugh). 1c2

A message is typed to the controlling tty if this capability is not assigned. 1c2a

The oldist will enable and disable the capability, so it need not be started with WHEEL enabled. 1c2b

The following changes are relevant to On-line Distribution 1c3

(a) HCDISTFILE garbage collection. 1c3a

Deletion of entries in the distribution file which have been serviced (i.e. which have been delivered on-line and/or in H.C., depending on the recipients option selection) is now done by a routine 'gdistf', Garbage Collect Distribution File. 1c3a1

It deletes individual statments, as opposed to the old garbage collection process which deleted only entire branches. 1c3a2

Before deleting a statement, it checks the deliveries which have been performed on it against the deliveries specified by the statement (if it is a braanch head) or the recipient in his identification record. 1c3a3

The branch head statements will be considered for deletion only if there are no sub-statments, i.e. if all of the adressees have recieved their copies. 1c3a4

Gdistf is run following each Hard Copy Distribution, and following a printout of the HCDISTFILE. 1c3a5

(b) New Fields in Identification Record 1c3b

Two new fields have been added to the identification record. 1c3b1

Both are optional, and both appear in the comments section, i.e. following the two consecutive EOLs. 1c3b2

(1) User 1c3b2a

Syntax: "User:" $NP TENEX USER NAME $NP '; 1c3b2a1

Semantics: This field is used to determine the directory location of the control file for the user identified by the record. 1c3b2a2

If the field is not present the last name (not including VAN, etc.) is used as the directory name. 1c3b2a3

An example of where this field is necessary is for user VAN DE RIET. 1c3b2a4

It may potentiaally be used for fancier things later on. 1c3b2a5

(2) Delivery 1c3b2b

Syntax: "Delivery: " $($NP ("Hard Copy"/"On-Line")) $NP '; 1c3b2b1

Semmntics: This describes the method to be used in delivery of documents to this user. 1c3b2b2

If this field is present, all implied delivery techniques are overridden, e.g. if Hard Copy is specified and not On-Line, no on-line delivery will be done, even if the user would qualify for it in the absence of this field. 1c3b2b3

If this field is not present, the following rules will be used for determining delivery techniques: 1c3b2b4

(a) Hard Copy to everyone 1c3b2b4a

(b) On-line delivery to all persons whose affiliation is ARC. 1c3b2b4b

(c) Description of OLDIST (on-line distribution procedure) 1c3c

(1) Update HCDISTFILE with the new ditribution requests in distfile. 1c3c1

This process LE leaves DISTFILE empty. 1c3c1a

(2)Initialise string containing idents of persons done to null> 1c3c2

(3) Open Identification file 1c3c3

(4) Cycle through the HCDISTFILE, inn the following manner. 1c3c4

Find the next top-level statement. 1c3c4a

This will be the document header of a document to be distributed. 1c3c4a1

For each sub statment (which will represent a particular copy to be distributed), Test to see if it is to be distributed on line. The highest level test which may be made, is to check whether it is an Author copy, which are not distributed on-line, or whether it has already been delivered. 1c3c4b

If it is a potential candidate for on-line delivery, the recipients initials are extracted, and the information for that user is taken from the identification file> 1c3c4b1

This is somewhat redundant, in that the statement itself has a copy of most of the information in the id file, but it is a tad more up to date to use the idfile, and it gives greater flexibility to change things. 1c3c4b1a

The information is the users ID record is used to determine whether or not he wishes on-line delivery. 1c3c4b2

If not, the next sub-statement is examined. 1c3c4b3

If we are going to deliver documents to this user on-line, we try to open his control file. 1c3c4b4

This will fail if he is currently using it, the attempt will fail, and we will forget about him for this running of the On-Line Distribution, i.e. everything is wrapped up, and his id is put into the done list (*auxlit*). 1c3c4b4a

Opening the ctl file requires WHEEL status, so it is enabled an disabled here. 1c3c4b4b

A partial copy is created if there is not one already. 1c3c4b5

This provides a lock 1c3c4b5a

Beginning with the current document, we begin delivering documents to this user, not stopping until we have search the entire HCDISTFILE. 1c3c4b6

