PSO Meeting

I used to have a job where I had to sit through regular staff meetings every two or three weeks where I was regaled with information which was of little interest to me such as the effect of winning certain contracts on the price of the company stock, or plans exhibits in other departments. 1

I found these meetings dull. 1a

Everyone in that organization of about 60 people also wrote at the end of the week a brief statement (usually 25 to 50 words) about what he or she had done that week. These statements were pyramided and summarized up to some vice president. 2

When I see the amount of duplication and uncertainty, uncertainty both about what to do and where to stand, that results from a low rate of information exchange, I begin to think that not having such meetings is worse than have them. 3

Therefore, I propose that PSO hold a brief meeting once every two weeks towards the end of the week for exchange of information. 4

I would promise to chair it briskly. 4a

I also propose that everyone write a 25 to 50 word description of what they do each week to be journalized at the end of the week. 5

On Thursday we will meeting to discuss my proposal at 4 o'clock in the conference room. 6

For the purpose of this proposal I define PSO as DvN KIRK MEJ BER CXP SRL LLL KFB and Carol (no ident) Hoffman. 7

I am also notifying certain other people who have been interested in PSO and who may want to attend: JAKE JBN BAH MFA JCN RWW JCP. 8

DVN 31-OCT-72 11:14 12426

PSO Meeting

(J12426) 31-OCT-72 11:14; Title: Author(s): Van Nouhuys, Dirk H./DVN; Distribution: Feinler, Elizabeth J. (Jake), North, Jeanne B., Hardeman, Beauregard A., Auerbach, Marilyn F., Peters, Jeffrey C., Norton, James C., Watson, Richard W., Kelley, Kirk E., Jernigan, Mil E., Row, Barbara E., Page, Cindy, Lee, Susan R., Lane, Linda L., Byrd, Kay F./JAKE JBN BAH MFA JCP JCN RWW KIRK MEJ BER CXP SRL LLL KFB; Sub-Collections: SRI-ARC; Clerk: BER; Origin: <VANNOUHUYS>PSOMTG.NLS;2, 31-OCT-72 11:07 BER ;

DCE 31-OCT-72 11:26 12427

Notes About a Community of Knowledge Workshop Architects

Extracted from my file BCNOT, as part of infomation exchange with Stefferud and Sternberg on their visit of 31 Oct 72

DCE 31-OCT-72 11:26 12427

Notes About a Community of Knowledge Workshop Architects

The following discussion pertains to any organization that is ready to take reasonable action in preparing for the revolution in its "knowledge workshops" -- a revolution in the way in which they do their knowledge work. 1

(NOTE: This is a DRAFT, a thinkpiece, that is in early form, and may well need editing.) 1a

We (Augmentation Research Center) have very effective base from which to build upon: 2

For developing augmented workshops 2a

For developing collaborative communities, either discipline oriented or mission oriented. 2b

For providing unique experience in using an augmentated workshop. 2c

We see that there are many high-value developments to work upon: 3

Adding new tools and techniques into the coordinated workshop 3a

Adding new principles and practices to the discipline of workshop development 3b

Bringing real awareness to many people in many disciplines and organizations of the potential for COORDINATED augmented workshops 3c

We feel that a rapidly growing number of people, within important organizations, can soon be brought to realize the need and timeliness for establishing for their organization a "workshop-architect staff." 4

It is inevitable that the knowledge work of their organization will someday be done within coordinated, augmented workshops of very high technology (making ours in retrospect look terribly limited and primitive). 4a

Achieving the new workshops will be by continuous evolution, over many decades to come, rather than by simple, large steps. 4b

It will be mandatory to their survival to keep up with the evolution -- competition, pressure to use most effective means, etc. 4c

They will need their own "workshop-architect" staff to guide

their evolution; scale, complexity and rate of evolutionary change will require this not to be guided by ad hoc means, but rather by knowledgeable and motivated people dedicated soley to this guidance assignement. 4d

It will take several years for their workshop-architect staff to be set up and become effectively able to begin coping with the evolutionary needs and possibilities already apparent. 4e

For a large or critical organization, where knowledge work is clearly perceived as vital, it is time now to begin developing a competent workshop-architect staff -- opportunities for significant change are clearly forthcoming within a few years. 4f

When key individuals within an organization realize and want to act upon the above, we suggest that specially designed services (WACS) would be attractive and very valuable for their workshop-architect staff to subscribe to, as members of a discipline-oriented community of similar workshop-architect staff groups. 5

Call it WACS, for Workshop-Architect Community Support. 5a

WACS would exist expressly to support a community composed of the workshop-architect staffs of any interested organization. 5b

It iwould be a "mutual" corporation, managed professionally as a not-for-profit organization, with its clients sharing in all of the gains. 5b1

As a most-basic level of its support, WACS would offer services similar to what a discipline-oriented professional society does; i.e. a mutual organizational framework in which to 5c

develop the discipline's content, standards and methodology, as well as to 5c1

increase the professional capability, in that discipline, of its participating individuals and organizations. 5c2

Beyond that, as a dominant part of its business, WACS would make available to each participant group the opportunity to: 5d

buy an augmented-workshop service, through WACS as the arranger-broker, brought right into its working site, that is expressly designed to support the study, analysis, community dialogue, external-activity intelligence

surveillance, etc that are necessary to the staff's gaining and keeping abreast of effectve knowledge/capability in its discipline. 5d1

or further, to make their own exploratory use of the special workshop facilities that augment system developers; 5d2

Transferring the WACS computer system to their own machines would be facilitated by a smooth, bootstrapping approach for which the foregoing augmentation facilities would provide tailored support. 5e

Very important here is that this would provide them with a tested, advanced workshop-builder's workshop, in which their organization's other-use workshops would be evolved; this would much facilitate the associated activities of analyzing knowledge-work operations, designing and implementing new operations and their support tools, developing and controlling the documenation for both the developers and the users of their improved workshop, testing and training the workshop users, etc. 5e1

There would thus be considerable payoff in their increased capability for developing their own systems. 5e1a

And another significant value from this transferred WACS workshop is that it would represent a very good starting point from which they can evolve toward any special form and set of features they wish to include in their own workshop(s). very readily 5e2

DCE 31-OCT-72 11:26 12427

Notes About a Community of Knowledge Workshop Architects

(J12427) 31-OCT-72 11:26; Title: Author(s): Engelbart, Douglas C./DCE ; Distribution: Paxton, William H., Watson, Richard W., Norton, James C./emc ; Sub-Collections: SRI-ARC EMC; Clerk: DCE ;

DVN 31-OCT-72 16:31 12428

DPCS: Towards Learning to Use COM, Font Samples and A First Try at Halftones

I gave you false information on the file source of the hard copy we looked at that contained various versions of some early pages of the report: It is still on line as (documentation,spqrcom,) 1

I have made a file (documentation,spqrcomgraph,), in which the layout is set up for the first six illustrations, and the typeface directives are set up as we discussed yesterday. It will go to DDSI tomorrow. I am having SRI illustration-photography make half-tone, screened images of the pages that bare illustrations reduced to 3 x 5 inches as per the conversation among Walter, me, and Paul Johnson yesterday. 2

They have promised the negs for Fri. 3

The files you prepared yesterday will go to DDSI tomorrow; one set of copy flows will go o you directly. 50 opies of the appendix showing type faces will be printed offset. 4

DVN 31-OCT-72 16:31 12428

DPCS:Towards Learning to Use COM, Font Samples and A First Try at Halftones

(J12428) 31-OCT-72 16:31; Title: Author(s): Van Nouhuys, Dirk H./DVN; Distribution: Meyer, N. Dean, Bass, Walt/ndm wlb (for your information) ; Sub-Collections: DPCS ; Clerk: DVN;

JBP 31-OCT-72 9:39 12429

complaint

i protest. how is a lowly network user supposed to be able to produce a document when random people link to him? And the REFUSE links command is not permitted for network users ???????? 1

JBP 31-OCT-72 9:39 12429

complaint

(J12429) 31-OCT-72 9:39; Title: Author(s): Postel, Jonathan B./JBP; Distribution: Watson, Richard W., North, Jeanne B., White, James E. (Jim), Irby, Charles H./RWW JBN JEW CHI; Sub-Collections: NIC; Clerk: JBP;

JRP 31-OCT-72 10:03 12430

seminar

bill, would the mnday followng thanksgiving be an acceptable time for a seminar? have you tried the file transfer yet?...john 1

