Line Printer Purchase Rationale

Line Printer Purchase Rationale 1

Line printer was offered to us by Data Products Corp. for $22,645. The price was based on a total price of $38,600, less 100 per cent of the rental paid thus far. 1a

We rejected this offer in favor of continued leasing because we do not plan to use the printer long enough to justify the purchase. 1b

Ed VanDeRiet 1c

EKV 21-JUN-71 9:31 7305

Line Printer Purchase Rationale

(J7305) 21-JUN-71 9:31; (Expedite) Title: Author(s): Ed K. Van De Riet/EKV; Distribution: Barbara E. Row, Barbara E. Row/BER BER; Keywords: ; Sub-Collections: ARC; Clerk: BER;
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DCE 21-JUN-71 9:46 7306

Notes on Possibility of ARC Giving System Support to Other Sites' Documentation

Rough notes from (Engelbart, ASCRATCH,4:) and (Engelbart< ABCXP,) submitted for the record before going on vacation.

DCE 21-JUN-71 9:46 7306

Notes on Possibility of ARC Giving System Support to Other Sites' Documentation

Augmenting the Documentation for an Existing System as one of the basic activities for BC kickoff. 1

Concepts 1a

Integrated Source-Code Files 1a1

In development and operation of a complex augmentation system, there is a basic set of conventions, techniques, skills, methods, etc. that must also exist for a Documentation System that is compatible with. 1a2

Considering the possiblities for our augmentation techniques being used to support the documentation activities of ILLIAC IV's operations. 1b

ARC has general goals and strategies toward augmentation of system-deveopment teams, and in this strategy it fits nicely to consider launching a developmetal activity aimed at producing an integrated documentation system for a large, complex, advanced-techniques computer system. 1b1

We aim someday to provide management techniques, organizational structures, working methods, etc. to support a complex-sytem development team. 1b1a

Our techniques will probably be ready soon for application to the documentation support of other systems than our own. We think that perhaps the ILLIAC-IV system would be the right kind of a challenge. 1b1b

There is important need to learn how to augment the documentation activity for operation of an existing system before we try to do so for the development of a new system. 1b1b1

The ILLIAC IV has very complex hardware and software, really stretchin the state of the art -- so manipulation, portrayal, user techniques, etc. for deveoping, studying, being taught, debugging, etc. of the concepts, designs, relationships, glosaries, and techniques associated with maintaining and using the system would be one of the best proving grounds we can imagine for developing and testing our augmentation techniques. 1b1b2

ARC would have in mind the possibility of a sort of serial-parallel set of stages, some being done by new

groups not otherwise planned to be in the ILLIAC-IV opeations business. For instance: 1b2

Where text-only documentation is sufficient, and a 128-character printer output is adequate, there probably could be immediate steps taken toward adapting our computer aids for developing and maintaining the hard-copy documents. 1b2a

Special on-line aids, working on the documenation data bases, could help in querying. Further developments would be able to give some special on-line information help in debugging, perhaps. 1b2a1

But plenty of direct payoff would result from the way in which this computer augmention of the hard-copy documentation system could provide such as: 1b2a2

For a given "document:" special editions specially formatted and ordered. special indices and tables of contents, 1b2a2a

Much-improved up-to-dateness, 1b2a2b

Catalogs and indices to help control a large number of documents, en toto or in special collections. 1b2a2c

The actual documntation work could be done by the NASA staff responsible for ILLIAC-IV documentation (or of some part of it), with support from ARC in the way of: 1b2a3

Computer-services -- either from our facility over the net, or from a version of NLS that we maintain in another net-site TENEX (e.g., RAND's), or one we maintain in a TENEX of their own. 1b2a3a

It seems that AMES plans to have a PDP-10 with TENEX, operating as a communication computer between ILLIAC-IV and the Network, by perhaps the first of the year. (This is in addition to the PDP-10 that will buffer and manage the Trillion-bit Store.) 1b2a3a1

Coordinated developmental help in tools, techniques, and methods. 1b2a3b

Perhaps one or more third-party groups could become involved in development of different aspects of the documentation system -- we'd propose doing the coordinating (via Baseline Records, Dialogue, etc.) 1b2a3b1

We'd be careful about not over-committing ourselves in the amount of direct developmental help we could offer. 1b2a3b2

For their programmers, special help in source-code files would probably follow relatively easily (if NASA wanted to provide NLS terminals to them): 1b2a4

Source-code organization and formatting for improved (NLS) facility in composing, studying, and modifying, with a special output-processor to produce what their compilers require. 1b2a4a

Integrated Source Code techniques, where a compiler operating upon the ISC files produces the running code, and a Documentation Translator operates upon them to produce documentation. 1b2a4b

(I didn't go into other interesting off-shoots, such as: on-line collaboration between advisors and users, inspecting source code, models, etc.; or Computer-Aided Instruction; or opening the way for advanced interactive debugging; or etc.) 1b2a5

Where the integration of graphic potrayal is necessary for utilization payoff, special developmental activities would need to be launched. 1b2b

I would picture these as being done under devlopmenal contracts, with picked groups who may either be within NASA, or could be at other Network sites. 1b2b1

Specific possibility for supporting Ame's ILLIAC documentation activity 2

Sort of three stages of possible participation: 2a

Give them immediate help, from our facility, with people we add on, in their "documentation Inventorying" operations. 2a1

Notes on Possibility of ARC Giving System Support to Other Sites' Documentation

What they must do: 2a1a

They must locate all existing ILLIAC documents 2a1a1

Catalog and index them 2a1a2

Acquire a full collection of local copies (probably in form suitable fo hard-copy replication) 2a1a3

Provide people with sub collections, with indices, control methods, etc. 2a1a4

What we might do to help them: 2a1b

We hire extra clerical help (of which ARC/NIC needs some added help anyway), training what is needed for Ames almong with what we need. 2a1b1

We do all of th work here, with a regula courier service across to Ames (their part of the clerical help)., dealing directly with Jones, who is in diret control of the scheduling and product of his share of th clerical staff. 2a1b2

We provide help, supervision, etc. of the augmentation process that go on here. 2a1b3

We provide direct, personal support help to Jones for guiding his course, and for educating him about extensions to wha we can do for them. Like Derk assigned directly; how much of his time might this involve? 2a1b4

Start, as soon as possible, helping them set up the ILLIAC/Ames System for Production and Management of Documentation -- aimed at being augmented by ARC-transferred/adapted techniques. 2a2

Seriously consider providing the computer support for part or all of the DPMS by piping it out of ARC's TENEX (expaned capability) 2a2a

Assume that it would (initially) involve only tha part of their documentation where printer-text capability is adequate, where our existing techniques can easily be adapted to support the system. 2a2b

ARC contracts for providing modifications and extensions

to NLS tools, to hard-copy output techniques, to Output Processor, to HLPs, to conventions, etc, that will extend the range and utility of the DPMS augmentation. 2a3

This may be a two-party developmmental contract, involving a party that is neither an Ames or ARC affiliate, but which will do the devlopmental workin close cooperation wih ARC and Ames. 2a3a

Considerations: 2b

Getting involved soon on the first stage might be manageable, and would have definite advantages toward shaping up amutually sensible second stage. 2b1

Derk wouldhave good chance to educate Jones , and sort of try out different approaches with him. 2b1a

Possible Stage-2 system configuration: 2b2

At the site of their documentation group -- minimal: 2b2a

A line printer (like the small version ours) 2b2a1

A paper-tape reader (or mag-cassette reader), for inputting spooled typing for DEX. 2b2a2

At least one TNLS terminal, typewriter. 2b2a3

One display terminal, initially for a high-speed TNLS, and as soon as practicable for DNLS. 2b2a4

Could have more NLS terminals, but at the start I'd much prefer considering a predominantly DEX support for their major production work. 2b2b

Ames probably would want to contract out some or all of their ctual docement writing an production. This probably means that we would be supporting a contractor group. This would lead toward our having the special equipment, when there is option between it being on our site or the production team's. 2b2c

Stage-3 Possibiliies: 2b3

Graphic hard-copy production 2b3a

We would be happy to accelerate the development of this facet of NLS. 2b3a1

If they felt it to be important enough, perhaps we could go for a quick solution, slightly expensive but completely safe, that their money/urgency could warrant; but tha also solve our local-hard-copy needs along with the production needs and their olcal-hard-copy needs. 2b3a1a

e.g. A III system, with a Princeton scan converter output from the FR-80, and a videw line not only to the local scan-line hard-copy device, but to such a device at the other site, so both sites could use the same front-end system. 2b3a1b

Automatic concordance indices, tables of contents, etc. -- we'd like to see accellerated anyway. 2b3b

Some casual notes about the possibilities for ARC supporting some of the ILLIAC-IV documentation problems: 2c

Visit from Bill Jones, 26 May 71 2c1

Outlined several of the immediatly seen problems that they have: 2c1a

Collecting all of the extant documents, getting them catalogued (perhaps indexed), finding a way to get repoductions of them to people who need them... 2c1a1

Have to provde awareness and access to much of this for the users (eventually) 2c1a2

Developing new documentation, 2c1a3

at/for AMES, they would probably want to contract out a fair bit of the labor 2c1a3a

At Illinois, by Slotnick's group , on 2c1a3b

wiring diagrams 2c1a3b1

hardware documents 2c1a3b2

McIntyre's software documentation 2c1a3c

AMES has under contract the development of

various programs fo which the contractrs will provide document;aton. 2c1a3d

JCN and DCE discussion, later: 2c2

If we could propose something to help them with the collecting and control, early work?? 2c2a

Like, we hire thee new clericals and train them to support production biblio-control work. 2c2a1

NSA contracts to pay more than one, like for two o them, or.. 2c2a1a

At least, euf so if one of the girls works full time for NASA in transcribing, running off special lists etc., they get what they need. 2c2a1b

She'd be under product supervision of BIll Jones 2c2a1c

working under our technical supevision 2c2a1d

Like, "AMES should have a pubications system, computer-aided, with mixed text and graphics. ARC would be willing to supervise the system configuring, the implementation, etc. making it work with the outut processor of our system, as a contracte venture. Havingall of this redy toreplicate (be tranferred??) to thei site when ....." 2c2a2

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DCE 21-JUN-71 9:58 7307

Some Miscellaneous Planning Notes

Rough notes fro (Engelbart, ASCRATCH,), submitted for the record before going on vacation.