When this user has been finished, his ctl file is updated, and we proceed to the next candidate. 1c3c4b7

When we have cycled through the entire file, the HCDISTFILE is closed along with any other open files, and a RETURN is executed. 1c3c4c

WSD 18-JUN-71 17:25 7295

Implementation Description of On-Line Journal Distribution, Secondary Distribution

(J7295) 18-JUN-71 17:25; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Mimi S. Church, Charles H. Irby, Harvey G. Lehtman, John T. Melvin, William H. Paxton/MSC CHI HGL JTM WHP; Keywords: Journal On-Line Secondary Distribution; Sub-Collections: ARC; Clerk: WSD;

DCE 20-JUN-71 11:55 7296

Note asking a Journal-entering favor from Harvey

Harvey: Just a reminder -- you were to execute a chore/favor for me. My file FORJOURNAL has eight first-level branches, For each, the first-level statement tells you the Title, Comment, and Distribution list to use for entering its sub-plex into the Journal. The last such entry is a message to you about deleting some of my files when all o this Journal material is judged by you to be very securely saved in the Journal system -- like after waiting until the next dump or something. Thanks for your help. Doug 1

DCE 20-JUN-71 11:55 7296

Note asking a Journal-entering favor from Harvey

(J7296) 20-JUN-71 11:55; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Harvey G. Lehtman/HGL; Sub-Collections: ARC; Clerk: DCE;

DCE 18-JUN-71 17:38 7296

Small favor by Harvey, for Doug

(J7296) 18-JUN-71 17:38; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Harvey G. Lehtman/HGL; Keywords: ; Sub-Collections: ARC; Clerk: DCE;

DCE 20-JUN-71 12:09 7297

Mixup Clearup Note to Harvey

Harvey: You will find two Journal-entry records in your initial file bearing the number 7296. The earlier one, dated 18 June, was lost in the Journal system somewhere, but they both dealt with the same request. 1

DCE 20-JUN-71 12:09 7297

Mixup Clearup Note to Harvey

(J7297) 20-JUN-71 12:09; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Harvey G. Lehtman/HGL; Sub-Collections: ARC; Clerk: DCE;

DCE 18-JUN-71 18:41 7297

Phone Log: Call From Ed Forsythe, NBS, regarding possible use of DSS in NIC.

(J7200) 3-JUN-71 12:20 .HJOURNAL="HGL 3-JUN-71 12:20 7200";Title: Author(s): Harvey G. Lehtman/HGL; Distribution: William S. Duvall, James C. Norton/WSD JCN; Keywords: ; Clerk: HGL;

Ha, Ha, Ha

** 7297
A First Message Test

Well, Bill... This is the first message in the new system. Does it work? Incidentally, the word is not jaccess but rather jolock. 1a

(J7270) 12-JUN-71 14:45; .HJOURNAL="JCN 12-JUN-71 14:45 7270";
(Expedite) Title: Author(s): James C. Norton/JCN; Distribution:
Douglas C. Engelbart/DCE; Keywords: ; Sub-Collections: ARC;
Clerk: JCN;

this is a test

** 7297
Test

test for JCN/DCE 2a

(J7296) 20-JUN-71 11:55; .HJOURNAL="DCE 20-JUN-71 11:55 7296";
(Expedite) Title: Author(s): Douglas C. Engelbart/DCE;
Distribution: Harvey G. Lehtman/HGL; Sub-Collections: ARC; Clerk:
DCE;

3

** 7297
Note asking a Journal-entering favor from Harvey

Harvey: Just a reminder -- you were to execute a chore/favor for me. My file FORJOURNAL has eight first-level branches, For each, the first-level statement tells you the Title, Comment, and Distribution list to use for entering its sub-plex into the Journal. The last such entry is a message to you about deleting some of my files when all o this Journal material is judged by you to be very securely saved in the Journal system -- like after waiting until the next dump or something. Thanks for your help. Doug 3a