JRP 31-OCT-72 10:03 12430

seminar

(J12430) 31-OCT-72 10:03; Title: Author(s): Pickens, John R./JRP;
Distribution: Jones, William P./WPJ; Sub-Collections: NIC; Clerk: JRP;

test

this is a test

SJL 31-OCT-72 18:54 12431

test

(J12431) 31-OCT-72 18:54; Title: Author(s): Laube, Sheldon J./SJL;
Distribution: Laube, Sheldon J./SJL(hi shel); Sub-Collections: NIC;
Clerk: SJL;

testdocc

this is a test

SJL 31-OCT-72 19:02 12432

testdocc

(J12432) 31-OCT-72 19:02; Title: Author(s): Laube, Sheldon J./SJL; Distribution: Laube, Sheldon J., Ricart, D. G., Page, William J./SJL DGR WJP; Sub-Collections: NIC; Clerk: SJL;

hi

this is a test

SJL 31-OCT-72 19:06 12433

hi

(J12433) 31-OCT-72 19:06; Title: Author(s): Laube, Sheldon J./SJL; Distribution: Laube, Sheldon J., Ricart, D. G./SJL DGR; Sub-Collections: NIC; Clerk: SJL;

AAM 1-NOV-72 6:40 12435

bugs in Print Journal command

Dear Smokey and/or Dick,
I have just tried using the "Print Journal" command on my initial file and it seems to have mildly blown its mind. I will send the output to you by USMail, but perhaps you would like to experiment prior to receiving it. Basically, the command seemed to go along fine, as (verbally) advertised for a while, then after typing out a 12-section message to me from Metcalfe which contained no links, it said "Text of cited document follows" and printed my entire initial file. After this, it "went back" to my initial file and continued processing correctly to the end of the "journal" branch. In case you want to try this yourselves, I willl refrain from modifing my initial file in any way until I get some word from one of you (please don't take too long).
love, Alex

1

AAM 1-NOV-72 6:40 12435

bugs in Print Journal command

(J12435) 1-NOV-72 6:40; Title: Author(s): McKenzie, Alex A./AAM;
Distribution: Wallace, Donald C. (Smokey), Watson, Richard W./DCW RWW;
Sub-Collections: NIC; Clerk: AAM;

MEJ DVN 1-NOV-72 13:27 12436
Masters of Headmatter for RADC-TR-72-232 Received From RADC

Permission is requested to make the following changes: 1

(a) Identification of contractor on cover and titlepage to be as follows: 1a

Augmentation Research Center
STANFORD RESEARCH INSTITUTE
Menlo Park, CA 94025 1a1

(b) Document be issued with SRI-ARC as the corporate author and Douglas C. Engelbart be removed as the personal author since, in fact, Dr. Engelbart authored only one small part, as stated in the report. Personal authors are shown for each section of the report which they wrote. 1b

(c) Change the word "On-Line" in the title to read "Online", since the word is consistently used inside the report as one word, not hyphenated. 1c

(d) Correction be made to Form DD1473 as noted above. 1d

MEJ DVN 1-NOV-72 13:27 12436
Masters of Headmatter for RADC-TR-72-232 Received From RADC

(J12436) 1-NOV-72 13:27; Title: Author(s): Jernigan, Mil E., Van Nouhuys, Dirk H./MEJ DVN; Distribution: Stone, Duane L., Meyer, N. Dean/DLS NDM; Sub-Collections: RADC DPCS; Clerk: MEJ;
Origin: <JERNIGAN>JNLMESS.NLS;1, 1-NOV-72 13:17 MEJ ;

DCE 1-DEC-72 13:53 12438

Visit Log: 8 Nov 72, Tom O'Sullivan, Raytheon

DCE 1-DEC-72 13:53 12438

Visit Log: 8 Nov 72, Tom O'Sullivan, Raytheon

Tom O'Sullivan, Raytheon Co., 528 Boston Post Road, Sudbury, Mass. 01776 -- (617) 443-9521, ext 2945 1

We have had several prior discussions, and two relevant references, by him, are in the NIC collection: (9343,) and (9875,). 1a

Gave him a copy of (12380,), the memo on "Centrally Coordinated Information Services for a Discipline- or Mission-Oriented Community." 2

Tom just visited Victor Bunderson, at Brigham Young University, Provo, Utah. Victor just joined BYU, and is setting out to develop course material using MITRE's TICCET; he has a fairly rigorous set of production procedures for developing a course. Involves setting up a team, with a mix of educational psychologists and subject-matter experts. 3

"Courseware" development process seems to affect the subject-specialists' attitudes and understanding as to how best to present their material. 3a

Bunderson's view is that the subject-specialists would need to come to Provo in order to participate in this courseware development. 3b

Tom suggested to him that it might be useful to apply advanced communication techniques through the Network using "distributed conferencing techniques" (perhaps developed specifically for this purrpose), so that course-material experts anywhere in the country could gain the collaboration benefits from interacting in courseware development with the BYU specialists. 3b1

Tom thinks that an experiment of this type could develop an extremely useful instrument -- and could be a good test vehicle for experimenting with distributed conferencing. He thinks that it would take supportive specialists in networking, in conferencing technique, and in small-group interaction, to facilitate this experiment. 3b2

Bunderson responded with an "I'd be delighted.." to participate in some such experiment. 3b3

Tom feels that one of the assumption is that the subject-matter specialists would need be willing to accept Bunderson's "quite specific approach to the courseware development." 3c

Visit Log: 8 Nov 72, Tom O'Sullivan, Raytheon

Tom has question: "Do we know enough about distributed conferencing yet to provide sufficient base to carry off such an experiment; or is our undestanding so sketchy that we really don't know how to build the experiment?" 4

My answer: I think that we know enough to launch such an experiment -- providing the general "community information service" picture (see -- 12380,) is being bought within that community anyway (at least for exploration). The investment in learning how to run NLS, for instance, is fairly substantial, and would want to have other payoff for them, e.g.: for documentation, for help as a workshop in developing their courseware, for intelligence data, etc. 4a

Tom says that his "social-science" focus has concentrated mainly on the instructional community for the past year; before then, he had been studying network potential for more general social sciences. 5

I ask him what his interest might be in spearheading such an experiment as the above. Answer: As a topic, for him, he would find it very intersting. But, he has his doubts about Raytheon's interest -- a previous activity in Raytheon that was interested in such matters has gone out of existence. His current activity in this area is sanctioned more or less because of the commitments Raytheon undertook when this other activity existed. 5a

I point out our hope that, within each discipline-oriented community that would want to start exprimenting with the use and development of these Central Information Services, there would emerge a nucleus group which would be the applications developer for that community. This nucleus of people could be stationed anywhere on the Network, and in fact could be a distributed group. The main point being that we want to interact directly with the planners, developers, and operators of a community's central services, rather than dealing directly with the community users. We would supply know how, training, guidance, direct help in acquiring reliable computer services, etc. Even though techniques, tools, and computer services are "bought" from the outside (e.g., from us), the building and running of the people-supporting community service activity should be done within the community. 6

Tom points out that in the educational services there is a whole complex of production requirements; at BYU Bunderson is right in the midle of an activity concerned with such. This includes many media (slides, tapes, video, computer programs, etc), and is a

well-developed operation there at BYU. There are thus possibilities of these information services growing to give support to many of the producton problems. 7

I reviewed our general plan, where: 8

beside stimulating the emergence of the abovementioned nuclei of community-service developers (which we then would like to support both with a "Computer-Service Utility" and with personal help), 8a

we would also plan to organize them as members of a special "intentional" community with whom we will deal directly in giving the highest-quality community information services we can. 8b

Here we would run a "Community Information Center for Community Information Centers," We expect that such a (bootstrapping) community of community information centers could pool resources, knowledge, etc. and otherwise collaborate to significant advantage. 8b1

Each center within this community of centers would be serving a particular community, which community assumedly would be involved in a different discipline or mission; the basic knowledge-support needs and problems of the different communities would be similar, and we expect that the special interests and capabilities which each community would invoke in its contribution to the purposeful evolution of Workshop systems would be very valuable to us -- where the evolution and application of such systems is our primary professional interest. 8b2

Note: we also would be working to set up and support another intentional community of "Workshop Architects" within mission-oriented organizaions; and the two special communities would have much in common. 8c

DCE 4-DEC-72 17:44 12439

Phone Log: 16 Nov 72, from Tom O'Sullivan re (12380,) and potential for a CBI community