Some Miscellaneous Planning Notes

We (ARC and SRI) need to formulate approaches for the following items, at least for "trial design" toward settling upon a Stage 4 Plan, and very possibly for adopting therein: 1

On what basis to offer to provide services to organizations outside ARC. Representative service candidates are: 1a

Raw NLS service, along with a limited amount of workspace file-storage capacity. 1a1

File-management service, and multi-level file storage. (Storage facility may be at another site -- e.g. UCSB, or Trillion-Bit Illiac Store at Ames.) 1a2

Training service, toward learning how to integrate existing NLS services into their work. 1a3

Information Services: 1a4

Providing a standard-user interface for a genealized information service, such as NIC, RINS. 1a4a

Collection development following requests, negotiated or regular service 1a4b

Private sub-collecton replications, in paper or microform, with associated catalog, shelf listing, indexing, etc. 1a4c

Special, on-line micro-fiche-study support 1a4d

Training in techniques of using NLS for developing their own private information systems. 1a4e

NLS-tool development service -- extending/adapting NLS to fit another party's applicaion needs, generally in association with extending the generally available (to all NLS users) user-system topic/method domain. We would serve as architect/builder here. 1a5

Support for other-party tool-development activity, where they would be serving as architect/builder for devloping new user-system areas. This would include such as: 1a6

give them custodianship of a special version of a given NLS module (one that contains the funtions they are interested in modifying or expanding), 1a6a

give them the source-code files for that module, 1a6b

make available the compiler-debugger peocesses. 1a6c

Provide documentation and indoctrination in our programming practices. 1a6d

Provide supporting counsel about the practices and principles of: 1a6e

User-feature design 1a6e1

Portrayal-generation 1a6e2

Ineractive-process design. 1a6e3

For people to get Office-Support service, on the Network: 2

Look at what people would like, and outline the courses of action to get ther 2a

Develop an XNLS of their own 2a1

Run a copy of our NLS in their computer 2a2

Use a version of NLS that we maintain, in another TENEX 2a3

Use a central NLS ervice that we provide 2a4

What are the relative economics, timing, etc., for them. 2b

Might be interesting to list all of the features of value, factors critical to be accommodated, etc., in such a support system. 2b1

Would seem that the adviseablillity for coordinated, common system, would be very evident. 2b2

Formulate what would be appropriate if we assumed that a central support system were to be used (leave the pro/con discussion as a separate thing to work on). 2c

We probably will need not so much to 2c1

ask ARPA if it is all right fr us to do such and so with respect to how people do their experimenting, ... 2c1a

as to say how we will approach the serving of the desires, needs, and possibilities as we see them. 2c1b

This approach would undoubtedly include provision for

contracting for batches of service capability, and if IPT would like othr than individual contracts to be estalished with certain types of support service, we could mae that whole support community appear to us as one batch contract. 2c2

Names for some of the central services we might supply 3

Documentation Support System is one Activity I'm hypothesizing; how about some other names and/or types of activity? 3a

Documentation Support System 3a1

Documentation Support Center 3a2

Office Support System 3a3

Office Support Center 3a4

Dialogue Support System 3a5

Dialogue Support Center 3a6

NP Notes, for things to be worked into our planning: 4

Organized data, candidate uses of "catalog-management system," where storing the basic information in attribute-value form may be worth considering. We'll have lots of processes for analyzing, searching, reformatting, sorting, etc., and making of special conversions into files, views, printouts for special purposes could be quite useful. 4a

Official ARC Glossary 4a1

User features 4a2

Eventually generated from software documentation? 4a2a

ARC roster 4a3

NET Roster 4a4

Software Processes (Procedures, JSYS, ...) 4a5

Software Architectural principles 4a6

Hardware processors 4a7

Units, Racks, Drawers, Cards, Chips, etc. 4a7a

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Some Miscellaneous Planning Notes

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Notes on Matters of ARC Organization

Rough notes from (Engelbart, AORGNP,), submitted for the record before going on vacation.

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Notes on Matters of ARC Organization

On goals and requirements for ORG/Management: 1

Bigger goal is to provide help in man's evolution of social organisms -- where undoubtedly there will emerge more humanistic environment. 1a

An eventual application of our team-augmentation techniques that I hope to live long enough to see get started is what might be called SWEEPS (Strategic Whole-Earth Ecological Planning System). 1a1

Strategic considerations are likely to have SWEEPS deal initially with: 1a1a

1) Key-problem inventory and strategic analysis, 1a1a1

2) priorty assessments, 1a1a2

3) problem-applicable resource survey, and then 1a1a3

4) those thus-revealed highest-priority problems where it can see a highest payoff for investment of the resources which can be marshalled. 1a1a4

The long-term approach would include maintaining something equivalent to a Master Baseline Record for the "Whole Earth", which would provide valuable orientation, stimulus, and coordinative perspective to needs, possibilities, goals and priorities. 1a1b

But, as to current questions regarding the "humanistic gradient" and whether a given change in ARC's organization or methods is plus or minus on this gradient, my strategic goal is to learn how to increase the EFFECTIVENESS of teams that develop, deliver and operate augmentation systems 1a2

(then a BC, then a SWEEP, and then when payoff and priorities become clearer, attend to humanistic (and other) problems of social organisms). 1a2a

and that can apply them in attacking very-complex problems. 1a2b

My priorities are to get effectiveness -- as much as possible and as quickly as possible -- for this first wave. Whether the workin methods of early augmented teams are particularly humanistic as concers the roles and actions of the team mmbers is realy of secondary concern to me. 1a3

Notes on Matters of ARC Organization

I happen to believe that the spirit of the team, the sharing of feelings, the concern for each other's personal condition, etc., are highly important to a truly effective team. Whether we should adopt democracy or autocracy though should to my way of thinking be dependent upon the result upon a team's net effectiveness -- a bootstrap team, creating an organization-methodology "design" communicable to others, must certainly have the spirit to cope with whatever way works best, and the mutual respect, concern, and compassion to maximize the gratification, dignity, tc. for all. 1a4

General Notes: 2

We are all contractors, selling a product in a marketplace. 2a

A "professional" usually sells his services. 2a1

A measure of proficiency and success for a contractor is that he can deliver his product within the expected buyer's price, and in a way that gives the buyer the best value/cost configuration. 2b

Evolution of a service item: 2c

A buyer has (or group of buyers have) a Need 2c1

through finding an architect, getting trial designs, evolution of Plan/Design and associated Requirements via negitiations involving needs/values and possibilities/costs and people in coordinator and other-task pusher rols; 2c2

contract, implementaton, monitoring, development of configuration specs; 2c3

checkout, acceptance, turning over to operations; 2c4

maintenance, teaching; changes 2c5

Who represents all the users, as buyer of a new, general user feture? 2d

Requiremnts of Org/Management system: 2e

Prototype for BC 2e1

Provides basis for significant augmentation 2e2

Provides for Bootstrapping -- e.g. enables measurement and

analysis of activity and products; can evolve in practical steps; can be made to work at each step 2e3

How differentiate between "methods" and "procedures"? 2f

Analogy between a computer process and a human role -- can this lead to useful models, modes of design, representation, documentaton, etc. for org/management systems? 2g

Time to start seriously to develop ARC glossary 2h

Seems handy to do it in something like cataog format 2h1

The "marketplace" concept is not a near-future target. But, being a primary target to which the interveing stages of org/man are aiming, I want the roles, methods, records, conventions, tools etc. we develop to be suitable for launching such a marketplace. 2i

We don't yet have the number of buyers, contractors, tasks, etc. to provide a framework for "free enterprise" 2i1

I am not thinking that our near future will see people turning down Task A because they would rather work on Task B, as would be natural in a larger market (where the contractor would turn toward promoting for and bidding on Task B, and the needy buyer would be advertising among other contractors for a suitable bidder). We must assume that the relative priority level in ARC's goal structure will strongly influence our decision process. 2i2

For instance, assume that the ARC contractor above might propose to have his income reduced by 50% for six mmonths to compensate within the resource/value system in our community for his working on the lower-value (but higher-interest) task. 2i3

We don't generally have the freedom in our size of a community to arrange this, like we'd generally have trouble finding a temporary replacement that could do Task A. 2i3a

Our choice would likely have to be between doing A or doing B, since the market where the cost of their development is being "bought" is not big enough to ccme forth with a pair of prices affixed to A and B such that it would be equally beneficial to the buyer community to have either one done for its stated price. 2i3b

Some algorithms for ARC people to use, relative to the workins and problems of our O/M system: 2j

If some feature isn't working, try to communicate the "bug" to the responsible party. 2j1

If you can't determine the responsible party, that in itself is a bug -- RETURN TO JCN. 2j1a

Understand that until the whole system is checked out, various parts will probably be hard to work in because of a bug being in some other part. Be accepting. If the debuggers know about your pdre trying hard to fix the bug, please try tokeep your part of the system working anyway. If that is more than reasonaby hard to do, CALL JCN for relief (he may provide help, or put in some patches that temporarily remove some of the burden). 2j2

Need to make it clear how the various decisions are to be made: 2k

Particularly where balancing between competing alternatives must be made. 2k1

The coordintors are (in current model) not in the direct resource-allocation decision-making business -- their role is to facilitate the process of keeping balance among the types of decisions where competing alternatives often exist. 2k2

In the phase of trial-design, estimating and negotiating, would we find value in using the term "architect" for the contractor helping the buyer; and use the term "builder" for the guy who subsequetly takes a contract to implement? Or rather, using special-named roles of similar nature to the architect and builder roles, however we choose to name the roles. 2l

About when a contractor takes over after a buyer has already developed a trial design as part of his early exploratoy work. 2m

Expected behaviour would likely be that the new guy (contractor) would accept the trial design as a starting point from which through dialogue and negotiation he and the buyer would evolve toward final the architectural stage of having a clear design and a clear set of requirements. 2m1

Where the contractor would prefer a different approach, he would be expected to propose exploring this, and to see to

it that the buyer understood and goes along with the reasons. 2m2

Where the contractor feels that the requirements are fuzzy, insufficient, inconsistent, or etc., the buyer is expected to work this out to mutual satisfaction. 2m3

It is natural to expect a buyer to mess around with trial designs as he is groping toward a formulation of what he wants. 2m4

The buyer should be honest about the degree of detail that he actually feels are relevant to his interest to be concerned with. 2m4a

If there indeed are aspects of the implementation approach that are of valid concern to the buyer, he should be able to formmulate a requirement that takes care of this -- e.g., the design must be compatible with that of Process X for later merging of the two. 2m4a1

The general attitude should be that the process of thrashing out the requirements and the final design are usually best done by a sequence of cut-and-try drafts of requirements and proposed design. 2m5

With JCN, Miscellaneous notes:: 3

Should each ARC person have: 3a

One and only one personnel coordinator watching him? 3a1

May have two, at least when he is involved in several kinds of activity. 3a1a

Would think so. 3a1a1

At least one watching him? 3a2

Amount of coordination a person needs depends upon the size and nature of the labor pool he is in. 3a3

Perhaps the team as a whole would benefit from having each person's application of his time, and his plans thereto, be under the surveillance of a personnel-resource coordinator? 3a4

What are the actual differences between the roles of pusher and coordinator? 3b

Coordinator role not commit resources? 3b1

Or can a coordinator buy some help inperforming his tasks? 3b2

Is the manager of an ongoing activit (e.g. Operations, NIC) a pusher? 3c

Seems that pushers are generally a candidate to find himself serving in reting relationships as sometimes buyer . 3d

Is everybody a pusher? 3e

Aren't the jobs of developing princples, conventions, methods etc. the kinds of things contracted to pushers? 3f

How about various community-service roles? E.g.: 3g

Library development for given areas. 3g1

Training of new people. 3g2

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Notes on Matters of ARC Organization

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WSD 21-JUN-71 10:30 7309

Journal Reliability Drive

I would like to make a concerted effort to get rid of the gremlins which run around causing the Journal to be unreliable. 1

Toward this end, I would like to make the following requests of Journal Users. 2

> If you encounter anything which does not seem to be right, please call me (X3268) before resetting. Consider calling me at any reasonable hour, weekends included. 2a
>
> Be mean to the Journal. Make mistakes whenever possible, and make note of the ones which it does not gracefully recover from. 2b
>
> Practice Simultaneous entry. If you have an item to enter, and someone else close by does also, by all means make a point to enter them at the same time. If the Journal becomes confused, give me a call. 2c

I will try to keep something of a log of problems, which will hopefully enable us to improve the state of Journal matters. 3

Thanks.....Bill 4

WSD 21-JUN-71 10:30 7309

Journal Reliability Drive

(J7309) 21-JUN-71 10:30; (Expedite) Title: Author(s): William S. Duvall/WSD; Distribution: Marilyn F. Auerbach, Walter L. Bass, Roger D. Bates, Mimi S. Church, Douglas C. Engelbart, J. D. Hopper, Charles H. Irby, Beauregard A. Hardeman, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Bruce L. Parsley, William H. Paxton, Barbara E. Row, Richard W. Watson, Ed K. Van De Riet, Kenneth E. Victor, Don I. Andrews, Dirk H. van Nouhuys/MFA WLB RDB MSC DCE JDH CHI BAH MEJ HGL JTM JBN JCN BLP WHP BER RWW EKV KEV DIA DVN;
Sub-Collections: ARC; Clerk: WSD;

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Some NP Notes on a Bootstrap Community

Rough Notes from (Engelbart, ABCNP,), submitted for the record before going on vacation.