(J7297) 20-JUN-71 12:09; .HJOURNAL="DCE 20-JUN-71 12:09 7297";
(Expedite) Title: Author(s): Douglas C. Engelbart/DCE;
Distribution: Harvey G. Lehtman/HGL; Sub-Collections: ARC; Clerk:
DCE;

4

** 7297
Mixup Clearup Note to Harvey

Harvey: You will find two Journal-entry records in your initial file bearing the number 7296. The earlier one, dated 18 June, was lost in the Journal system somewhere, but they both dealt with the same request. 4a

(J7334) 23-JUN-71 7:09; .HJOURNAL="WSD 23-JUN-71 7:09 7334";
Author(s): William S. Duvall/WSD; Distribution: William H. Paxton, Charles H. Irby, Mimi S. Church/WHP CHI MSC;
Sub-Collections: ARC; Clerk: WSD;

5

** 7297
Mixup Clearup Note to Harvey

Where the hell is updtfl???? I'm getting pretty goddam tired of this crap where people change library routines without letting anyone know about it. 5a

(J7335) 23-JUN-71 7:51; .HJOURNAL="WSD 23-JUN-71 7:51 7335";
Title: Author(s): William S. Duvall/WSD; Distribution: William H. Paxton, Charles H. Irby, Mimi S. Church/WHP CHI MSC;
Sub-Collections: ARC; Clerk: WSD;

6

** 7297
Apologia

I found it and 'twas my error...I eat my words 6a

(J7336) 23-JUN-71 7:55; .HJOURNAL="WSD 23-JUN-71 7:55 7336";
Author(s): William S. Duvall/WSD; Distribution: William H.
Paxton, Charles H. Irby, Mimi S. Church/WHP CHI MSC;
Sub-Collections: ARC; Clerk: WSD;

7

** 7297
Apologia

System is loaded and does not work (blows up on initialisation in FLDIRE+122). Undefined symbols are: flck2s, flcfn1, flcfn2, flckls, lnkdef, setdev. 7a

(J7356) 29-JUN-71 9:24; .HJOURNAL="JCN 29-JUN-71 9:24 7356"; Title: Author(s): James C. Norton/JCN; Distribution: Duane L. Stone, Richard W. Watson/DLS (Note the entry in your initial file..try sending one to me?) RWW; Keywords: ; Sub-Collections: ARC; Clerk: JCN;

** 7297
Note to Duane Stone

Thanksfor the message last week. We hope your return trip went well. I note you worked online on June 24th. Did you use the Execuport, and if so, did you use lowercase mode when in TNLS? If you do not plan to use the Model 37 to connect, I'll take the permanent 15cps switch off...OK? 8a

(J7364) 1-JUL-71 14:58; .HJOURNAL="RWW 1-JUL-71 14:58 7364";
(Expedite) Title: Author(s): Richard W. Watson/RWW;
Distribution: Steve D. Crocker, Jon B. Postel, Robert E. Long, Eric F. Harslem, John W. McConnell, Mark C. Krilanovich, Duane L. Stone, Charles H. Irby, William S. Duvall/SDC JBP REL EFH JWM MCK DLS CHI WSD; Sub-Collections: ARC NIC ; Clerk: RWW;

9

** 7297
NIC Open for Online Business(We Hope)

This message is to demonstrate we are up on the network open for NIC business. We connected to BBN and are using their telnet to connect back to ourselves. A historic moment. 9a

(J7367) 2-JUL-71 18:09; .HJOURNAL="JCN 2-JUL-71 18:09 7367";
Title: Author(s): James C. Norton/JCN; Distribution: Marilyn F. Auerbach, Richard W. Watson, John T. Melvin/MFA (let's talk Tuesday 7/6) RWW JTM; Keywords: ; Sub-Collections: ARC; Clerk: JCN;

** 7297
TNLS Guide distribution

We need to get together next week ..July 7-8? .. to discus distribution of the TNLS Users Guide. Among others we know want copies, Cordell Green of ARPA needs one early. He is interested in coming to the third (Septembe?) session of TNLS training courses. 10a