DCE 4-DEC-72 17:44 12439

Phone Log: 16 Nov 72, from Tom O'Sullivan re (12380,) and potential for a CBI community

Tom had paid us a brief visit on 8 Nov (see -- 12438,), during which I gave him copies of both (12380,) and (12427,), and we talked quite specifically about the CBI community possibilities. 1

He opened today's discussion by saying, "The more I look into it, the better it seems, to give NLS-like support to a CAI community." He wants to become specifically active toward promoting such, and in this regard he wanted to come to the next TNLS class. (Note: This has been arranged, via RWW and MEJ, for the week of 11 Dec). 2

He said that he has talked with Austin Kibler since his visit with us, and that he is still providing "scouting" support to Kibler regarding computer-network support for a particular community that Kibler is interested in. He also said that he had talked with Licklider on the general topic of "distributed conferencing," and felt that Lick was interested. 3

Tom asked me about broadening the kinds of communication, e.g. audio, dynamic video, pictures, etc. I reminded him that our DNLS linked-screen capability, together with a telephone link, gave quite effective audio-visual communication; and commented on the general value of having video-transmission capability, which will certainly be a downstream capability in later, high-bandwidth computer networks. 3a

We talked briefly about the need, for doing serious exploration of "knowledge-workshop augmentation" within a community, of having not only a really solid "utility" service but also of making sure that the various component tools were integrated into one workshop. He has had previous experience where a group of engineers was given various special computational tools, and saw that unless there was such integration, there was no serious exploration past an initial playing around with individual tools, 4

He also volunteered the remark that "People I visited after your place saw a strong need for central production facilities to support quality publication of ther materials." I reminded him of (12380,2c), where we place specific emphasis upon economical and effective support for developing, producing, and controlling documentation. 5

Note: I feel sure that the centrally coordinated information services of (12380,) would be very useful to a CBI community; and also that CBI people could get great value from NLS-based knowledge-workshop techniques in doing their substantive work. And it also seems to me that helping with such a community, and

Phone Log: 16 Nov 72, from Tom O'Sullivan re (12380,) and potential for a CBI community

with such a workshop, would have a very high "bootstrapping" index for us. (Any community whose definitive discipline coincides with a major service item in either a basic augmented-workshop system, or a basic community-oriented information system, will have a high bootstrapping index.) 6

DCE 4-DEC-72 18:03 12440

Contact Log: 19 Oct 72, Austin Kibler, at ARPA's Human Resources Office

DCE 4-DEC-72 18:03 12440

Contact Log: 19 Oct 72, Austin Kibler, at ARPA's Human Resources Office

Lt. Col. (Army) Austin W. Kibler is director of ARPA's Human Resource Office. He is located in an office suite adjoining that of Larry Roberts and the IPT staff. He already had some acquaintance at least with our name and general activity, and made me feel welcome. 1

This was a get-acquainted visit. I knew of his potential interest in a special, Computer-Based Instruction (CBI) discipline-oriented network community from earlier discussions with Tom O'Sullivan of Raytheon Co. Tom had studied this CBI-Community possibility under a contract with Kibler; see his papers (9343,) and (9875,). 2

I described such items as our basic Knowledge-Workshop approach, the possiblities for a computer network supporting a Community Workshop, etc., in specific reference to the possibilities for the CBI Community which he has considered connecting to the ARPANET. I left with him a copy of (12380,), in its pre-Journalized form, and discussed the items in Branch 2 in a relatively thorough but summary manner. 3

Apparently there are at least fourteen sites whose connection to the ARPANET he might consider: six of these are sort of software/courseware R&D groups, strongly "academic" in flavor; six of them are DOD centers doing both development and operational training work; and three or more are doing hardware development. 4

He mentioned that he is paying for the installation of PLATO terminals in a number of these sites -- which is independent of considering linking the sites by a general-purpose computer network. (PLATO uses a very special digital distribution system, which apparently is such that PLATO terminals can not be serviced over the ARPANET.) 4a

I mentioned that one of my hopes was that we (SRI, as independent agents) could make it attractive for different services and agencies each to join a common (intentional) community, and thus achieve a measure of implicit cooperation among them, in cases where cooperation might otherwise be politcally difficult to establish. 5

He plans a trip to the West Coast in November, and said that he would try to visit ARC. 6

DCE 4-DEC-72 18:27 12441

Visit Log: 1 Dec 72, Austin Kibler, ARPA's Human Resources Office

DCE 4-DEC-72 18:27 12441

Visit Log: 1 Dec 72, Austin Kibler, ARPA's Human Resources Office

BACKGROUND 1

Lt. Col. (Army) Austin W. Kibler is director of ARPA's Human Resource Office. I visited him at his office on 19 Oct 72 (see my contact report -- 12440,). 1a

Tom O'Sullivan, with Raytheon Co., has studied this CBI-Community possibility under a contract with Kibler (see his papers (9343,) and (9875,)), and Tom and I have had several recent discussions about the possibility (see my contact reports for 8 Oct 72 (12438,) and for 16 Oct 72 (12439,)). 1b

SUBJECTS TREATED 2

He was with us in ARC for about 1:15 hrs. I showed him the computer and general lab layout. RWW joined us in my office for about 45 minutes of DNLS demo, and basic review of topics such as Knowledge Workshop, Community services, dialogue, etc. He commented on "terrible displays," but seemed to recognize that we had chosen to invest in other things. We wanted to demonstrate shared-screen remote dialogue, but something turned out to be missing in the latest monitor which disabled that capability. 2a

Showed him the IMLAC, as example of what now can provide DNLS service from anywhere on the Network (and predicted that within a few years many other, cheaper terminals would also provide that capability); he was also interested in the Plasma Display terminal, since he has invested quite a bit in development and installation of the Plato terminals. 2b

JCN showed him the GE Video Projector in use, with both camera video (noisy signal, because of low light level) and computer video as sources that could be mixed, split, etc. This seemed to impress Kibler; he was quite interested in the $30K cost figure, and the chance of getting this sort of capability at lower cost. Earle Jones was there for that part of the visit, and assured Kibler that a) the plasma display couldn't generate enough light to project an image as bright as that, and that b) unless there grew to be a substantial market, it wasn't likely that ths particular type of projector would get significantly cheaper. 2c

(Note: We overlooked at the time what Kibler might really have been asking, about the possibilities for the plasma display. One of the future-development possibilities

discussed by the plasma-display developers has been a large plasma display, for instance the size of the screen upon which we were projecting. It just might be possible that relatively cheap plasma-display systems could thus reproduce the effect we were demontrating. 2c1

Throughout our discussion I took every opportunity to bring out the following basic themes: 2d

The pursuit of Augmented Knowledge Workshops would seem of basic, explicit concern to his office, since man's knowledge and knowledge-work capabilities are extremely important human resources. 2d1

A CBI network community would stand to gain from Community-Workshop exploraton in several important ways -- 2d2

the community's collaborative work would generally be facilitated (as per -- 12380,), 2d2a

specialzed application could be made of augmented Knowledge Workshop techniques to various special tasks important to their discipline, and 2d2b

People need to experience the use of "Stage n" of a knowledge workshop evolution before they are really ready to evaluate or design "Stage n+1." A large part of our current effort is aimed at making it possible for people to get the best experience they can with what we immodestly claim to be the current world's best general augmented workshop. 2d3

There are so many levels and facets in a complete workshop that to handle the size and empirical complexity of consciously evolving a complete workshop system, it is almost necessary to enlist a large "bootstrapping community," embracing many disciplines and many active people participating as developers, users, evaluators, explorers, critics, etc. 2d4

MISCELLANEOUS ITEMS 3

Tom O'Sullivan may move to Washington to work in Kibler's office. 3a

Kibler commented on the difficulty he's observed for people to obtain copies of NIC's reference documents when they were

interested in learning about what the ARPANET could do for them -- which to him seems antithetical to the spirit of expanding the knowledge and participation in the network. Dick guessed that one such notebook prbably cost about $25 to produce, and we find ourselves to have a certain reluctance to hand them out freely. This is a matter that we (particularly NIC) should somehow come to terms with. 3b

CONCLUSIONS 4

He said that when/if his staff can expand to handle it, he wants to pursue possibilities further with us. We should keep in close touch. 4a

POST-VISIT NOTE: 5

I realized that I had implicitly put forth the following hypothesis, which (after he left) I felt it to be worth formulating explicitly. 5a

The complete, computer-aided Knowledge Workshop will be the eventual environment of computer-aided training. Consider that: 5b

almost every professional knowledge worker will begin early in his career to depend continuously upon such Workshop support; 5b1

the knowledge-manipulation activities for learning and for working can't really be so very different; 5b2

much learning wlll be aimed at improving the knowledge worker's proficiency in his working processes; 5b3

Workshop cost is bound to come down so that his use will begin early in his school life; 5b4

training will be a continuing process; 5b5

and it doesn't make sense to think of the proessional knowledge worker switching environments (consoles, manipulative processes, etc.) when he goes back and forth between learning and working. 5b6

Visit log: 31 Oct 72, Einar Stefferud, private consultant, and Nathan Sternberg, HQ Army Materiel Command.