Some NP Notes on a Bootstrap Community

ARC's goals; steps toward BC approach. 1

We could supply services, among: 1a

Network participants, 1a1

Researchers in Computer and Information Science Techniques, of which there are several relevant categories: 1a1a

Techniques significant to current augmetation systems (e.g. language, operating systems, time sharing, terminals, networks, interactive techniques, 1a1a1

Techniques not of current significance to augmentation systems, but of apparnt future significance (e.g. speech recognition, artificial intelligence, signal processing, very-large computational problems, 1a1a2

Researchers in User Systems that are of current significance to augmentation sytems, e.g.: 1a1b

Management, documentation, group organization communication etc., 1a1b1

Researchers in other areas, but regular, heavy users of techniques such as significant in current augmentaton systems. 1a1c

E.g. heavy document user, for special documentation, studying, teaching, collaborating, etc. 1a1c1

Augmentated sotware-development activities. 1a1c2

Special, enlisted parties -- industrial, university, agency, small contractors, etc.. 1a2

some of whome will probably meet the requirements for Net membership, and some may not (and hence we may have to have our own subnet radiating from ARC. 1a2a

To provide these services takes certain expensive and scarce resurces: 1b

NLS service, tuned for balanced responsiveness 1b1

Aug-Sys specialists to design, install, maintain, and operate the NLS services. 1b2

Aug-sys specialists to teach, guide, help set up user systems, etc., in interaction with the users of such services. 1b3

Physical resources: 1b4

NLS-support computers, with special configurations 1b4a

Balanced file-storage facilities 1b4b

Network-communication capacity (often of relatively high responsiveness). 1b4c

ARC has a particular, firmly held strategic goal that strongly affects such things as its planning, its internal motivation toward different activities, etc. 1c

The Goal: ARC is dedicated toward maximizing the impact that its activity will have on the computer-related industry toward improving its capability to furnish augmentation systems to customers. 1c1

This includes improving, within the "industry": 1c1a

The understanding about how to augment individuals and organizations. 1c1a1

The "architectural" capability of designing organizaonal systems within the user domain to harness effectively what services the compute systems can provide. 1c1a2

The capability to design and deliver the hardware and software to fit the customer's needs. 1c1a3

The capability for training users in new concepts and skills associated with integrating an augmetation system into their wrking environment. (Also, indoctrination in new attitudes about such as effectiveness, roles, collaboration, organizational dynamics, etc. will undoubtedly be required before augmentation systems can be either sold or established effectively.) 1c1a4

The ability to operate the service system with high relibility, economic utiliation of resources, toward maximum value within the user domain. 1c1a5

The ability to "track" the augmentation system(s) of

a customer organization along with its changing needs and possiblities, toward keeping as closely as possible a maximum cost effetiveness and investment balance in its putting part of its resources into developing and operating its augmentation-system(s). 1c1a6

Consider the following, then: 1c1b

Until progress is marked toward these critical goals, augmentation systems for any organization will be inadequate, expensive, inflexible, unexportable, unreliable, and/or lacking in coherence of design principles. 1c1b1

Resources applicable toward these goals are very limited. 1c1b2

Resources applied toward developing special, one-of-a-kind augmentation systems, if not done within an active discipline, will be liable to very low value/cost ratio due to such as: 1c1b3

Difficulty in developing solutins, to the many unique kinds and levels of system problems encountered, by developers unacquained with special design principles and implementation techniques. 1c1b3a

Difficulty in providing enough tools and techniques to the "augmented workshop" of the system's users for hem to achieve a coherent, integrated, and smooth-working knowledge-processing operation. 1c1b3b

It is ARC's stand that the approach to take toward these ends is to concentrate upon accellerating the improvements in all of these areas. We have no possession claims upon these improvemnt goals -- indeed, they essentially are being pursued by many people already, But we do have a certain unique opportunity to act directly toward accellerating their pursuit. 1c1c

We have been engaged for some time in the developmet of augmentation techniques, and have concentrated within a bootstrapping mode upon those techniqes which would best help computer-systems developers. This has been in accordance with a long-term strategy, as expressed in the Research Recommendations of XDOC(nnnn,), (OSR1, Ch. IV). 1c1c1

We are entering into a phase of activity where special services supported by some of our techniques are being offered over a computer network, and where it is planned to steadily increase the accessibility of our service-system tools to users at remote terminals. 1c1c2

We are planning to expand as much as is practicable our capacity to furnish services to remote users -- and it is here, in the choice of which users to serve with what kind and portion of the available people and service-system resources, that we see a very unique position for ourselves in the impact we can have toward the above industry-improvement goals: 1c1c3

The resources mentioned will of course steadily expand. But, compared with the scope of the problems that only this kind of resource can attack toward the above goals, these resources will for a number of years be very limited (very very limited). 1c1c3a

There are many ways in which the expanding, but 1c1c3b

So it is our position that payoff toward ARC's specified industry-improvement goals would be significantly enhanced if we would make our resource-allocation choices (for developing techniques, supplying services, helping establish augmented systems, promotng and indoctrinating toward becoming augmented, etc.) toward maximizing the rate at which augmentation systms will be applied toward the improvement activities llisted. 1c1c4

within the choices we 1c1c5

The only means of acceleration which we can most directly affect is that of providing effective augmentation systems to the various sections of this industry. 1c1c6

a capability for rapid and effective evolution of improved techniques 1c1d

system-development 1c2

Helping describe the Bootstrap Community 2

The topics of direct, substantive concern within the

Bootstrap Community (BC) all have to do with techniques for developing and operating computer-based systems. This includes: 2a

Application-system analysis and design, computer-system analysis and design, modelling, system-development project management, documentation, installation, user training, operations. 2a1

And for the people engaged in development and operations -- working methods, techniques, conventions, tools, records etc. 2a2

The principle goal of the BC will be to improve the capability of the "system-development industry" for providing effective computer-based systems to its customers. Its approach will be to: 2b

Provide comprehensive collection, integration and dissemination service for information pertaining to the relevant techniques. 2b1

Provide experience with working examples of representative techniques 2b2

Provide an advanced computer-based system (X-System) of tools, services, techniques and methods to support the basic activities of the BC participants. 2b3

Engage in the continued evolution of a special, study-subject system that is extensively used and studied as a test bed for tools and techniques to augment system development. (This will be the X-System mentioned above.) 2b4

Specifically concentrate upon development of principles, practices, and techniques associated with the processes of development and operation of X-System. 2b5

Certain characteristics of the X-System are important to note: 2c

It is to be a complete, carefully coordinated, working system of computer hardware and software, network communications, and terminals -- together with the associated conventions, working methods, training aids, etc. required for its human users to harness it. 2c1

It is to be specially designed to facilite the work of developing and operating complex, computer-based systems. 2c2

The principles and details of its design, analysis, and use are to be documented with extreme thoroughness. 2c3

It is to be modular in nature and to have considerable attention given to making it easy to transfer part or all into another people-hardware environment for supporting the developers of other computer-based systems. 2c4

One characterization is that it is to be a "system-developer's workshop," ready to be adopted by practising system developers. 2c4a

Its design, documentation and application will in particular enhance its users' capability for modifying it and for adapting it to the faciliation of other system-development tasks -- in particular, adapting the X-System to facilitate the development of other computer-based systems. Indeed, an expanded, tailored, and tuned X-System would be a very good "benchmark design" for facilitating almost any "knowledge work." 2c5

Different kinds of explicit "products" will be produced by BC. 2d

A working prototype of a distributed, computer-based system for facilitating the evolutionary development of a specific discipline; a system for collection, integration, and dissemination of discipline-oriented information, and for supporting distributed, recorded dialogue among the discipline's developers; a system that can be adapted to facilite the evolutionary development of other complex, knowledge-heavy disciplines. 2d1

A working prototype of a distributed, computer-based system for facilitating a project team engaged in a very complex project; a system for coordinating the intellectual and knowledge resources of a team toward giving increased speed, adaptiveness, efficiency, and comprehensiveness to their work; a system that can be readily adapted to a number of types of teams and projects. 2d2

A working prototype of a computer-based system for facilitating the development of computer-based systems; 2d3

a system that can be transferred and quickly adapted to special programming languages, machine systems, etc.. 2d3a

a system that when transferred is immediately ready for use in training its new users, in studying itself, and

in changing itself in adaptation for other-system development. 2d3b

An integrated, coordinated sytem for creating, editing, designing typgraphical layout, publishing, indexing, storing, retrieving, and updating reports, manuals, handbookds, etc. on all phases of computer-based systems. 2d4

Covering highly complex and specialized concepts; special graphic portrayas; glossaries; cross-referencing; concordance indices; specialized fact-access corrolary publications; ... 2d4a

n A system for managing special colections of information in special ways tailored to individualized needs in an active, knowledge-intensive working domain. 2d5

A system to support distributed collaborative dialogue. 2d6

A system to suppot real-time conferencing, special workshops and symposia. 2d7

A system to support computer pogrammers with special languages coordinated with an interactive-display tools, for composng, studying, modifying, documenting, debugging, analyzing, cross-referencing, etc. 2d8

Advanced techniques of language and compiler design, and of interactive-system programming archi tectuure. 2d9

Information to support the developers of computer-based systems. 2d10

Specific "Handbook" information, 2d10a

Covering techniques, practices, principles, examples, terminology 2d10a1

as well as an "intelligence data base." 2d10b

Covering products, techniques, practices, principles, evaluations, current research activities, other related ongoing developments, forecasts, 2d10b1

Miscellaneous Notes about BC-PLAN Organization 3

Need an approach to BC that provides for evolution, integration of The useful Parts of new developments (if not the whole). 3a

Should provide for healthy recorded dialogue. 3a1

Needs control of development as associated with dependable operations. 3a2

Needs good documentation; planning and managemment system so each contributor and user can have good visibility of what is expected to happen; 3a3

Need to paint a quite clear picture of the components that could profitably be considered for inclusion into the "whole sytem". E.g.: 3b

Services: 3b1

Basic augmentation tools: 3b1a

Flexible, universal portrayal-generation and -manipulaton capabilities. 3b1a1

3-D drawing manipulation a portrayal 3b1a1a

I.e., consistent techniqes for producing portrayals on any media (display, typetwirter, line printer, scan priner, COM, etc.) 3b1a1b

Hard-copy output, to various media. E.g.: draft (working copy) paper, film, high-quality paper publication, high-quality reference cards, letter-head colors, ... 3b1a2