(J7368) 5-JUL-71 10:53; .HJOURNAL="WSD 5-JUL-71 10:53 7368";
(Expedite) Title: Author(s): William S. Duvall/WSD;
Distribution: Kenneth E. Victor, James C. Norton/KEV JCN;
Sub-Collections: ARC; Clerk: WSD;

11

** 7297
Re-Groups

Ken..I guess I must have mis-understood what was to happen with respect to the group stuff. I am no longer in NLS' group (or whichever way it is supposed to be), which is innconvenient. Could things be fixed so I can write NLS' files again???
Thanks...Bill 11a

(J7369) 5-JUL-71 19:22; .HJOURNAL="WSD 5-JUL-71 19:22 7369";
(Expedite) Title: Author(s): William S. Duvall/WSD;
Distribution: William H. Paxton, Charles H. Irby, Mimi S. Church/WHP CHI MSC; Sub-Collections: ARC; Clerk: WSD;

12

** 7297
L10 Note

Bill...I had to go back to version 38 of the L10 compiler again... New version wouldn't work for Goto L10 Command. Bill...

12a

(J7373) 5-JUL-71 20:35; .HJOURNAL="WSD 5-JUL-71 20:35 7373";
(Expedite) Title: Author(s): William S. Duvall/WSD;
Distribution: Walter L. Bass, Mimi S. Church, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, Bruce L. Parsley, William H. Paxton/WLB MSC JDH CHI HGL BLP WHP; Sub-Collections: ARC; Clerk: WSD;

13

** 7297
Addendum to (7371,)

I forgot to mention in NLS Utilty Document, that it does an expunge of NLS' directory after each time it runs. 13a

(J7377) 7-JUL-71 3:22; .HJOURNAL="DCW 7-JUL-71 3:22 7377";
(Expedite) Title: Author(s): Don C. Wallace/DCW; Distribution:
Charles H. Irby, John T. Melvin, Kenneth E. Victor, William H.
Paxton, Mimi S. Church, William S. Duvall, James C. Norton,
Richard W. Watson, Don C. Wallace, J. D. Hopper, Bruce L.
Parsley, Harvey G. Lehtman/CHI JTM KEV WHP MSC WSD JCN RWW DCW
JDH BLP HGL; Keywords: ; Sub-Collections: ARC; Clerk: DCW;

** 7297

Current state of TENEX as of am 7 july:
new EXEC w/test pattern; most recent BBN monitor w/appropriate changes; disk was reloaded this am

14a

(J7383) 7-JUL-71 22:19; .HJOURNAL="WSD 7-JUL-71 22:19 7383";
(Expedite) Title: Author(s): William S. Duvall/WSD;
Distribution: Charles H. Irby, Mimi S. Church, William H. Paxton, Harvey G. Lehtman/CHI MSC WHP HGL; Sub-Collections: ARC; Clerk: WSD;

15

** 7297
NLS Note

I got the editing done, but did not have time to load or compile (system probs again). Files needing to be compiled areunder TASKS. 15a

(J7385) 9-JUL-71 10:20; .HJOURNAL="JCN DCW 9-JUL-71 10:20 7385"; Title: Author(s): James C. Norton, Don C. Wallace/JCN DCW; Distribution: Ed K. Van De Riet, Richard W. Watson, Charles H. Irby, James C. Norton/EKV (The question is for you to answer, I guess) RWW (ekv to answer .. your comments?) CHI JCN; Keywords: ; Sub-Collections: ARC; Clerk: JCN;

Rubout key question: where and when to relocate

** 7297
Rubout key question: where and when to relocate

Every now and then the question of "rubout key is in the wrong place and should be moved comes up" ..it just did again. When will we try moving to another location? ..like up where tab key is on display consloe keyboard.. 16a

(J7386) 9-JUL-71 11:48; .HJOURNAL="WLB 9-JUL-71 11:48 7386";
Title: Author(s): Walter L. Bass/WLB; Distribution: Marilyn F. Auerbach, William S. Duvall, Douglas C. Engelbart, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, Jeanne B. North, James C. Norton, Bruce L. Parsley, Dirk H. van Nouhuys, Richard W. Watson, James A. Fadiman/MFA WSD DCE CHI MEJ HGL JBN JCN BLP DVN RWW JAF;
Keywords: ; Sub-Collections: ARC; Clerk: WLB;

** 7297

*****

There is a new Output Processor directive which will cause the Output Processor to run about an order of magnitude faster. This directive is designed to be used with preformtted documents such as the NIC catalog indices but can be used for other documents at the user's peril. If you are interested in using this new directive, please see me for info.