Mr. Einar Stefferud
EINAR STEFFERUD AND ASSOCIATES
3002 Midvale Ave.
Los Angeles, California 90034
Telephone (213) 475-0717 1

Einar is a "Computer Management Consultant," currently working with the Army Materiel Command. He and Sternberg represent an interest within AMC Headquarters (Computer Network Management) --- Especially "Science and Engineering Support". 2

They will have a (closed) network, of their "Science and Engineering Support" computers -- some 15 to 20 machines of the class of CDC 6600, IBM 360/65, and UNIVAC 1108. 2a

For this Network, they can see that they will need an information center, at least for the basic needs in support of sharing resources. 2b

Nathan described a concept that is growing within AMC, whereby they consider having an "automatic spec-writing system" in which many people in The AMC will, at some time in their work, need to prepare specification(s) for new designs (either in house or under contract). 3

Contact about this development concept: Roland Gard, Missile Command, Huntsville, Ala. He has a contract to come up with generic names and qualities which have to be used for particular items -- transistors, etc. -- and when an engineer has to put up a given spec, he has a "catalog noticing order" for helping to generate the specs. 3a

General Discussion Stefferud's activities and thoughts regarding computer networks: 4

Stefferud -- "the essence of the problem of network management is dealing with the problems of sharing the resources across major organizational boundaries. The problems are eventually seen as budgetary, organizational, and political." 4a

Einar left copies of those of his publication which bear on Network management -- see XDOC items 4b

(9824,) "Computer Management: Procedures are User's Concern, But Policy is President's Decision " (University environment) 4b1

(10161,) "Management's Role In Networking" 4b2

Visit log: 31 Oct 72, Einar Stefferud, private consultant, and Nathan Sternberg, HQ Army Materiel Command.

(11257,) "The Environment of Compute Operating System Scheduling: Toward an Understanding" 4b3

(11258,) "What the Top Administrator Needs to Know about Computer Based Indormation Systems" 4b4

In the forthcoming FJCC, Einar Stefferud will chair a session called "Computer Network Management:" 4c

One paper describes "a wholesale-retail concept for network management." David L. Grobstein and Dr. Ronald Uhlig are the authors. (Not an official paper, with respect to AMC, but based upon their studies and considerations.) 4c1

The other paper is by Leland Williams (Directur of Triangle Universities Computation Center -- North Carolina), about the management structure of TUCC. 4c2

Einar feels that this session will provide a forum for a thorough discussion of management issues for computer networks. Every effort will be made to facilitate audience participation. 4c3

In two hours of discussion, in my office, with the DNLS console, we covered the following: 5

Demonstration of basic NLS features -- enough so they experienced operating keyset and mouse, and so they got a good feeling for the depth and breadth of an "augmented knowledge workshop". 5a

I described the position that we feel is important to communicate to organizations that are becoming aware of the future place in their organization of "knowledge-workshop evolution." I.e,, of the need to establish a group to be their Workshop Architects, and of the value of their being collaboration among the architectural groups of different such organizations -- namely, the framewok for our "Bootstrap Community." 5b

I extracted a branch from BCNOT, and Journalized it, to give them takeaway notes (12427,) "Notes About a Community of Knowledge Workshop Architects." They also carried away a "quick-print" of a draft of this visit report that we generated on line. 5b1

I also gave each of them: a copy of the "Centrally Coordinated Information Services ... " memo, (12380,) -- including a 2-level and a 3-level "table of contents" printout; and a copy of the "dinosaur paper" (5255,) 5c

Visit log: 31 Oct 72, Einar Stefferud, private consultant, and Nathan Sternberg, HQ Army Materiel Command.

Although they came with the particular aim of learning about NIC and its potential value (and availability of technique transfer) for this proposed (private) network, we got into the broader potential of workshop and centrally supported information services enough that they decided to learn more. 5d

Sternberg's boss, Dr. Ronald Uhley?, will visit briefly this Friday. Stefferud wants even more definate follow through. 5d1

DCE 20-JUL-73 16:45 12442

Visit log: 31 Oct 72, Einar Stefferud, private consultant, and Nathan Sternberg, HQ Army Materiel Command.

(J12442) 20-JUL-73 16:45; Title: Author(s): Douglas C. Engelbart/DCE ; Distribution: /jcn rww bc drb mdk pr srl cfd chi dsk hgl kev dcw jew jbn dvn dls ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 4-DEC-72 16:12 12443

Visit Log: 4 Dec 72, Smallwood, Oren, Berger and Holzman from Xerox

DCE 4-DEC-72 16:12 12443

Visit Log: 4 Dec 72, Smallwood, Oren, Berger and Holzman from Xerox

Dr. Richard Smallwood and Shmuel Oren are at PARC; Smallwood apparently heads the operations research activity there that has to do with analysi of an augmented office system, and Oren works for him. Dave Holzman and Howard Berger are from Corporate Offices in Rochester, and Holzman is apparently a high-level market analyst. Holzman is embarking upon a comprehensive study of business-offices -- types, modes of work, needs, etc. -- and apparently one product-line possibility that will be assessed is what they call the "word manipulation" systems. They came to trade philosophic notions about such systems. 1

Discussed general matters over lunch; had about 50 minutes afterward in my office to get an introduction to DNLS -- mainly conceptual matters, with enough demo to make them stick: e.g., Journal, distributed dialogue, community-supported services, DNLS control principles, need of system architects for experience, general notion of our intentional communities for architects and community centers. 2

Gave them copies of (12380,) and (12427,). Specifically mentioned my intention to approach Xerox in the near future, to solicit some participation in at least the architect community (KWAC). Holzman offerred to help find interested parties/groups in other parts of Xerox (than PARC); and I assured Smallwood that I would work through PARC (Bill English and him) before trying to solicit any such business within Xerox. 3

It would be my notion that for its size and future-products interest, Xerox ought to have a number of prototype application groups who will work at harnessing full workshop systems, and for each of whom there will be an architect (individual or group) for whom it is a full-time, serious, professional concern to plan, guide, and assess the workshop application experiment. If they could afford a number of such experiments, at least one of them should try a system close enough to our evolving workshop so that its experiment-architect could be an active participant in our Knowledge Workshop Architect Community (KWAC), composed of like persons/groups located around the country, within a number of different companies, agencies, universities, etc. 3a

DCE 12-DEC-72 10:29 12445

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

Paper for Second Annual Computer Communications Conference, San Jose, 24 Jan 72

DCE 12-DEC-72 10:29 12445

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

INTRODUCTION @CENTER=1; 1

Generally, adoption of a multi-access computer network is promoted on the basis of increased accessibility and economy of computational and data-bank resources for a distributed community of users. But visualize this resource-sharing computer network as a general-purpose digital-packet transportation system linking resources, processors, vendors, brokers, customers, etc.; then consider that the existence of such a transportation system will inevitably stimulate growth of an information market involving many processes, products, and services. A distributed community availing itself of such a transportation system should rightfully count on such market development for much of its payoff from its early investment. 1a

In particular, the "Knowledge Workshop" services described below will grow to become very important to network-coupled communities that are involved with a common discipline or mission -- my judgement is that this use of computer networks will come to dominate over the purely computational use in scale and generally perceived social worth, with today's type of computer services being seen as but a special subset of the tools integrated into a coherent knowledge workshop. 1b

THE KNOWLEDGE WORKSHOP @CENTER=1; 2

In using the term "knowledge workshop", I build directly upon terms "knowledge work" and "knowledge worker", whose special use I first came across in reading Peter Drucker (Reference 1). He develops a much larger theme about these concepts in Reference 2, adding terms such as "knowledge technologies", "knowledge economy", and "knowledge society", and pointing out that the growing level and importance of knowledge-work activity in our society will produce a discontinuity in our cultural evolution of a scale commensurate with that of the industrial revolution. 2a