Publication onto paper and microform 3b1a2a

Including drawings etc., photgraphs, cros references, 3b1a2a1

Question-answering services 3b1a3

Help 3b1a4

Speech-string handling 3b1a5

Speech recognition facility 3b1a5a

Handwriting-translation 3b1a6

Dialogue Support System 3b1a7

Message services 3b1a7a

Consider formulating the BC first year in such a way as to end up with "Departments" 3c

Among other features that would be desireable to build into this approach would be a relatively clean division in types of outside-world people who would be involved as contracting participants. 3c1

IIt would be valuable to have the people-meeting get coordinated (visitors to ARC, visits to other places, searching out likely contacts, etc.), and be distributed as soon as possible to staff who will likely be prinicples in the Department that the people to meet would be most closely associated with. 3c1a

Provide benefit of more people becoming specifically involved and oriented, stimulaing productive dialogue in the evolving plans and developmments of BC. 3c1a1

Also, distribute the burden of such contacts,l and get ARC/BC guys oriented and practiced in 3c1a2

dealing with the type of considerations their departments would be faced with, 3c1a2a

meeting the potential (distributed) assocites, 3c1a2b

getting a feel for the promotional possibilities, etc. activity 3c1a2c

Seems the bast way for getting help (to me) in the planning -- trial formulations and eveluations, plan-development formulations, coordination of various facets of plan, etc.; and for this purpose, a real, planned involvement for the helpers would be very sensible (stimulation, orientation, consistent way to divide labor, etc.) 3c1b

Besides, this approach seems to be what everyone else does -- make up an organization (for helping develop the plan) that tries to fit the likely form of the plan. 3c1b1

Trial categorization of outside-contact people. 3d

From different types of organizations: 3d1

Industrial 3d1a

Uniersity 3d1b

Government Agencies 3d1c

From different levels and areas of home-organization involvement with activities where interactions with BC are relevant: 3d2

Approval types, e.g: Board of Directors, Legislators, Very-top Executives 3d2a

Highest-Level Launcher and Reviewer types, e.g.: Top executives 3d2b

High-level Plan and Pusher types, or funding-agency contract-area launcher 3d2c

System-development pusher, or funding-agency project monitor 3d2d

System-development sub-pushers: 3d2e

Responsible for development of operating subsystem, or of techniques specifically applicable within a subsystem of a "whole augmentation system,"enerally covering the range of system areas. 3d2e1

System customer 3d2f

Operational managemnt of system 3d2f1

User of systems (customer of operations man as well as sys-dev man) 3d2f2

With various types of concern about augmentation systems: 3d3

Organizational and priority approach to establish, in their organizations, to cover the high-level processes of Surveillance, Assessment, Planning, and Implementation-coordination for 3d3a

their future use of Aumentation Systems., or 3d3a1

their future role in production/marketing of products and/or services in the Augmentation-System Market. 3d3a2

Development of system-implementation plans; Concerned with their organization evolving the right plan for

augmenting whom and for how and in what stages and schedules. 3d3b

System utilization Concerned with different types of 3d3c

Improving value/cost for customers of Augmentation Systems -- by finding, developing, or supporting development of, new products, designs, techniques, methods, user-group organization and training, etc. 3d3d

Improving the process of developng Augmentation Systems -- i.e. concerned with improving value/cost for customers of System-Development Augmentation Systems 3d3e

With different immedidate concerns relative to possible participation in BC: 3d4

Possibly "buying" from BC: 3d4a

Evaluating potential value to their organization in dealing with BC 3d4a1

Promoting interest within their organization in dealing with BC 3d4a2

Negotiating a contract for participation. 3d4a3

Possibly "selling" to BC: 3d4b

Exploring potential value to BC in dealing with their organization 3d4b1

Promoting interest within BC for dealing with their organization 3d4b2

Negotiating a contract for participation. 3d4b3

Possibly a combination of "buying and selling" from/to BC. 3d4c

Possibly becoming an internal resource within BC: 3d4d

Perhaps highest-paid programmers will have to be the operations-control and maintenance guys, in order to assure quality. 3e

Contract Market must have process to provide incentives where needed to distribute foci of activities according to community needs. 3f

Need make clear what I want, what ARC wants, what SRI wants; then find what part of this intersection IPT would pick up; then launch and go after other participants when the time is ripe. 3g

Need study the way various information services operate. 3h

Battelle has a number that serve special clientele, in specia (usually technical) areas. 3h1

How does such a Center do its billing, its membership selecting and charging, etc.? 3h2

Contracting market, in BC, wants to have practices that assure healthy evolutionary imrpoements in all areas and at all levels. 3i

Like, no monopolies? Perhaps the Community subsidizes a Number Two if it as to, for which role there would be competition. 3i1

Promotional areas, project areas, etc. 3j

Trial approaches to BC-PLAN Organization 4

Types and examples of orgs, people: 4a

Government Agencies, funding sources for R&D 4a1

ARPA IPT 4a1a

Existing support of NIC, NET, Team Aug 4a1a1

New-program interests in some related areas: 4a1a2

On-Line Computer-Science Library 4a1a2a

On-Line Computer-Science Encyclopaedia 4a1a2b

Computer-aided conversation 4a1a2c

Speach recognition 4a1a2d

Mentioned other relevant concerns: 4a1a3

Transferral of results 4a1a3a

Better documentation 4a1a3b

Widespread graphic-text printout terminals 4a1a3c

Strong investment in Computer Systems res. 4a1a4

Strong investment in exotic computer processes, where it seems evident tha critical improvements needed in techniques available in the system-development industry before these exotic processes can readily be available for application systems. 4a1a5

Extension of NIC-like services toward DSS and RINS would seems very valuable towards increasing effectiveness of their research community. 4a1a6

Development of documentation-support facilities for use by their contractors would seem likewise valuable; providing effective, integrated and coordinated techniques and comprehensive, relevant information bases, toward improving 4a1a7

effectiveness of the work 4a1a7a

through the increase in collaboraton effectiveness. 4a1a7a1

Through the improved learning, maintenance and operations that the better documentation engenders. 4a1a7a2

Through the excellent foundation thus provided for direct attack on augmenting the designer and developer. 4a1a7a3

and its transferrability 4a1a7b

ARPA Human Factors 4a1b

ONR 4a1c

NSF 4a1d

Larry has said that he'd be hapy to help IPT conractors in approaching NSF. 4a1d1

Reportedly going to expand their Computer-Systems activity 4a1d2

Aready established as interested in information systems. 4a1d3

OE 4a1e

NIH 4a1f

Government Agencies, applications with sys-dev resource and drive -- possibilities for both cooperative activity and funding. 4a2

RADC 4a2a

Management Information Systems 4a2a1

Air-force logistics ($20-billion inventory to manage) ?? 4a2a2

NBS 4a2b

Tom Pyke -- Sys Development techniques, data bases, networks, terminals, interactie systems, ... 4a2b1

NASA Ames 4a2c

ILLIAC-IV documentation system 4a2c1

NIH 4a2d

Library of Medicine, big developmental activity 4a2d1

Bib Sproul, NIH, system-development techniques 4a2d2

Navy Logistics 4a2e

Capt. Lewis (?) 4a2e1

NASA Langley 4a2f

Fuhrmeister, huge system operations, special applications 4a2f1

Transportation 4a2g

Libraries 4a2h

University-staff project planner or leader 4a3

Rosenberg at UCB, Information Systems 4a3a

Ed Parker, at Stanford 4a3b

Pauline Atherton, at Syracuse Universty 4a3c

Dave Malone, at Purdue 4a3d

University, interested contact types 4a4

Bill Elliot, England 4a4a

Jerre Noe, Univ. of Washington 4a4b

Andy Van Dam, Brown Univ. 4a4c

Reitman, U. Of Michigan 4a4d

Ed Sibley, U. Of Michigan 4a4e

Dave xxx, UCSC 4a4f

xxx, UCI 4a4g

XXX, U. Of Wisconsin 4a4h

Industrial, non-profit R&D 4a5

Stacey French, Carnegie Inst. at Stanford 4a5a

Ray DeSaussure, at LRL, Livermore 4a5b

Already interested in idea of using our RINS to develop a (sharable) intelligence base on components and services. 4a5b1

SDC 4a5c

Already in Net 4a5c1

Strong position in Information Systems, Computer Systems, System-developement esperience and methodology,... 4a5c2

RAND 4a5d

Already in Net 4a5d1

Strong position in Information Systems, Computer Systems, Exotic applications 4a5d2

AMP 4a7b

Sweeney et. al., already have shown a lot of interest in longer-range possibilities. 4a7b1

MMM 4a7c

Bechtel 4a7d

Specific Activities under consideration for BC kickoff 4b

Development and production techniques for Computer-System Handbook(s) 4b1

Handbook(s) 4b1a

Microfiche production and computer-aided study techniques for Computer-System documentation and Computer-System-Development Handbook, management, etc. 4b2

Developing RINS base on sys-dev topics 4b3

Give technique consultation, computer-tool service support, special-tool or technique implementation help and/or support, etc. to selected system-development activities (generally as pursued by other groups than ARC). For instance, groups that are: 4b4

Developing Documentation System(s) for specific computer (-based) system(s). See discussion in (nnnn,). Possibilities: 4b4a

NLS 4b4a1

TENEX 4b4a2

ILLIAC IV 4b4a3

MULTICS 4b4a4

Langley's big multi-computer system 4b4a5

Developing specific subject areas of a coordinated Handbook for Computer-based-systems development and operation. 4b4b

Developing specific subject areas of a coordinated Intelligence data-base, in areas relevant to Computer-based-systems development and operation. 4b4c

Give direct, constant support of the on-going processes of documentation, bibliographic (intelligence) -base development and use, and collaborative dialogue, to selected R/D activities in the Techniqus end of Information Processing Systems (generally as pursued by other groups than ARC). For instance give technique consultation, computer-tool service support, special-tool or technique implementation help and/or support, etc. to selected R/D activities in the Techniqus end of Information Processing Systems (generally as pursued by other groups than ARC). For instance, groups that are working on such as: 4b5

Privacy 4b5a

Data-base management 4b5b

Query and Retrieval 4b5c

Computer-Aided Instruction 4b5d

Artificial Intelligence 4b5e

Project Management 4b5f

Language Development 4b5g

Programming principles and techniques (documentation, debugging) 4b5h

Display-system development 4b5i

Network Design and Analysis 4b5j

Network protocol, etc. 4b5k

Time-Sharing Systems 4b5l

Development of an Augmentation-System Handbook, covering analysis, design, project management, implementation techniques and principles, documentation, operations, training, evolutionary tracking, etc. 4b6

Development of an Augmentation-System Intelligence Data Base, served by RINS. (covering development, analysis, operations, training) 4b7

Log of BC-relevent events: 5

Met May 71, with Cordell Green, John McCarthy, and Bert Raphael (lunch, SRI International Dining Room). 5a

Green wants some progress made toward producing a coherent proposal in this area. 5a1

"Cost is no object" -- in first drafts of such. Cost/effectiveness assessmnt would come later, but apparently before any contracts are let. 5a1a

Sort of appears that BR and JMc would pair up to produce an initial thinkpiece, and I launch one from my point of view. 5a2

Theirs would apparently involve (perhaps among other things) publication of "AI Journal" in vomputer form, using Network resources, computer typography (III) etc. 5a2a