*****

17a

(J7392) 12-JUL-71 9:15; .HJOURNAL="WSD 12-JUL-71 9:15 7392";
(Expedite) Title: Author(s): William S. Duvall/WSD;
Distribution: William H. Paxton, Mimi S. Church, Charles H. Irby, L. Peter Deutsch, Harvey G. Lehtman, Bruce L. Parsley/WHP MSC CHI LPD HGL BLP; Sub-Collections: ARC; Clerk: WSD;

18

** 7297
L10 Note

I had to go back to version 38 of L10 again...version up looped when compiling intnls. 18a

(J7395) 12-JUL-71 21:49; .HJOURNAL="WSD 12-JUL-71 21:49 7395"; Title: Author(s): William S. Duvall/WSD; Distribution: Walter L. Bass, Mimi S. Church, J. D. Hopper, Charles H. Irby, Harvey G. Lehtman, Bruce L. Parsley, William H. Paxton/WLB MSC JDH CHI HGL BLP WHP; Sub-Collections: ARC; Clerk: WSD;

19

** 7297
NLS Note

For the sake of consistancy, I changed aplit to litdsp, and tspt to tsprt. ldrdrv etc. reflect this change 19a

(J7401) 13-JUL-71 10:08; .HJOURNAL="JWM 13-JUL-71 10:08 7401";
Title: Author(s): John W. McConnell/JWM; Distribution: John T. Melvin/JTM; Keywords: ; Sub-Collections: NIC; Clerk: JWM;

** 7297
COMMENT ON TRYING THE NET

JOHN, BBN REFUSES CONNECTIONS, IS IT YOU OR THEM.

ALSO, A WAY OF GETTING AT NETWORK STATUS WOULD BE NICE.
HOW ABOUT SOME GLIDING IN THE NEXT COUPLE OF WEEKS? 20a

(J7412) 14-JUL-71 16:51; .HJOURNAL="BAH 14-JUL-71 16:51 7412";
Title: Author(s): Beauregard A. Hardeman/BAH; Distribution:
James C. Norton/JCN; Keywords: ; Sub-Collections: ARC; Clerk:
BAH;

** 7297
First Message

i am sending you a message. 21a

(J7421) 22-JUL-71 10:04; .HJOURNAL="JWM 22-JUL-71 10:04 7421";
Title: Author(s): John W. McConnell/JWM; Distribution: Charles
H. Irby/CHI; Keywords: ; Sub-Collections: NIC; Clerk: JWM;

** 7297

CHUCK, JOHN MELVIN WAS GOING TO GET ME THE DOCUMENTATION OF TREE/A-META. DO YOU KNOW IF IT IS READY? I D HOPED TO GET AT IT THIS WEEKEND. 22a

(J7452) 23-JUL-71 17:14; .HJOURNAL="WSD 23-JUL-71 17:14 7452"; Title: Author(s): William S. Duvall/WSD; Distribution: Marilyn F. Auerbach, Dirk H. van Nouhuys, Charles H. Irby/MFA DVN CHI; Sub-Collections: ARC; Clerk: WSD;

23

** 7297
Re-mnemonic names for load/output file (7384,)

As long as we are considering changing load and output file, mebbee we should think in terms of 'trees' rather than files, as this is compatible with our future thoughts on NLS sets etc.