The knowledge workshop is the specially provided environment in which knowledge workers do their knowledge work. We can talk about a small knowledge workshop for an individual, or a large knowledge workshop for an organization. Knowledge workshops have existed for centuries, but here we consider maximizing their effectiveness by systematically evolving tools, methods, etc., with heavy dependence upon the new technologies of computer time sharing and networking. (In the text below, read "knowledge workshop" for "Workshop".) 2b

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

Basic workshop functions must serve the daily handling of the users' working information -- of their notes, things-to-do lists, memos, letters, designs, plans, budgets, announcements, commentary, proposals, reports, programs, documentation, item-control catalogs, etc. And before it can sensibly be of much value, we believe that a Workshop has to provide for the grubby cut-and-try detail involved in the minute-by-minute, day-after-day worker's handling of this information: in its composition, studying, commenting upon, arguing about, modifying, communicating, publishing, presenting, etc. There are many exciting, elegant tools in the offing -- superlative graphics, artificial-intelligence services, etc. -- but their serious application will only be sensible within an integrated Workshop, and in a manner whose associated conceptual and procedural skills are consistent with those of tools and techniques that support the basic Workshop functions. 2c

For the past ten years in the Augmentation Research Center (ARC), at Stanford Research Institute, we have concentrated in succession on exploring the computer augmentation of knowledge workshops, first for an individual, then as extended for a project team, and then for a network-coupled, distributed community (See Reference 3). Over the past three years we have developed a beginning set of prototype "community-Workshop" services on the ARPANET, as associated with our serving as the Network Information Center (NIC).* 2d

[Footenote] *The following agencies have contributed components of direct support to this ten-year development: The Information Processing Techniques Office (ARPA), Langley Research Center (NASA), Rome Air Development Center (USAF), and the Information Systems Branch (ONR). 2d1

Our focus all along has been toward supporting R&D workers, and we have followed the empirical, bootstrapping approach of doing as much of our own work as possible in our Workshop, continuously building, using, and evolving it. Our Workshop services are supplied by a large software system that we call NLS, running under TENEX on a PDP-10. It provides a large repertoire of functions to display terminals (DNLS), online typewriter terminals (TNLS), or via deferred-execution of commands and text from offline typewriters as accumulated on cassettes or other intermediate storage (DEX). Hardcopy output is available on typewriters, online printers, or through an offline phototypesetting device providing publication-grade quality for multi-font text, computer-directed graphic constructs, or scan-stored diagrams. 2e

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

Besides giving constant, pragmatic attention to the needs and possibilities for evolution of support functions and working methods, we have had to struggle with what is a soul-wrenching burden for people whose orientation is toward exploratory development -- trying to meet the absolutely necessary requirements of organizing, documenting, maintaining, and operating the hardware/software and clerical services towards being responsive and reliable, minute after minute and day after day. 2f

Technology has reached a state warranting much more activity explicitly applied toward the evolution both of better Workshops, and of a coherent discipline associated with Workshop-system development; for this to happen, it is obvious that more people must take on the challenge of becoming "Workshop architects", and that more pilot-plant Workshops need to be set up for exploratory support of real knowledge-work activities. There are (will be many) approaches to be tried besides ours, of course; but to do our bit toward accellerating this process, we intend to share and extend our developments and knowledge by making our Workshop tools available for exploratory application in distributed, modular, pilot-Workshop sites, and by offering close collaboration with the pilot-Workshop architects. (Note below that an important Workshop feature being offered is designed to facilitate such "distributed collaboration".) 2g

PROTOTYPE COMMUNITY-WORKSHOP SUPPORT . @CENTER=1; 3

We aren't ignoring exploratory use within localized organizations, but we are committing a substantial portion of our energy toward the early, exploratory use of knowledge-workshop services to support distributed, network-coupled communities. There are two special reasons for this commitment: 3a

The first reason concerns relative payoff: if a service facilitates hobnobbing via terminals, there is extra value when this supplants air fare and a two-day trip in contrast with supplanting a walk down the hall; there is more payoff from relatively costly augmentation services when they facilitate collaboration among participants who are distributed rather than among those who are already clustered. 3a1

The second reason concerns a wider awareness of the possibilities for augmenting knowledge workshops, and a

wider interest and involvement in their accelerated evolution -- things we hope to enhance by facilitating community-Workshop exploration. We find that toward significant Workshop innovations a user needs a sort of warming-up process before gracefully giving something new a try. Thereafter, in the right environment, he will "naturally" adopt successive stages of significant new Workshop techniques. This process is noticeably facilitated by steady exposure to the products and conventions of Workshop services; and it helps considerably to have a variety of opportunities and materials to stimulate and support the "giving it a try" -- for instance, to try a little online dialogue with a distant, more-advanced colleague, dealing with materials already in the community data base. Also, if a new stage of service is available in this "community way", a large number of people will benefit from the lower threshold of investment and determination needed to give it a try. 3a2

Following is a brief description of community-Workshop applications that special communities can consider exploring. The sequence represents an explicit progression, beginning with tested techniques whose "cultural shock" and financial investment are relatively low, and offering paced, open-ended evolution with time, experience, and perceived payoff. We are arranging for computer support of these services by a commercial-quality "utility" service connected to the ARPANET. We will provide this Workshop support (at cost) over the Network to selected subscribers for setting up and exploring prototype, augmented-Workshop applications. We expect the Workshop toolkit to be continually expanding and improving, and plan for much of the evolutionary energy and direction to come from the subscribers. 3b

COLLABORATIVE DIALOGUE: We offer computer aids for the composition of messages and for their subsequent reviewing, cross-referencing, modification, transmission, storage, indexing, and full-text retrieving. A "message" may be one word in length, or a hundred printed pages. In any message there may be formalized citations pointing to specific passages in prior messages, so that a group of related messages becomes a network of recorded-dialogue contributions. There is also: automatic delivery of messages; full cataloging and indexing; online accessibility both to message notification and to the full text of all messages; and open-ended storage of the dialogue records. These services enable a community of people who are distributed

in space and time to maintain recorded, collaborative dialogue at a new degree of effectiveness. 4

Then to support "real-time" remote dialogue (teleconferencing), we have the following facility: Any two DNLS users can "link up" at any time, so that each party sees a common display view, including both his and the other person's cursor; either party is able to point or control, and they mutually have access to the full range of Workshop functions, over any of the online information. The responsiveness and bandwidth of the ARPANET provide remarkably good support of our highly interactive DNLS service to remote display users, so that when used to supplement a telephone conversation, the speed and flexibility of this shared, "augmented blackboard" brings a new quality to teleconferencing that is really quite dramatic. 4a

DOCUMENT DEVELOPMENT, PRODUCTION, AND CONTROL: We offer a rich set of computer aids for the composition, study, and modification of document drafts, and for automatically generating high-quality photocomposition output with flexible controls for font-designation and formatting, to enable the production of publication-grade hardcopy (printing masters, or microform masters). There are processes for collaboration between several writers, and with an editor, in the process of evolving a final draft. Included among such helpers can be experienced production people to help in laying out a finished document, in inserting proper designations for specifying font, size, and density of different character strings, and for managing footnotes, cross-references, tables of contents, indices, etc. There are also aids for the people who must keep control of changes, new-version distributions, etc., and provide the indexing to complex documents or sets of documents. Planned improvements include facility for handling complex graphic portrayals and extensive special symbols. 5

RESEARCH INTELLIGENCE: The provisions within the Dialogue Support System for cataloguing and indexing internally generated items also support the management of externally generated items -- bibliography, contact reports, clippings, notes, etc. With these centrally supplied (therefore uniformly available) services, a community can maintain a dynamic and highly useful "Intelligence" data base to help it keep up to date on external happenings that particularly affect it. Microform distribution can provide for mass replication of this data base at remote sites, and computer-generated indexes or online retrieval can facilitate access. Citations of external items from within the

internally-generated dialogue base -- in the form of annotations, miscellaneous commentary, or supportive references -- offer computer-sensible interlinking of the external information with the internal, and considerably facilitate browsing, retrieval, back-citation searching, etc. 6

The Community could choose to operate a special Information Analysis and Integration Center as a nucleus to this activity, but the notes and private-collection records of individual users, integrated into the "recorded dialogue", could well add the more value. (Reference 4 describes some developments and possibilities for support of research intelligence.) 6a