I kept expressing the need for a framework in which this proposed work would be carried out, saying tht there would be opened up so many types of useful tools, conventions, applications, etc. that it would cross over many areas in which ARPA people have vested interestes, real capability, applicable tools and concepts, etc. 5a3

Notes w. WHP, 22 May 5b

Described basic idea of heavy support for sys-dev community, pushing on ILLIAC-IV documntation, system meas and eval, aug soft engr, aug operations andmaint, etc. 5b1

Illinois group perhaps take prime management of the developmental part of ILLIAC-IV documentation-technique activity 5b2

PARC's NOVA MPS coming along 5b3

PARC's display system -- nice amalgum of digital and video systems, coordinating well with scan-line printer outputs. 5b4

Parc's computer-development project: 5b5

Building a PDP-10 TENEX-compatible processor, with MOS store, soft-coded micro-programmable, ultra-reliable processor, 5b5a

Hope to have it working by first of next year. 5b5b

New notes -- 17 June 71 6

With Duane Stone, re. ARC/RADC working relationships 6a

Possibly they might benefit by pushing on local establishment of a DPCS, for their use, or for some other Air-Force group. 6a1

We'd like to see the use initally aim toward documentation of computer systems, since this would provide much better bootstrapping coordination with activity by ARC and any other people we can get to go along similar paths (e.g. ILLIAC, EIN, etc ...) 6a1a

6a1b

Documents with mixed text amd graphics: hardwae, software, syystem analysis, project mangement (baseline, PERT, etc.) 6a1c

A group in RADC maintains officia JOVIAL manual. 6a1d

One local task they are cnsidering is to support their "Program Call," which is a intensive review activity of their planning statements for their programs. 6a2

This is an annual exercise, normally during November-December at he section level. 6a2a

Duane thinks that the genera level of fule security that TENEX offers would be adequate. 6a2b

A reaonable DPCS would serve well -- even with one-day turn around. 6a2c

If they had an IMLAC for quick review and updating, would help beyond that. 6a2d

Basic scheduling data: 6a3

Their TIP is scheduled for 1 Oct. 6a3a

Local Printout: Could fund a new-buy, 6a3b

otherwise like a TTY37. 6a3b1

They have two prototype 37's owned by Teletype Corp, maintained by a local guy (but not well) 6a3b1a

They have been looking into electrostatic copier, working from face of a CRT. 6a3b2

Have some MTSTs. 6a3b3

Duane thinks that there is a coupler available now to hook an MTST unit to a phone line. 6a3b3a

Would we have a suggestion? 6a3b4

DATA PRODUCTs printer, like ours, only usingthe desk-top model, would be a solid way to start. 6a3b4a

Possibilities for direct collaboration. 6a4

Consider RADC's shipping us a fixed-dollar parcel, for between now and end of contract, to cover both ARC-personnel and -computer services. We set about adding staff to be able to meet our other cmmitments while providing this interface. We work on some reasonable guess for how to increment service capacity so that RADC's usage doesn't intrude upon ARC's or NIC's other commitments. 6a4a

Configuration possibility at RADC: 6a5

n on-line typewriters 6a5a

Two Execuports now, with two bad TTTY37s, some o.k. TTY33s generally available -- at least two of which have paper-tape punches. 6a5a1

Table-top line printer (lease this, so later can go to graphic system -- like Gould and PDP-11?) 6a5b

Some spooling-input, off-line terminals 6a5c

33ASRs, or some special, Selectric-cassette terminals 6a5c1

A spooled-data reader terminal 6a5d

One IMLAC, with mouse and keyset 6a5e

While IMLAC working on 1800-bauc moem, could perhaps connect the spooled-data reader and the line printer to work off it. 6a5e1

(How about a TEKTRONIX display-printout termina??) 6a5f

Possibility of ARC procuring a coordinated package of

hardware for RADC -- it be installed there more or less by contract through us. 6a6

Two components of hhelp here (possibly): 6a6a

getting the specs, cost/tradeoffs, etc 6a6a1

procuremnt help 6a6a2

Sometimes it is hard for them to be quick and flexible about their acquisition. 6a6b

This might be especially attractive if combined with NASA and even EIN DPCS-facility development. 6a6c

He'll develop a sort of scenario for the Program-Call process, so we could look at it and help evalute that as a test thing for their use of NLS tools. 6a7

Do it on TNLS, and stick it in the Journal. 6a7a

Notes re proposal emphases 6b

Strong push on the DPCS service, trying very hard to get this underway, in sys-development areas. 6b1

Includes high-quality publication techniques, mixed text and graphics, special portrayals for system design, analysis, teaching , special indices, etc. the whole foundation for 6b1a

DCE 21-JUN-71 10:41 7310

Some NP Notes on a Bootstrap Community

(J7310) 21-JUN-71 10:41; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: James C. Norton, Ed K. Van De Riet, Richard W. Watson, William H. Paxton, Charles H. Irby/JCN EKV RWW WHP CHI; Keywords: ; Sub-Collections: ARC; Clerk: HGL;

DCE 21-JUN-71 10:46 7311

Some Miscellaneous Leave-Behind Notes

Rough notes submitted for the record before going on vacation

DCE 21-JUN-71 10:46 7311

Some Miscellaneous Leave-Behind Notes

Settle on our positions w.r. RADC, Xerox, EIN, Ames 1

RADC, 1a

They could provide money, to contract-period end, 75K if needs be). 1a1

Can we assimilatee it without over-congesting ourselves? 1a1a

Mix of personnel and computer resources 1a1b

I think that they would be ahead to include in their earliest activities setting up their own DEX-based DPCS. 1a2

EIN 1b

If they agreed to use DEX for all of their bulk work, depending upon NLS (T or D) for occassional touchup stuff (i.e. if they didn't depend upon being on line to get their work done, then I'd like to consider going ahead with them. 1b1

Xerox -- we need to work toward a clean interface (organizationally speakin), where we agree ahead of time on the exchanges of resources for particular ventures. 1c

Their doing collaboraive developments is an extremely valuable asset to our ends;but in the mix of our other commitments and activities, we have to have a means of protecting resources allocated toward mundane-like (but necessary) activities from being usurped by exotic-like activities. 1c1

As long as Jim and Peter are using NLS directly on the joint software developments, we can consider them as part of our ARC software staff as far as NLS-resource allocation is concerned. 1c2

Other uses we can't consider in that way, without finding a workable basis for specific agreements. See discussion on Resource Scheduling. 1c3

Consider designing several stages of remote-device configurations for DPCSs of various degrees of elegance and thrughput capacity. (For RADC, EIN, Ames, even ARC, and others to come.) (Notes: (1) didn't finish with this branch (2) talked the material over with Roger Bates to some extent.) 2

Three independent parts to the system: 2a

Entry/Spooling, NLS Access, and Printout. 2a1

Entry/Spooling 2b

TTY33 ASR's for off-line paper-tape punching; a stand-alone high-speed pape-tape reader. 2b1

More elegant: Selectric terminals for entry, spoolin onto cassettes, and automatically readable from a polling system. Add an IMLAC fr on-line work. 2b2

NLS Access 2c

Printout 2d

TTY37 for printout, directly specifiable as an output device by their DEX runs; 2d1

"Desk-Top" version (? 185 lb) of our Data Products printer. Prints at about 300 lines/min 2d2

96-ch, 88-column version leases for $430/mo 2d2a

PDP-11 driving a Gould 2d3

Miscellaneous: 2e

Consider having the 37 and the Reader connected on the same full-duplex modem. 2e1

Could this be arranged so that they could easily switch to a mode that disconnects the Reader and allows the 37 to be used as a TNLS terminal? 2e1a

Might want a separate TNLS console, leaving the 37 and the Reader on one modem. 2e2

If simple, cassette-spooling off-line terminals are reliable (using better typewriters, like a Selectric), replace the TTY33s and paper-tape reader with the cassette typewriters and a cassette reader. 2f

Most flexible: Have a local mini-computer that does the pooling, perhaps giving some local feedack to the entry clerks. It could drive the local printer. 2g

Local T/G (Text/Graphic) Hard-Copy output (Talked this over with Roger, too): 3

Some Miscellaneous Leave-Behind Notes

Look at high-quality sytem, FR-80 or better. 3a

Stripped-down version, driving a Prineton Scan-Converter, if possibile. Depend upon a service bureau for film or publication output. 3a1

Possiblity of proposing to Ames that they acquire such a system, we initially being the physical and operattonal custodian (later could move it to their site). 3b

Run a good-grade line over to a printing device on their site so can deliver proof-quality hard copy 3b1

Drive two Princeton from the FR-80 front end, one to ach site's printer? 3b2

Roger should get in touch with Ray DeSausseurre (??), at Lawrence Radiation Lab, Livermore, who has done an exhaustive comparative study of high-quality COM devices. 3c

Miscellaneous considerations: 3d

can a Gould paper cutter keep registration well enough to print out very long documents? 3d1

Can we get an automatic 3-hole pucher on the LDX output? 3d2

Are there collator devices for such as the LDX output, where it may be cheaper to run off n copies of each page for a multi-copy publishing operation, than to redraw each page n times? 3d3

Multi output systems, with n Pincetons and n LDX's, or mied LDX/Gould. 3d4

Resource Scheduling (Talked over this stuff with Jim, Ed and Charles.). 4

There are several specific collaborative opportunities for which we need immediate framework in which to plan and work:. 4a

We are committed to finding a way of supporting RADC's application studies with NLS and Personal resources from ARC. 4a1

We are already involved with XEROX in a profitable collaboration, and further such opportunities clearly exist. 4a2

We would like to find a way to support Ames and EIN in their Documentation Productionand Control. 4a3

I very much want to find an early basis upon which we can make collaborative agreements with groups such as these. There are no end of other pending opportunities for valuable collabraion, but I'd like to concentrate for the time being upon some approach to handle just these four. 4b

I feel somehow that it would be important to squeeze into our next few months an effort to find a reasonable working solution. Perhaps one can be proposed and implemented in much shorter time -- but if it was harder han that, and if we could possibly squeeze it in, 4b1

I'd put a fairly high priority on it -- somewhere in the mix ofhe other high-priority items that probably over-saturate us already, like multi-level file system, T/G printer, Sets, Back Links, DEX Processor, Backgrounding, Modular Programming System, NIC Stages, etc. 4b2

Perhaps careful consideration would put it before Backgroundng and MPS, for instance. 4b2a

What would be the simplest satisfactory way to handle the operational computer support? 4c

This seems independent of the question of how to increase the carrying capacity of the system. 4c1

I think it means, how can we schedule the computer resources into these various applications, and to a reasonable extent how can we associate these resources with costs so as to negotiate equitable charging. 4c2

Keeping track of their usage, and billing the user according to some agreed-upon basis, would be one way to start. But this may not cover quite enough of the problem domain -- it leaves unsettled the question of accessibility and total capacity. 4d

I.e., when one of them wants to work, what are his rights with respect to getting on when there is competition from other users? 4d1

In the early stages, we could consider some agreed-upon explicit schedules. 4d1a

Or, possibily we could find a way to guarantee them a

servicing level corressponding to a certain percentage of the system's resources, whenever they want to claim it. 4d1b

Then how would we set up an equitable charging rate to do differentiate between this kind of service and that of getting on whenever you can find the space? Wouldn't seem right to charge this latter kind of service the same price per unit of consumption as the one getting preferred treatment. 4d1b1

What we need for the next month: 4e

ad hoc way to work with Xerox, RADC 4e1

work up a framework for proposing to RADC how we'd tool up to take cae of their resource needs. 4e2