23a

(J7453) 23-JUL-71 17:21; .HJOURNAL="WSD 23-JUL-71 17:21 7453";
Title: Author(s): William S. Duvall/WSD; Distribution: Bruce L. Parsley, James C. Norton, Richard W. Watson, Douglas C. Engelbart/BLP JCN RWW DCE; Sub-Collections: ARC; Clerk: WSD;

24

** 7297
Identification within the baseline record system

With the expansion of the Identification System, I think that we should once again consider using Idents in the baseline record system instead of first names. I think that it will otherwise become a great inconsistancy within the NLS world. 24a

(J7454) 27-JUL-71 13:06; .HJOURNAL="WSD 27-JUL-71 13:06 7454"; Title: Author(s): William S. Duvall/WSD; Distribution: Dirk H. van Nouhuys/DVN; Sub-Collections: ARC; Clerk: WSD;

25

** 7297
Journal Note

Dirk...Please try your Journal Entry now...I couldn't find anything obviously wrong, but let me know if the problem persists 25a

(J7485) 12-AUG-71 8:36; .HJOURNAL="RWW 12-AUG-71 8:36 7485";
Title: Author(s): Richard W. Watson/RWW; Distribution: James C. Norton, Douglas C. Engelbart/JCN DCE; Sub-Collections: ARC;
Clerk: RWW;

26

** 7297
Visitors on MOnday Aug 16

Both Both Steve Crocker and LCordell Green will be at SRI on Monday to review work in the AI project. Cordell is bringing A person Lee Talbert an Ast. Sec. of Defense with him to see our system. Talbert is interested in timesharing and particularly in our system. Cordell said something about Talbert being interested in obtaining a PDP 10 and Tenex and possibly a copy of our system. I will be spending a few minutes with Steve. 26a

(J7492) 13-AUG-71 14:21; .HJOURNAL="JCN 13-AUG-71 14:21 7492"; Title: Author(s): James C. Norton/JCN; Distribution: Duane L. Stone, Thomas F. Lawrence/DLS TFL; Keywords: ; Sub-Collections: ARC; Clerk: JCN;

** 7297
Note to DLS about QMR6

we are sending the QMR6 to RADC next week, but you may view it
with ooevice teletype command in tnls..just load file 7484
..it's a journal file now..and you'll see it (I hope) about
4 pages after header page.. see you in two weeks.. Jim Norton 27a

(J7494) 15-AUG-71 12:37; .HJOURNAL="DCE 15-AUG-71 12:37 7494";
Title: Author(s): Douglas C. Engelbart/DCE; Sub-Collections:
ARC; Clerk: DCE;

28

** 7297
Note on Elliot's mention of Tribus of Xerox as likely being interested in ARC techniques.

Bill Elliot, in (handwritten) letter of 26 July 71, mentions a man named Marion Tribus, Vice President for Engineering and Research at Xerox. During Bill's recent visit with me (Sunday, 25 July) he had been trying to think of this man's name. Apparently Tribus was Dean of Engineering at Dartmouth during the time that their time-sharing system (and BASIC) were developed. Bill says that Tribus is an enthusiastic believer in such, and that he also is very interested in and has "tremendous ideas" about engineering education. 28a

(J7496) 15-AUG-71 15:46; .HJOURNAL="DCE 15-AUG-71 15:46 7496"; Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Douglas C. Engelbart/DCE; Keywords: Contact; Sub-Collections: ARC; Clerk: DCE;

** 7297
Contact Report: Call from Bob Greenway about Ben Peach

Contact Note: Bob Greenway, a professor at Sonoma State College called me about a fellow named Ben Peach who needed some computation help in the process of working on some idea for a "new clock." Told Bob that we didn't have any spare resource to speak of, but I'd be happy to talk to Peach if he were to call. Bob's phone number: (707) 823-0557. 29a

(J7497) 16-AUG-71 13:00; .HJOURNAL="CHI 16-AUG-71 13:00 7497";
(Expedite) Title: Author(s): Charles H. Irby/CHI; Distribution:
Douglas C. Engelbart/DCE; Keywords: f-viewspec bug marks;
Sub-Collections: ARC; Clerk: CHI;