COMMUNITY HANDBOOK DEVELOPMENT: We are extending the above services toward the coordinated handling of a very large and complex body of documentation and its associated external references. I use the term "superdocument" to refer to such material when integrated into a monolithic whole. There are a number of important applications for a system that facilitates the responsive development and evolution of a superdocument by many (distributed) individuals. In particular, for either a discipline- or project-oriented community, one very important application of a centrally available "superdocumentation" service would be to maintain "The Community Handbook" -- i.e., a uniform, complete, consistent, up-to-date integration of the special knowledge representing the current status of the Community. 7

The Handbook would include: principles, working hypotheses, practices, special-term glossaries, standards, goals, goal status, supportive arguments, techniques, observations, how-to-do-it items, etc. An active community would be constantly involved in dialogue bearing upon the contents of the last formal version of its Handbook -- comments, errata, suggestions, challenges, counter examples, altered designs, improved arguments, new experimental techniqes and data, etc. Constant updating would provide a "certified, community position structure" about which the real evolutionary work would swarm; flexible aids for online "navigation and view generation" would be very important, as would the facility for automatic publication (especially into microform editions). 7a

COMPUTER-BASED INSTRUCTION: If relatively widespread applicability of Computer-Based Instruction (CBI) were suitable for the Community, then there would likely be advantage gained from pooling resources and utilizing a community-coordinated instructional service. For a community also utilizing other centrally managed Workshop services of the scope and power

described here, there would be considerable overlap between them and their CBI processes and activities. 8

Even though CBI has more visibility and momentum as a discipline than does CBKW (Computer-Based Knowledge Workshop), it seems inevitable that the former will end up as being but a special, integrated component of the latter. One should expect CBI service anyway in his Workshop, and he won't expect to go to a different terminal or to learn a different set of interactive concepts and skills to get that service; and also, that service will often bear directly upon concepts and matters deeply embedded in the workaday domain of his Workshop system. 8a

It is also very probable (to my mind) that communities will ultimately integrate their Handbook and CBI techniques so that their monolithic, superdocument Handbook would contain the special tags, links and etc. required by the CBI computer processes so that a significant portion of the instructional services would be generated directly from the primary knowledge source, the Community Handbook. 8b

MEETINGS AND CONFERENCES: This refers to assemblies of people, which occurrences aren't likely for a long time yet to be supplanted in total effect by technological aids. In supporting our own ARC meetings, demonstrations, etc., we use TV-projector equipment that projects our regular work-terminal display images onto a movie screen, easily readable in a meeting room having enough ambient light for comfortably reading notes and seeing each other. Images from live TV-cameras or from video recorders can also be projected. We make use of commercial devices for controlling these various video signals -- switching, mixing, and frame-splitting. We can mix two signals to get image superposition, or split the video frame to get a computer-display picture on one part of the screen and a camera image on the other (for example, simultaneously showing the camera view of the user's controlling actions right along with the display responses from the computer). 9

With this projector setup, we use our regular Workshop techniques in meetings to present and explain material from the online data base. It is easy to review and change the agenda and the meeting notes; some meetings operate very profitably in a mode of "collaborative position-statement development", with a facility that for many purposes is far superior to using a blackboard -- it is as though the blackboard now is very easily stretched to make room for new

notes, edited, scrolled, folded, reorganized, or etc., and any available online material may be copied onto it for integration into the study, re-organization, re-wording, development process. A skilled Workshop user can operate this "blackboard" with enough speed and flexibility that these processes often don't seem to be what limits group progress (in the midst of questions, deliberations, etc.). 9a

Any Workshop user at the gathering can call on part of his own online notes, or use his familiarity with certain material, to bring special information before the assembly. Or, the whole assembly can see the display being controlled by another individual (or assembly) at a remote site, in shared-display dialogue. There are many further technical and procedural innovations to explore in improving the effectiveness of meetings -- e.g. computer-processed bio-feedback, radical changes in the "rules of order", and giving each participant independent use of a private display terminal. 9b

COMMUNITY MANAGEMENT AND ORGANIZATION: Where the Community has conventional, project-management operations, their Workshop can include computer aids for such as PERT and CPM, plus the enriching services of dialogue support, document development, and a "Handbook" system. An extension of the Handbook could contain plans, commitments, schedules, specifications, current-state records of work in progress, etc., with special Workshop tools to support management analysis and control. 10

But also, with the probable increase in the amount and intensity of distributed collaboration within the Community, "committee work" would become more widespread, dynamic, and important. Thus there would be greater dependence upon better techniques for inter-communication and management within the committee-like structures by which a Community goes about its composite business. Harnessing these new techniques will lead to very different ways in which distributed communities can be organized and in which they can go about their business -- and the possibility of considerable improvement here, stemming from relatively modest innovative investments, is an important part of our motivation toward facilitating Community Workshop exploration. 10a

SPECIAL KNOWLEDGE WORK BY INDIVIDUALS AND TEAMS: Assumedly, Community members could avail themselves of the above types of Workshop service in support of their own daily work -- i.e., for other than their participating in community-oriented activities.

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

There are obvious benefits to almost any knowledge worker from use of general Workshop facilities such as listed above; and for a team (or any close-working organizational unit) of augmented knowledge workers, there is yet another level of benefit to be gained by adopting new organizational structure and collaborative methods that harness better the new capabilities existing within the Workshop (as extended by a few special team-support tools). 11

Then further, the particular set of disciplines and pursuits which characterize the Community will generally have special computer-based processes and data that are important in its work -- i.e. unique functions and forms in its analytical programs, statistical processes, numerical data, conceptual/analytic models, graphic portrayals of subject matter, etc. Assuming that they are available within the same computer network that distributes the Community's Workshop-support services, then access to these special computer-based resources can be provided to a worker "through" the coordinated Workshop in which he does his other work -- and to a distinct advantage. 11a

In any of this special work, there is basic advantage in having a flexible, powerful facility for managing mixed text and graphics -- composing, studying, modifying, integrating new material into working notes and reports, publishing, doing collaborative dialogue, giving presentations, etc. When doing tasks of this sort in assocation with his special computer-based operations, it is an important advantage to the worker to do so within a familiar and consistent working environment. Our Workshop flexibly provides for special translation of information passing back and forth to any such "external" computer service, so that for access to a wide variety of such services the Workshop can provide users with consistent conventions and methods in whose use his other Workshop tools would be of maximum support. 11b

CONCLUSION @CENTER=1; 12

The full sense of what computer networks offer in the way of "resource sharing" contains some special twists of significance here: For one thing, a truly complete Workshop will contain a very large repertoire of service functions, and the evolution, operation, and maintenance of these functions (and their support software) will require highly trained specialists. Any sort of widespread exploration of augmented-Workshop techniques will be very much facilitated by the network's capability for sharing the expertise of such

specialists — by enabling central computational resources that they develop and maintain to service distributed users. Note that specialists working from their home Workshop will be able to reach through the network to install and maintain software in remote hardware installations, which will be important, too; but note also that many already-present local computers and operating systems are inappropriate for supporting all of the important Workshop functions. 12a

For another thing, the vocabulary and procedural skill required to harness these functions effectively and smoothly into one's worklife will become very extensive and sophisticated (the pidgin-English approach won't provide the power, and full-statement natural language isn't fast enough), and again special expertise will be necessary to help people through the learning stages as their Workshop matures. Therefore, although the network can very much facilitate bringing into user reach these powerful Workshop tools, it requires the additional network-supported (Workshop) facilities such as teleconferencing to enable a limited number of Workshop specialists to give close support to these learning processes, without which the computer services would have much less value. 12b

If exploration of Workshop use were to occur only where there exists both an appropriate local computer system and trained specialists to maintain the software and train the users, there would be a very much slower evolution toward the increased-effectiveness possibilities offered by computer augmentation. 12c

Finally, the "digital-packet transportation system" aspect of a computer network seems quite essential to the practical, effective support of an augmented Community Knowledge Workshop — which in turn seems to offer a really important and unique means for sharing among a community of humans the distributed nuclei of human resources represented by individuals with special knowledge, judgement, intuition, imagination, conceptual skills, etc. This human-resource sharing has explosive potential — I look to it with a biological metaphor as providing a new evolutionary stage for the nervous system of social organisms, from which much more highly developed institutional forms may evolve that are much improved in: awareness of self and environment, situational cognizance and response, visualization of the future, problem-solving capability, etc. (See Reference 5 for expansion of this theme.) 12d

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12445

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

by

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COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