General ARC-operations during my absence: 5

JCN be in charge. Make any decision he has to. Assumedly will draw on others for help. 5a

DCE 21-JUN-71 10:46 7311

Some Miscellaneous Leave-Behind Notes

(J7311) 21-JUN-71 10:46; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: James C. Norton, Ed K. Van De Riet, Richard W. Watson, William H. Paxton, Charles H. Irby, Roger D. Bates/JCN EKV RWW WHP CHI RDB; Keywords: ; Sub-Collections: ARC; Clerk: HGL;

DCE 21-JUN-71 10:50 7312

Two DCE visitors scheduled for week of 21 June; for JCN to take care of

Submitted for the record before going on vacation

DCE 21-JUN-71 10:50 7312

Two DCE visitors scheduled for week of 21 June; for JCN to take care of

M. Mainguenaud, Centre National D'Etudes Des Teecommuniations, Paris, France. There are two letters from him on file (with Mil). 1

Mr. Larson, who has been at SDC for a residency period. Based in Sweden. We communicated for a while with his director, whom I met at the ASIS Show, about thepossibility of Larson's coming here. ARC never could get in shape to invite him. Larson is on his way home now. We should get acquainted. He had been working in the information systems (library) field. 2

DCE 21-JUN-71 10:50 7312

Two DCE visitors scheduled for week of 21 June; for JCN to take care of

(J7312) 21-JUN-71 10:50; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: James C. Norton/JCN; Keywords: ; Sub-Collections: ARC; Clerk: HGL;

DCE 21-JUN-71 10:55 7313

Phone Log: From Ed Forsythe, National Bureau of Standards, About Computer-Aided Dialogue

DCE 21-JUN-71 10:55 7313

Phone Log: From Ed Forsythe, National Bureau of Standards, About Computer-Aided Dialogue

A fellow named Ed Forsythe called me, on 17 Jun 71. He is with the National Bureau of Standards (in the Washington DC area), and is involved currently in what sounded like "Consumer Product Questions." In this regard he is interested in using a sort of computer-aided dialogue system -- Like the "Delphi System," XDOC(7038,). He had in mind making use of some time-sharing service's editing system, and having participants dial in, look at files, add their comments, etc. He had recently heard of our stuff, and wanted to find out more about it. 1

I steered him to the NIC collection handled by the NBS Station Agent, Mrs. Shirley Watkins. He is going to look through this stuff, which includes some of ourreports, so he can get a feeling fo what the NIC type of service might be able to do. 1a

We might hear from him again. I assume that when NBS gets on the Net, he would be able to launch such an experiment if he used other Network participants. But beyond some experimentation, this really wouldn't be the type of thing we are committed to support under NIC, unless he were to pursue dialogue development on subject matter relevant to Network activities.. 1b

DCE 21-JUN-71 10:55 7313

Phone Log: From Ed Forsythe, National Bureau of Standards, About Computer-Aided Dialogue

(J7313) 21-JUN-71 10:55; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: James C. Norton, Richard W. Watson/JCN RWW; Keywords: ; Sub-Collections: ARC; Clerk: HGL;

DCE 21-JUN-71 11:01 7314

Requesting a file-cleanup favor of Harvey

Message left behind on DCE leaving for vacation

DCE 21-JUN-71 11:01 7314

Requesting a file-cleanup favor of Harvey

Harvey: At some time after you have gotten the 8 plexes in my FORJOURNAL file (including this one) entered into the Journal, whenever you have that iron-clad feeling of surety that they really made it, would you then please clean out the following of my files -- Delete, Expunge: 1

AARCNP, AARCXP, ABCNP, ABCXP, and ASCRATCH 1a

Thank you for your trouble. Doug 2

DCE 21-JUN-71 11:01 7314

Requesting a file-cleanup favor of Harvey

(J7314) 21-JUN-71 11:01; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Harvey G. Lehtman/HGL; Keywords: ; Sub-Collections: ARC; Clerk: HGL;

RWW 21-JUN-71 12:20 7315

Journal Looseends Clarification

This piece is to summarize our conversation regarding stage 0 Journal system loose ends as per our conversation and (Journal,7284,) and (Journal, 7266,). 1

RFC 's should belong to both NIC and NWG subcollections. 2

The group identification system does need somesort of procedure to modify, add or delete people from various groops. It should allow this to be accomplished when new people are added to the id file. 3

> There is probably a need for a separate subsystem for manipulation of the the id file rather than requiring people to have to enter journal mode for such pruposes, although it is good to keep the present mechanisms as well. 3a

RFC numbers should appear on the title line of the documents in some reasonable place such as top left. 4

Until the file archive system is working there is a need for a manual procedure using Barbara or Cindy or someone to check periodically to see that the journal directories are not about to overflow and if they are to do some standard operations to fix things up. 5

I agree with your desire to have an automatic number system and in a separate note list the requirements NIC needs to have in such a system; they are minor additions to the present system. 6

In a separate note I will discribe a new incremental procedure for building NIC catalogs and its interface to the Journal. 7

RWW 21-JUN-71 12:20 7315

Journal Looseends Clarification

(J7315) 21-JUN-71 12:20; (Expedite) Title: Author(s): Richard W. Watson/RWW; Distribution: William S. Duvall, Mimi S. Church, Jeanne B. North, James C. Norton/WSD MSC JBN JCN; Sub-Collections: ARC; Clerk: RWW;

JHB 21-JUN-71 12:57 7317

Reactions to the Augmentation Research Center

Off the top of my head

Reactions to the AHI Research Center. 1

First, it seems that the joint use of the System by more than one user to work on the same text is not very common. 1a

Possible reasons why On-Line Conference Techniques are not useful in daily work: 1a1

Intuitively, this appears to be due to the normal tendency of indivduals to maintain a user space independently of interference from others. The amount of cooperation implyed by joint access to a given piece of text is enough to prevent less than highly motivated individuals from working together in this manner. (It has be my observation as a behaviorial scientist that hard scientist, engineers and technical people are less inclined toward interpersonnal ccommunication anyway.) 1a1a

The mechanics of editing the same text arenot clear. Infact,, it may not even be possible .....check on this Can software handle this yet? 1a1b

The personnel at ARC seem to be more inteligent and sensitive tha the average, consequently the system evaluation must consider this. LINK (USE,:m) 1a2

The psychological envirnment seems not to be high presure . People seem to come and go with a large degree of freedom. 1a3

Some comments-problems in use. 1b

Viewspecs are very confusing-- primarily because we do not have a dictionary or list of what the specs are. 1b1

THe display system is standardized and highly functional. However, I did note some less than optimal stuff: the keyboard is extremely sensitive romoting a high error rate in typing. Some positive tactile feedback would greatly enhance keyboard use, eg.a pulse or cick when contact is made by the key. 1b2

Software wise the Tenex executive is the difficult to understand and use . The manipulation of files, uppdating , outputing, partial copies, direction listings , and versions --is absoutly mind boggling. It notable that some of our questions and problems could not be answered by available ARC people..... 1b3

When inserting text, as I am doing now, the screen does not

automaticaly role up to display what has gone beyond the current page capacity. The only way seems to be to jump to item from the last statement on the page. 1b4

It very sdifficult to use the control marker in TNLS because of the inconsistancies in where it is pointing. Sometimes it is at the character, or after it , or the count includes the current chacrter or not, etc. ad nauseum..... 1b5

The xset comand doesn't seem to work--somebody at the ARC confirmed this with a chuckle shrug. 1b6

The nature of TV displays, for all the advantages leaves something to be desired: it is impossible to differentiate between a few characters-- .,:;: etc. 1b7

When the line of a display is long enough, i.e. very close to the right margin, the last characters of the last word are not displayed. 1b8

JHB 21-JUN-71 12:57 7317

Reactions to the Augmentation Research Center

(J7317) 21-JUN-71 12:57; (Expedite) Title: Author(s): James H. Bair/JHB; Distribution: William S. Duvall, James C. Norton, Richard W. Watson, Charles H. Irby, William H. Paxton, John T. Melvin/WSD JCN RWW CHI WHP JTM; Keywords: Reaction User New; Sub-Collections: NIC; Clerk: WSD;

RWW 21-JUN-71 13:58 7318

Some NIC Requirements for Preassigned Journal Numbers

The purpose of this piece is to clarify the requirements on the number system for the initial journal system for the network. 1

The changes required to the present system are minimal and are the following: 2

Provide some way to couple NIC and RFC number pairs together. 2a

Collect a little more information about the intended uuse of the preassigned numbers. 2b

Be sure that in case of a crash people can use their preassigned number(s) on the next try. 2c

Since people cannot use an RFC number without a NIC number a request for a preassigned RFC number or numbers should result in the return of both a RFC and NIC number(s). 3

The files which keep track of the preassignd numbers should contain cross references if the numbers are part of a RFC and NIC number pair. 3a

The process of getting a preassigned RFC number is thus somewhat different from getting a number at the time an item is actually submitted, because at that time it is a two step process to get both a NIC and RFC number. In this case we still want to have the two numbers coupled in any files that record number usage. 3b

The information required for each preassigned number is the following: 4

The name of the person requesting the number. 4a

A tentative title. 4b

Whether or not the actual document or message is going to be submitted later on or offline. 4c

Whether or not the item if submitted offline is going to be sent to us for distribution or to be distributed directly. 4d

If the item is to be submitted offline and we are going to distribute it we need to know its distribution. 4e

AS RFC and NIC numbers are going to be coupled and as we want to avoid gaps if possible in the RFC number sequence we need to be able to use any numbers assigned even if the sytem crashes. 5

This feature may already be in the system and all we hve to do is document it in the TNLS Guide. 5a

Jean will still want to take out a small block of NIC and RFC numberss in case the system goes down or to give to people who are not online to us. 6

Jean should have the ability to goe to the preassigned number file nd reassign the the number to the person she gave it to if they are going to enter the document online. If they are going to enter the document offline they will send it to us for entry and we will enter it using the hardcopy form H. 6a

Please let me know through the JOurnal how all this is going to work finally as well as the Group Id stuff so that Marilyn can describe it in the final version of the TNLS Guide to be released soon. 7

Once we know the format of the information stored with the preassigned numbers, we can write an L 10 program to produce a listing of these for Jeans purposes. 8

RWW 21-JUN-71 13:58 7318

Some NIC Requirements for Preassigned Journal Numbers

(J7318) 21-JUN-71 13:58; (Expedite) Title: Author(s): Richard W. Watson/RWW; Distribution: William S. Duvall, Jeanne B. North, James C. Norton, Cindy Page/WSD JBN JCN CXP; Sub-Collections: ARC; Clerk: RWW;

DCE 22-JUN-71 13:17 7323

Library Automation With Distributed Resource Sharing via Computer Networking

Notes generated by DCE at INFOSYS Panel Meeting in Washington, June 15-16, 1971, for consideration in Draft Three (7070,) of the Panel's final report

Library Automation With Distributed Resource Sharing via Computer Networking

CONCLUSION 1 1

The single most significant facet of emergent computer technology, for the library-system problem, is that of distributed resource sharing by means of a computer network. 1a

CONCLUSION 1A 1b

The only viable form of a general, economic, computer-supported library system that can currently be seen as feasible would have the computer-supported libraries connected to a computer network from which they buy their computer service in a manner analogous to their buying of electricity now. 1b1