** 7297
Bug marks and the f viewspec

Doug, bug marks are supposed to dsappear wen an f viewspec is executed. Finding the new locations for the bug marks is a non-trivial job and will probably not get done for a while unless some pressure is applied. 30a

(J7500) 16-AUG-71 18:52; .HJOURNAL="DCE 16-AUG-71 18:52 7500";
Title: Author(s): Douglas C. Engelbart/DCE; Keywords: dpcs;
Sub-Collections: ARC; Clerk: DCE;

31

** 7297
Visit log: Cordell Green, re. graphic printers and on-line reference systems for the Network

Visited with him for a few minutes at the end of his day (he and Steve Crocker were with AI group and Jack Goldberg today). Asked him about the status of IPT's plans for such potential project on-line libraries, encyclopedias, etc. He said that it was still up in the air, no apparent heading yet; and I got the impression that a specific proposal about the botstrapping approach to these things would have as much chance as any other proposition to be evaluated. 31a

(J7502) 17-AUG-71 10:45; .HJOURNAL="WSD 17-AUG-71 10:45 7502"; Title: Author(s): William S. Duvall/WSD; Distribution: Harvey G. Lehtman/HGL; Sub-Collections: ARC; Clerk: WSD;

** 7297
Status of Place Link in Journal

Perhaps we should make the Journal Status command reflect the 'Place Link' address if it has been specified. 32a

(J7507) 19-AUG-71 11:38; .HJOURNAL="WLB 19-AUG-71 11:38 7507";
Title: Author(s): Walter L. Bass/WLB; Distribution: William H.
Paxton, Walter L. Bass, Charles H. Irby/WHP WLB CHI; Keywords: ;
Sub-Collections: ARC; Clerk: WLB;

** 7297
Comments on (7486,)

I agree with your comments in (7486,). I have been trying for some time to develop the habit of using Jump File Link instead of load file so as to keep my link stack in the state I want, and I find this works very well. In my initials file I have three branches:
(1) contains a plex of links to files I am currently working on
(2) contains links inserted by the journal system
(3) contains links to old working files, now in the journal.
This organization makes it easy to get to the files I am most likely to want to see immediately after enterring NLS.

I also support the need for a LeftInsert command class -- even if Load File isn't undefined and another name has to be used. 33a

DCE 18-JUN-71 18:41 7297

Phone Log: Call From Ed Forsythe, NBS, regarding possible use of DSS in NIC.

(J7297) 18-JUN-71 18:41; Title: Author(s): Douglas C. Engelbart/DCE;
Distribution: James C. Norton, Richard W. Watson/JCN RWW;
Sub-Collections: ARC; Clerk: DCE;

Note Concerning NLS Error Messages

Note on New NLS error Messages 1

In using the newer versions of NLS, I notice that many of the error messages which were previously somewhat verbose have been replaced by messages saying "NLS system error" or simply "System error". 1a

While endorsing terseness, I find that I miss the information contained in the longer messages. 1b

Perhaps we could use a compromise solution whereby we: 1c

(a) Used short messages (perhaps preceded by "System Error" for te novice user) which indicated the nature of the error, e.g. "System Error--PC Open Failed". 1c1

(b) Include a number in the error message which may be tracked to the nature of the error, e.g. "System Error #3". 1c2

(I don't like this alternative) 1c2a

(c) Type Have two different error mmessages which may be typed depending on whether the system is experimental or not. 1c3

This could be easily handled by having a special procedure, e.g. 'Typerr', which accepted an A-String as a parameter. 1c3a

If the experimental system flag was on, it types the contents of the string as an error message. 1c3a1

Otherwise, it simply types "NLS System Error" or the like. 1c3a2

WSD 20-JUN-71 12:38 7298

Note Concerning NLS Error Messages

(J7298) 20-JUN-71 12:38; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Mimi S. Church, Charles H. Irby, Harvey G. Lehtman, Bruce L. Parsley, William H. Paxton, Don I. Andrews/MSC CHI HGL BLP WHP DIA; Sub-Collections: ARC; Clerk: WSD;