TWO-LEVEL CONTENT VIEW

COORDINATED INFORMATION SERVICES for a DISCIPLINE- OR MISSION-ORIENTED COMMUNITY

INTRODUCTION 1

Generally, adoption of a multi-access computer network is promoted on the basis of increased accessibility and economy of computational and data-bank resources for a distributed community of users. But visualize this resource-sharing computer network as a general-purpose digital-packet transportation system linking resources, processors, vendors, brokers, customers, etc.; then consider that the existence of such a transportation system will inevitably stimulate growth of an information market involving many processes, products, and services. A distributed community availing itself of such a transportation system should rightfully count on such market development for much of its payoff from its early investment. 1A

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In using the term "knowledge workshop", I build directly upon terms "knowledge work" and "knowledge worker", whose special use I first came across in reading Peter Drucker (Reference 1). He develops a much larger theme about these concepts in Reference 2, adding terms such as "knowledge technologies", "knowledge economy", and "knowledge society", and pointing out that the growing level and importance of knowledge-work activity in our society will produce a discontinuity in our cultural evolution of a scale commensurate with that of the industrial revolution. 2A

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wider interest and involvement in their accelerated evolution -- things we hope to enhance by facilitating community-Workshop exploration. We find that toward significant Workshop innovations a user needs a sort of warming-up process before gracefully giving something new a try. Thereafter, in the right environment, he will "naturally" adopt successive stages of significant new Workshop techniques. This process is noticeably facilitated by steady exposure to the products and conventions of Workshop services; and it helps considerably to have a variety of opportunities and materials to stimulate and support the "giving it a try" -- for instance, to try a little online dialogue with a distant, more-advanced colleague, dealing with materials already in the community data base. Also, if a new stage of service is available in this "community way", a large number of people will benefit from the lower threshold of investment and determination needed to give it a try. 3A2

Following is a brief description of community-Workshop applications that special communities can consider exploring. The sequence represents an explicit progression, beginning with tested techniques whose "cultural shock" and financial investment are relatively low, and offering paced, open-ended evolution with time, experience, and perceived payoff. We are arranging for computer support of these services by a commercial-quality "utility" service connected to the ARPANET. We will provide this Workshop support (at cost) over the Network to selected subscribers for setting up and exploring prototype, augmented-Workshop applications. We expect the Workshop toolkit to be continually expanding and improving, and plan for much of the evolutionary energy and direction to come from the subscribers. 3B

COLLABORATIVE DIALOGUE: We offer computer aids for the composition of messages and for their subsequent reviewing, cross-referencing, modification, transmission, storage, indexing, and full-text retrieving. A "message" may be one word in length, or a hundred printed pages. In any message there may be formalized citations pointing to specific passages in prior messages, so that a group of related messages becomes a network of recorded-dialogue contributions. There is also: automatic delivery of messages; full cataloging and indexing; online accessibility both to message notification and to the full text of all messages; and open-ended storage of the dialogue records. These services enable a community of people who are distributed

in space and time to maintain recorded, collaborative dialogue at a new degree of effectiveness. 4

Then to support "real-time" remote dialogue (teleconferencing), we have the following facility: Any two DNLS users can "link up" at any time, so that each party sees a common display view, including both his and the other person's cursor; either party is able to point or control, and they mutually have access to the full range of Workshop functions, over any of the online information. The responsiveness and bandwidth of the ARPANET provide remarkably good support of our highly interactive DNLS service to remote display users, so that when used to supplement a telephone conversation, the speed and flexibility of this shared, "augmented blackboard" brings a new quality to teleconferencing that is really quite dramatic. 4A

DOCUMENT DEVELOPMENT, PRODUCTION, AND CONTROL: We offer a rich set of computer aids for the composition, study, and modification of document drafts, and for automatically generating high-quality photocomposition output with flexible controls for font-designation and formatting, to enable the production of publication-grade hardcopy (printing masters, or microform masters). There are processes for collaboration between several writers, and with an editor, in the process of evolving a final draft. Included among such helpers can be experienced production people to help in laying out a finished document, in inserting proper designations for specifying font, size, and density of different character strings, and for managing footnotes, cross-references, tables of contents, indices, etc. There are also aids for the people who must keep control of changes, new-version distributions, etc., and provide the indexing to complex documents or sets of documents. Planned improvements include facility for handling complex graphic portrayals and extensive special symbols. 5

RESEARCH INTELLIGENCE: The provisions within the Dialogue Support System for cataloguing and indexing internally generated items also support the management of externally generated items -- bibliography, contact reports, clippings, notes, etc. With these centrally supplied (therefore uniformly available) services, a community can maintain a dynamic and highly useful "intelligence" data base to help it keep up to date on external happenings that particularly affect it. Microform distribution can provide for mass replication of this data base at remote sites, and computer-generated indexes or online retrieval can facilitate access. Citations of external items from within the

internally-generated dialogue base -- in the form of annotations, miscellaneous commentary, or supportive references -- offer computer-sensible interlinking of the external information with the internal, and considerably facilitate browsing, retrieval, back-citation searching, etc. 6

The Community could choose to operate a special Information Analysis and Integration Center as a nucleus to this activity, but the notes and private-collection records of individual users, integrated into the "recorded dialogue", could well add the more value. (Reference 4 describes some developments and possibilities for support of research intelligence.) 6A

COMMUNITY HANDBOOK DEVELOPMENT: We are extending the above services toward the coordinated handling of a very large and complex body of documentation and its associated external references. I use the term "superdocument" to refer to such material when integrated into a monolithic whole. There are a number of important applications for a system that facilitates the responsive development and evolution of a superdocument by many (distributed) individuals. In particular, for either a discipline- or project-oriented community, one very important application of a centrally available "superdocumentation" service would be to maintain "The Community Handbook" -- i.e., a uniform, complete, consistent, up-to-date integration of the special knowledge representing the current status of the Community. 7

The Handbook would include: principles, working hypotheses, practices, special-term glossaries, standards, goals, goal status, supportive arguments, techniques, observations, how-to-do-it items, etc. An active community would be constantly involved in dialogue bearing upon the contents of the last formal version of its Handbook -- comments, errata, suggestions, challenges, counter examples, altered designs, improved arguments, new experimental techniqes and data, etc. Constant updating would provide a "certified, community position structure" about which the real evolutionary work would swarm; flexible aids for online "navigation and view generation" would be very important, as would the facility for automatic publication (especially into microform editions). 7A

COMPUTER-BASED INSTRUCTION: If relatively widespread applicability of Computer-Based Instruction (CBI) were suitable for the Community, then there would likely be advantage gained from pooling resources and utilizing a community-coordinated instructional service. For a community also utilizing other centrally managed Workshop services of the scope and power

described here, there would be considerable overlap between them and their CBI processes and activities. 8.

Even though CBI has more visibility and momentum as a discipline than does CBKW (Computer-Based Knowledge Workshop), it seems inevitable that the former will end up as being but a special, integrated component of the latter. One should expect CBI service anyway in his Workshop, and he won't expect to go to a different terminal or to learn a different set of interactive concepts and skills to get that service; and also, that service will often bear directly upon concepts and matters deeply embedded in the workaday domain of his Workshop system. 8A

It is also very probable (to my mind) that communities will ultimately integrate their Handbook and CBI techniques so that their monolithic, superdocument Handbook would contain the special tags, links and etc. required by the CBI computer processes so that a significant portion of the instructional services would be generated directly from the primary knowledge source, the Community Handbook. 8B

MEETINGS AND CONFERENCES: This refers to assemblies of people, which occurrences aren't likely for a long time yet to be supplanted in total effect by technological aids. In supporting our own ARC meetings, demonstrations, etc., we use TV-projector equipment that projects our regular work-terminal display images onto a movie screen, easily readable in a meeting room having enough ambient light for comfortably reading notes and seeing each other. Images from live TV-cameras or from video recorders can also be projected. We make use of commercial devices for controlling these various video signals -- switching, mixing, and frame-splitting. We can mix two signals to get image superposition, or split the video frame to get a computer-display picture on one part of the screen and a camera image on the other (for example, simultaneously showing the camera view of the user's controlling actions right along with the display responses from the computer). 9