RECOMMENDATION 1 2

The Federal Government guarantee that there will be established by 197X a national computer network linking all major libraries, and to which may be connected any computer or communication service which satisfies certain minimal conditions of intent, etc., for providing services to the libraries. 2a

Assume that the government underwrites the communication costs, guaranteeing N years of operation at a certain rate, to be adjusted toward a break-even rate in graduated steps thereafter. A franchised "transportation" utility would operate the network and would provide for transmitter-site identification verification to a receiver site, along with every transported information packet (which could contain one character, or many pages worth of information). Otherwise, the network-communication service would work in a manner similar to the mail service, where customers and vendors place orders, send products, send invoices, send payment checks, etc. It is like a bare marketplace in which it can give franchises to those who want to set up their stalls and offer their wares for sale, and gives high mobility and visibility to customers who want to negotiate, compare, and buy services there. Prices, marketing practices, etc., would probably benefit from only enough control to ensure stability -- which in the early days of the marketplace, before there was enough experience, enough market activity, etc., free-market practices might not get things rolling well (like temporary monopolies, subsidized prices, etc., may be required to stimulate venture on either or both the buyer or vendor side). 2b

Standards of hardware interfacing and

information-communication format would be valuable to enforce -- so competitive terminal devices could be developed for every function, and similarly for the service modules. 2c

General Notes on This Network Concept 2d

A library contracts for services whose characteristics are specified at the library's level of concern, with an organization in the library-support industry that is tied into the network supplies the service on demand. The library doesn't concern itself with the location, the equipment, the data structure, the program languages, etc., as long as the service is as agreed. 2d1

The delivery of these services to the library will be via on-site printers, display screens, or typewriters; the requests for service may also be done in a variety of ways, on a variety of terminals -- mark-sense cards, typewriter keyboard, etc. What terminal a library uses would depend upon its needs and the services it is buying. 2d2

Assume that a library wasn't interested in sharing a computer with others. It has been learned by existing computer utilities that it is cheaper to maintain a cluster of machines of a given type grouped physically (so as to share maintenance and operating staff) even after paying the communication costs of delivering remote service. Contracting for maintenance and operation within such a remote clustering would be cheaper, and specialized management would produce better operational service than if the library maintained its own, on-site facility. 2d3

If the library's requirements for service responsiveness required a large machine but its daily load didn't keep the machine busy, it might consider adopting the "utility" practice of contracting for the required fraction of service time from an appropriately sized machine system somewhere in the network. This could produce significant savings -- still with independence in the programs it used. 2d4

But in the mix of services that the library would probably draw upon during the day, there would be categories each of which find most economy from a different configuration among the computer's physical parameters -- such as processor speed, processor sophistication, core memory, disk storage, etc. What would be most economical is to have each category of service be provided by an appropriate (time) share of an appropriately configured computer system

-- which can be arranged for on a network with a healthy selection of service vendors. 2d5

The amount consumed of any particular service will have cycle variations that in a large enough service market can be contracted for in such a way that a library's (time) share of a given machine configuration has a scheduled fluctuation in the expected cycle pattern -- so it doesn't pay for its maximum service-rate capacity all the time. This, for the loading variations in most library requirements, would produce significant additional savings in computer-service costs. 2d6

Even if a library were to follow this route, i.e., to support its own staff of programmers to develop and maintain service programs within the library's "pseudo computer(s)", it would realize a significant gain by taking advantage of the network and its "marketplace" of computer resources. 2d7

Consider further the possibility that one or more of the library's service processes would need access to a complete mark catalog in computer-sensible form, or a union catalog. To maintain the storage and access systems for such a data bank would be fairly expensive, and the number of references to it made by one library may be relatively low. It is sure that most other libraries on the Network would have service processes which also from time to time required similar access to these files. One utility service that stored a specialized data bank and that provided access to it, on demand, for processes in other computers around the network (at a service fee), would make for much more economical availability of these data. Even if our sample library wanted to be independent otherwise, it probably would want to make use of such file-reference service for these standard data. For even more specialized reference information, such as census data, meteorological data, etc., libraries would surely draw from shared-resource data services. 2d8

It wouldn't be long, in a network having these facilities for flexibly sharing processing and storage facilities, before groups here and there would begin to specialize in certain kinds of the services which libraries utilize. One group of system programmers would evolve special interests in one type of service and would develop special tricks, concepts, capabilities, etc., such that they could provide

more flexible, reliable, economical, etc., services of this type. 2d9

With quite a few different systems in evidence around the network that delivered similar types of service, the better ones would soon stand out, and other libraries would realize that the cost of supporting the specialist system-programmer staff to maintain and improve such a special-service system would be much reduced if a number of libraries shared the same service facility as maintained by the same group of specialist programmers. It seems evident that in this type of "market" environment, the service-support industry that provides information, communication, and computer services to the libraries on the network, would evolve towards being able to sell to the libraries modules of service capability that are matched to those levels of functional and operational requirements where the actual interfaces existed between the library's internal operating system and the tools and services upon which it depends. 2d10

There would be a constant evolution in the quality of service that competitors would offer, constant improvements in the performance/cost factors as new computer technology was integrated into the facilities of the service vendors. These evolutionary struggles are actually not the proper concern of the libraries, and in this network-market environment the libraries could concentrate upon the innovative evolutions within their levels of the "library system" that would become feasible as the support-service market steadily increased the range and quality of services which could be harnessed into the library system. The evolution of the support-service market would track with the evolution of the library system, in the same type of natural evolution as is seen between supplier and user segments of any other industry with a healthy marketplace. 2d11

In this term, "healthy marketplace", is seen to lie the most critical aspect of the library problem. Today's situation, with regard to providing information-technology supportive services to a library, is badly skewed from what is required for the healthy situation wherein for the buyer (the library with a particular need for support service) there are to be found a wide variety of service-module "products" which it can consider contracting for, where installing the service facility does not commit it to long delays or large thresholds of staffing, financial, space, etc., resources, . . . etc. The computer-network

environment is good for the service vendor, too, since he can market his services in small, tailored modules to interested customers over a wide range of special needs, geographical locations, and expenditure brackets. 2d12

If a healthy information-technology support-service marketplace could indeed be fostered by establishing a library-support computer network, then many of the very tough problems that now are seen as part of "the library problem" would sift themselves into slots and levels of the system where there would be appropriate context and perspective to deal with them. A library manager would not have to worry about ccmputer-acquisition problems, or about how many of his staff shouuld learn programming -- any more than he does about printing presses and typography -- these things are part of the problem domain of another level of the industry. And the increments of innovative investment now required for progressive evolution in his system levels are of a scale, and are dependent upon the type of factors, which he cam manage within his budgeting and his analytic capabilities. 2d13

All of the potentially valuable developments in the information-technology domain, which now can be argued over endlessly as they are described by their proponents or demonstrated in shaky laboratory-like environments, would get their chances to emerge into valued acceptance, just as in any evolutionary system the mutant developments have their chance to pass the test of survival in an environment of competition within the whole-system context. Foundations interested in advancing some segment of the library industry, at some particular level, can have much enhanced perspective regarding potential value and relevance of proposed explorations. Researchers who want to invest their energies toward discoveries or developments that indeed will make a difference to the capability of the library system, will also have a much better perspective in an environment where evolution can be going on at many levels and segments simultaneously. 2d14

DCE 22-JUN-71 13:17 7323

Library Automation With Distributed Resource Sharing via Computer Networking

(J7323) 22-JUN-71 13:17; (Expedite) Title: Author(s): Douglas C. Engelbart/DCE; Distribution: Douglas C. Engelbart/DCE; Keywords: NAS; Sub-Collections: ARC; Clerk: DCE;

Thanks...

A non-technical message from the three from RADC. 1

We would like to thank all those at the ARC for their help and warm hosting of our stay. 1a

Thanks to free environment and willing trouble shooting, we learned a lot and gained real appreciation for the system. 1b

The little things made our stay very comfortable:the coffee the donutts and those fantastic lunches Again, many thanks.
Jim bair, Duane Stone, Tom Lawrence. 1c

JHB DLS TFL 22-JUN-71 14:58 7324

Thanks...

(J7324) 22-JUN-71 14:58; Title: Author(s): James H. Bair, Duane L. Stone, Thomas F. Lawrence/JHB DLS TFL; Distribution: Marilyn F. Auerbach, Dirk H. van Nouhuys, John T. Melvin, James C. Norton, Richard W. Watson, Mil Jernigan/MFA DVN JTM JCN RWW MEJ; Sub-Collections: NIC; Clerk: WSD;

MEJ 22-JUN-71 16:10 7328

Telephone Call from Professor Jim McKinney, Harvard Business School

MEJ 22-JUN-71 16:10 7328

Telephone Call from Professor Jim McKinney, Harvard Business School

To: D.C. Engelbart
From: Mil Jernigan
Subject: Telephone Call, Professor Jim McKinney 1

Professor Jim McKinney, Harvard Business School, phone (617) 495-6324, called you this afternoon to ask you to chair a session of a 2-day national conference, sponsored by EDUCOM, to be held at Ohio State University, Columbus, Ohio, October 15-16, 1971. 2

There will be 3 sessions as follows: 3

(1) Large Memories and Computer Networks 3a

(2) University Planning 3b

(3) Computer-aided instruction and how universities use computers 3c

He would very much like to have you chair the first session on Large Memories and Computer Networks. 4

I told him you would be on vacation for about a month, but if we contacted you in the meantime we would tell you about it and report back to him. 5

MEJ 22-JUN-71 16:10 7328

Telephone Call from Professor Jim McKinney, Harvard Business School

(J7328) 22-JUN-71 16:10; (Expedite) Title: Author(s): Mil Jernigan/MEJ; Distribution: Douglas C. Engelbart, David R. Brown/DCE DRB; Keywords: ; Sub-Collections: ARC; Clerk: MEJ;
Origin: <JERNIGAN>CHAIRMAN.NLS;1, 22-JUN-71 15:44 MEJ ;

CHANGES IN NLS ON OR FOLLOWING 15JUNE71 1

Entries are by the man who wrote the changes. Amplifications following"In other words" or "note" are by DvN. 1a

NEW VIEWSPECS 1b

In TNLS and DNLS: 1b1

Old u,v (markers) have been moved to M,N, 1b1a

Note:Don't get your hopes up too much. You cannot yet make markers visible. But when you can, it will be with "M". 1b1a1

u,v now turn display area formating on and off, respectively, 1b1b

In other words: The purpose of these viewspecs is to speed up work when the system is running slow by cutting out unnecessary recreations of your dispaly. Thes viewspecs are meaningless in TNLS. With "u" viewspec on, editing changes in structual entities will not cause recreation of the dispaly. The change will be reccored in the partial copy, but your screen will remain the same. If you forgetfully try to bug something in a statement that has been deleted, you will get an error message. If you address in a command a statment name or number, the command will act on what is really at that address (the changed version).You can see your changes by recreating dispaly or by swiiticing back to viewspec "v". 1b1b1

G,H cause statement numbes to be displayed on left or right, respectively. 1b1c

SUCESSOR of ITSELF and END 1c

Successor has been (slightly) redefined to be consistent with the definition of Predecessor. The successor (predecessor) of a statement which is the tail (head) of it's plex is defined to be the statement itself. 1c1

In other wrds: In TNLS if your cursor is in the last statement of a plex, and you move with the space command and give "s" as the address your (Syntax: SP s CA) cursor will end up at the first character of that statement. If you are in the first statement of a plex and give "p"as an

address,(Syntax: SP p CA) your cursor will end at beginning of that statement. 1c2

End means END OF BRANCH (to level of current viewspecs) 1c3

QUICKPRINT DELETES. 1d

Output Processor, Quickprint, Device delete old versions of the output file. 1d1

In other words: If you output via quickprint to a new version of an old file, quickprint deletes the previous version 1d1a

MODIFICATIONS of TNLS ADRESSING 1e

command no longer moves the CM 1e1

↑ (that is the up arrow that sets a link in motion) is preceded by the NUM rather than followed and types out the file name. 1e2

Use . instead of : for names and numbers. 1e3

;X; and 'X may be followed by F. specification, meaning search from beginning of statement 1e4

You may put / or in the addr. The printing will be done when the addr is interpreted. 1e5

In other words: The slash commands will print out the text around your cursor at that step in the address. E.g. in the adress:.2a +5w -3 ↑.8b7 the slash will print out something from your file, statement 2a, whereas in the adress:2a +5w -3 ↑ .8b7 it will print out something from statement 8b7 in the file which is cited by the link. 1e5a

Operation of Statement Names:: 1e6

Use .name rather than :name. 1e6a

In the future : will have other meaning. 1e6a1

↑ searches for link to the right of any name in the statement 1e6b

i.e. if the CM is within the name then it is moved

to the first character after the right name delimiter before the ↑ is executed 1e6b1

In other words: statments names will not confuse the use of links embeded in statements. 1e6b1a

ALT repeat works for ;X; and 'X as well as [X] and <X>. 1e7

SECONDARY JOURNAL DISTRIBUTION 1f

A new command has been added which allows distribution of documents which have already been entered into the Journal. 1f1

Syntax: 1f2

E[xecute] Z[Secondary Distribution]
[Document #] (NUMBER CA/ CA)
[TO:] IDENTLIST CA 1f2a

Semantics: 1f3

The Document indicated by NUMBER is distributed to te persons on the identlist as a non-expedited document. 1f3a

Possible errors are: 1f3b

Illegal Number 1f3b1

No such Document 1f3b2

It is possible to get a NO Such Document error if a document has been entered into the Journal relatively recently. 1f3c

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. 1f3c1

After the distribution has been done, the system will ask for another document number. 1f3d

If you wish to distribute another document, respond with the syntax used for the first document. 1f3d1

Otherwise, a CA or CD will return you to the TNLS level. 1f3d2

The distribution of the documents will be done along with the distribution of normal Journal documents. 1f3e

NEW ECHOS in TNLS 1g

& and @ type out file name. 1g1

Update file types file name when done. 1g2

"Execute Viewchange / characters" command 1g3

may be used to change the number of characters to either side of the CM typed by the / command 1g3a

In other words: If you want to change the number of characters that types on each side of the cursor, the syntax is:

e v NUM CA 1g3a1

"Execute Status Viewspec display" command may be used to have the current viewspec settings typed 1g4

syntax:

e s v CA 1g4a

1g4b

KNOW HOW BIG YOUR DIRECTORY IS 1h

The executive command disk (syntax DSK CR) will tell you the number of pages of disk space you are using at any given moment. Not a change, but useful information these days. 1i

DVN 22-JUN-71 16:05 7329

Mid-June Changes in NLS

(J7329) 22-JUN-71 16:05; (Expedite) Title: Author(s): Dirk H. van Nouhuys/DVN; Distribution: Marilyn F. Auerbach, Walter L. Bass, Roger D. Bates, Mimi S. Church, William S. Duvall, Beauregard A. Hardeman, Martin E. Hardy, Fred P. Hocker, J. D. Hopper, Charles H. Irby, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Bruce L. Parsley, William H. Paxton, Barbara E. Row, Ed K. Van De Riet, Dirk H. van Nouhuys, Kenneth E. Victor, Richard W. Watson, Don I. Andrews, Dirk H. van Nouhuys/MFA WLB RDB MSC WSD BAH MEH FPH JDH CHI MEJ HGL JTM JBN JCN BLP WHP BER EKV DVN KEV RWW DIA DVN; Keywords: NLS Viewspecs changes addresses echo; Sub-Collections: ARC; Clerk: DVN; Origin: <VANNOUHUYS>JOURDRAFT.NLS;9, 22-JUN-71 15:54 DVN ;

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. 1

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

Apologia

(J7335) 23-JUN-71 7:51; 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;

System is loaded and does not work (blows up on initialisation in FLDIRE+122). Undefined symbols are: flck2s, flcfn1, flcfn2, flck1s, lnkdef, setdev. 1

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

Apologia

I found it and 'twas my error...I eat my words 1

Know your disk space

DVN 23-JUN-71 10:37 7337

Know your disk space

After reading my note on the executive command DSK (journal,7329), Bruced pointed out another command, syntax DDS CR. DDS will print out for you the total pages of your files on the disk including files you have deleted but not expunged. That is, DDS prints out the total number of pages of which you are depriving other users, an important bit of information with the disk waxing toward overflow. 1

DVN 23-JUN-71 10:37 7337

Know your disk space

(J7337) 23-JUN-71 10:37; Title: Author(s): Dirk H. van Nouhuys/DVN; Distribution: Marilyn F. Auerbach, Walter L. Bass, Roger D. Bates, Mimi S. Church, William S. Duvall, Beauregard A. Hardeman, Martin E. Hardy, Fred P. Hocker, Mil Jernigan, Harvey G. Lehtman, John T. Melvin, Jeanne B. North, James C. Norton, Cindy Page, Barbara E. Row, Ed K. Van De Riet, Richard W. Watson, Don I. Andrews, Dirk H. van Nouhuys/MFA WLB RDB MSC WSD BAH MEH FPH MEJ HGL JTM JBN JCN CXP BER EKV RWW DIA DVN; Keywords: disk DDS space; Sub-Collections: ARC; Clerk: DVN; Origin: <VANNOUHUYS>JOURDRAFT.NLS;9, 23-JUN-71 10:24 DVN ;

RWW 23-JUN-71 10:34 7338

A Procedure for an Incremental Catalog Building Process

This discussion describes a recommended procedure for building the NIC catalog and updating the Master Catalog. The procedure is to be run on a monthly basis. 1

New citations enter the system in two ways: 2

Offline entry of documents cause citations to be entered by a typist. 2a

Online entry of documents and messages to the Journal cause creation of citations in the Journal Catalog automatically. 2b

The procedure to be described builds an up-to-date catalog by working primarily with the new citations created since the last catalog and then merging listings and indexes based on these new citations with those used in the last catalog. 3

First, we outline the procedure to be followed and then indicate the new tools or changes to present tools which must be made for this procedure to work. 4

CATALOG PRODUCTION 5

Citations entered by a typist are to be entered in a file, say TYPNEWCIT. 5a

These citations are to be proofed. 5a1

An L10 program must be run over the Journal Catalog which extracts and reformats according to Master Catalog format all new citations created since the last catalog was produced and places them in a file, say JOUNEWCIT. 5b

These citations are to be proofed and additional data entered, if necessary. 5b1

The files TYPNEWCIT and JOUNEWCIT must be merged by the Collector-Sorter into a file, say NEWCIT. 5c

The file NEWCIT is to be merged into the Master Catalog. All new citations with a catalog number equal to a number of a citation in the Master Catalog are to replace the old citation and all new items are to be entered. To make this merging process efficient implies that the Master Catalog and NEWCIT were sorted by catalog number. One would like to produce a file with the old and new citations if a replacement takes place. 5d

The program GETNIC is applied to the file NEWCIT to obtain the new NIC citations. 5e

One then applies the procedures described in (Journal, 7263,) with the following changes to produce a set of indexes and listings. The difference is that the sort keys are left on the items. 5f

These listings and indexes with sort keys are proofed and corrected as now. 5g

The new incremental listings and indexes are merged with those from the last catalog. If a new item is an update of an old, the new replaces the old. 5h

The merged files have the sort keys left on. 5i

The new catalog with sort keys is printed and proofed. 5i1

The indexes and listings have the sort keys removed and are printed and proofed. 5j

The two complete sets of listings and indexes with and without sort keys replace those from the last catalog. 5k

TOOLS 6

The new tools needed are: 6a

(1) Program to get from the Journal Catalog all citations entered since a given date. 6a1

(2) A program to reformat Journal Catalog entries into the format of the Master Catalog. 6a2

(3) A program which will merge two files and throw out the older of two items with identical sets of sort keys. A file of the new-old pairs of items should be created for proofing purposes. 6a3

(4) All present key producing programs should be checked to see that a catalog number secondary key is produced for use with this above merging program. 6a4

(5) The formatting programs for producing indices and listings need to be modified to work with sort keys on. The format probably should have the sort key on a separate line as some indices now can run a full print line without sort keys. 6a5

RWW 23-JUN-71 10:34 7338

A Procedure for an Incremental Catalog Building Process

(J7338) 23-JUN-71 10:34; (Expedite) Title: Author(s): Richard W. Watson/RWW; Distribution: Jeanne B. North, William S. Duvall, James C. Norton/JBN WSD JCN; Sub-Collections: ARC; Clerk: RWW;

RWW 23-JUN-71 10:47 7339

A Summary of Catalog and Collection Requirements

Catalog Production 1

Significantly speedu the Output Processor (its a bottleneck for proofing, a heavy drain on the system, and used heavily by everyone in ARC) 1a

A merge program to allow catalogs to be built incrementaly and to allow easy updating of the Master Catalog. 1b

An automatic mechanism to produce major sections of the catalog. 1c

A trivial word filter. 1d

Change key making and formatting programs to work with incremental building process. 1e

A faster Collector-sorter is required. 1f

Fix the bug which has the Collector-sorter end with a bad file if no sorting is going on. 1g

We need to get the transmittal letter citations out of the regular listings and indices. 1h

We need lists of items by site. 1i

We need to indicate number of pages in the indices and listings(do we even have this information in our master entries?) 1j

A program to get from the Journal catalog all new items since a given date. 1k

A program to reformate Journal entries to that used by the Master catalog.(RFC s have special format). 1l

Catalog Input 2

We need to study the input process and determine what input and editing facilities are required for ourselves and for net people building their own subcollections. 2a

We need to get caught up on the item coding, entry, and proofing. 2b

Other Collection Management 3

We need a plan for how we are going to handle other net user

subgroups such as the weather people or Illiac users. Are there going to be subcenters for these groups who use our ugh tools, or are we going to try and do everything ourselves etc. IN anycase our tools are not up to such public scrutiny. 3a

Station AGents need more steady contact and help. 3b

The XDOC collection is in a mess; we can not find anything and have no idea who has taken an item. 3c

We need to know what new items have come in. 3d

We still havenot moved all relevant items from XDOC into the NIC collection. 3e

There are undoutedly other things that need doing that I'm not yet aware of. 3f

Querying 4

We need a plan and some simple NLS experimentaion with our catalog and other online docs to determine a staged process for providing online query. 4a

RWW 23-JUN-71 10:47 7339

A Summary of Catalog and Collection Requirements

(J7339) 23-JUN-71 10:47; (Expedite) Title: Author(s): Richard W. Watson/RWW; Distribution: Jeanne B. North, Bruce L. Parsley, William S. Duvall, James C. Norton, Douglas C. Engelbart, Charles H. Irby/JBN BLP WSD JCN DCE CHI; Sub-Collections: ARC; Clerk: RWW;