With this projector setup, we use our regular Workshop techniques in meetings to present and explain material from the online data base. It is easy to review and change the agenda and the meeting notes; some meetings operate very profitably in a mode of "collaborative position-statement development", with a facility that for many purposes is far superior to using a blackboard -- it is as though the blackboard now is very easily stretched to make room for new

notes, edited, scrolled, folded, reorganized, or etc., and any available online material may be copied onto it for integration into the study, re-organization, re-wording, development process. A skilled Workshop user can operate this "blackboard" with enough speed and flexibility that these processes often don't seem to be what limits group progress (in the midst of questions, deliberations, etc.). 9A

Any Workshop user at the gathering can call on part of his own online notes, or use his familiarity with certain material, to bring special information before the assembly. Or, the whole assembly can see the display being controlled by another individual (or assembly) at a remote site, in shared-display dialogue. There are many further technical and procedural innovations to explore in improving the effectiveness of meetings -- e.g. computer-processed bio-feedback, radical changes in the "rules of order", and giving each participant independent use of a private display terminal. 9B

COMMUNITY MANAGEMENT AND ORGANIZATION: Where the Community has conventional, project-management operations, their Workshop can include computer aids for such as PERT and CPM, plus the enriching services of dialogue support, document development, and a "Handbook" system. An extension of the Handbook could contain plans, commitments, schedules, specifications, current-state records of work in progress, etc., with special Workshop tools to support management analysis and control. 10

But also, with the probable increase in the amount and intensity of distributed collaboration within the Community, "committee work" would become more widespread, dynamic, and important. Thus there would be greater dependence upon better techniques for inter-communication and management within the committee-like structures by which a Community goes about its composite business. Harnessing these new techniques will lead to very different ways in which distributed communities can be organized and in which they can go about their business -- and the possibility of considerable improvement here, stemming from relatively modest innovative investments, is an important part of our motivation toward facilitating Community Workshop exploration. 10A

SPECIAL KNOWLEDGE WORK BY INDIVIDUALS AND TEAMS: Assumedly, Community members could avail themselves of the above types o. Workshop service in support of their own daily work -- i.e., for other than their participating in community-oriented activities. There are obvious benefits to almost any knowledge worker from

use of general Workshop facilities such as listed above; and for a team (or any close-working organizational unit) of augmented knowledge workers, there is yet another level of benefit to be gained by adopting new organizational structure and collaborative methods that harness better the new capabilities existing within the Workshop (as extended by a few special team-support tools). 11

Then further, the particular set of disciplines and pursuits which characterize the Community will generally have special computer-based processes and data that are important in its work -- i.e. unique functions and forms in its analytical programs, statistical processes, numerical data, conceptual/analytic models, graphic portrayals of subject matter, etc. Assuming that they are available within the same computer network that distributes the Community's Workshop-support services, then access to these special computer-based resources can be provided to a worker "through" the coordinated Workshop in which he does his other work -- and to a distinct advantage. 11A

In any of this special work, there is basic advantage in having a flexible, powerful facility for managing mixed text and graphics -- composing, studying, modifying, integrating new material into working notes and reports, publishing, doing collaborative dialogue, giving presentations, etc. When doing tasks of this sort in assocation with his special computer-based operations, it is an important advantage to the worker to do so within a familiar and consistent working environment. Our Workshop flexibly provides for special translation of information passing back and forth to any such "external" computer service, so that for access to a wide variety of such services the Workshop can provide users with consistent conventions and methods in whose use his other Workshop tools would be of maximum support. 11B

CONCLUSION 12

The full sense of what computer networks offer in the way of "resource sharing" contains some special twists of significance here: For one thing, a truly complete Workshop will contain a very large repertoire of service functions, and the evolution, operation, and maintenance of these functions (and their support software) will require highly trained specialists. Any sort of widespread exploration of augmented-Workshop techniques will be very much facilitated by the network's capability for sharing the expertise of such specialists -- by enabling central computational resources

that they develop and maintain to service distributed users. Note that specialists working from their home Workshop will be able to reach through the network to install and maintain software in remote hardware installations, which will be important, too; but note also that many already-present local computers and operating systems are inappropriate for supporting all of the important Workshop functions. 12A

For another thing, the vocabulary and procedural skill required to harness these functions effectively and smoothly into one's worklife will become very extensive and sophisticated (the pidgin-English approach won't provide the power, and full-statement natural language isn't fast enough), and again special expertise will be necessary to help people through the learning stages as their Workshop matures. Therefore, although the network can very much facilitate bringing into user reach these powerful Workshop tools, it requires the additional network-supported (Workshop) facilities such as teleconferencing to enable a limited number of workshop specialists to give close support to these learning processes, without which the computer services would have much less value. 12B

If exploration of Workshop use were to occur only where there exists both an appropriate local computer system and trained specialists to maintain the software and train the users, there would be a very much slower evolution toward the increased-effectiveness possibilities offered by computer augmentation. 12C

Finally, the "digital-packet transportation system" aspect of a computer network seems quite essential to the practical, effective support of an augmented Community Knowledge Workshop -- which in turn seems to offer a really important and unique means for sharing among a community of humans the distributed nuclei of human resources represented by individuals with special knowledge, judgement, intuition, imagination, conceptual skills, etc. This human-resource sharing has explosive potential -- I look to it with a biological metaphor as providing a new evolutionary stage for the nervous system of social organisms, from which much more highly developed institutional forms may evolve that are much improved in: awareness of self and environment, situational cognizance and response, visualization of the future, problem-solving capability, etc. (See Reference 5 for expansion of this theme.) 12D

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DCE 22-DEC-72 12:37 12446

Augmenting the Knowledge Workshop: Abstract

Abstract (for yet to be written paper) submitted to Wm. Bethke (JHB) as a candidate for presentaion at the National Computer Conference, New York City, June 73. (Historical Note: Bethke, Bair and I reviewed the draft of this abstract, between 1100 and 1140 PST, in a shared-screen, three-way-phone hookup between me at ARC/Tasker and them at RADC/Imlac; also discussed general content/presentation plan for the paper.)

Augmenting the Knowledge Workshop: Abstract

This paper expands upon the theme of automating a Knowledge Workshop, gives examples to fortify a whole-system perception of such a workshop, and predicts the rapid emergence of a discipline of "knowledge-workshop architects" encompassing both human and technical factors within whole-system "workshop augmention." 1

The knowledge workshop is taken to be the environment in which knowledge workers do their knowledge work -- using "knowledge work" in the special sense of Peter Drucker's main theme in his "Age of Discontinuity: Guidelines to Our Changing Society" (Harper & Row, New York. 1969). 2

It is obvious both that sophisticated computer tools will emerge to automate almost every important task performed in a knowledge workshop, and that our technology will produce such tools so cheaply that inevitably almost every knowledge worker will do all of his work in a heavily automated knowledge workshop. But when this occurs, the knowledge workers themselves will be undergoing concurrent changes of pervasive and significant nature: using much different methods, procedures, and conventions; depending upon a much extended set of skills and concepts; and making use of very different display portrayals to represent the extended concepts with which they work. And further, an organization of knowledge workers using an automated "group workshop", will come to have different organizational form, different working roles, and much different ways of communicating and collaborating. 3

As differentiated from "automation," the term "augmentation" here includes not just automating human knowledge-work tasks, but includes also the associated changes in human language, skills, methods, etc. toward increasing knowledge-worker productivity. 4

DCE 22-DEC-72 12:37 12446

Augmenting the Knowledge Workshop: Abstract

(J12446) 22-DEC-72 12:37; Title: Author(s): Engelbart, Douglas C./DCE ; Distribution: Bair, James H., Bethke, William P., Norton, James C., Watson, Richard W., Stone, Duane L./jhb wpb jcn rww dls ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 13-MAR-73 11:57 12447

Visit Log: 13 Dec 72, Tom O'Sullivan

More on the CBI Community possibilities

Visit Log: 13 Dec 72, Tom O'Sullivan

See recent relevant reports (12438,), (12439,), (12440,), (12441,), between O'Sullivan, Kibler, and us. 1

Personal interest on his part in developing Workshop support for CBI work. He lists some activities that currently interest him: 2

Lincoln Lab's controlled frame-positioning ufiche work. 2a

Author's production of courseware. 2b

Media experts. 2c

Only a few plces in the country that have the combination of resources; he'd liketo work on a distributed-communication support system so they could be shared around a communiy of course writers. 2d

Considering having a meeting, including specialists from technolgy, behavior, etc., and see if some sort of meeting of the minds can take place with respect to what mode of distributed system and working methods they'd buy. 2e

He sees needs for extensions to our dialougue capability, e.g.: snapshot video, and voice-packet, for Net communication. 3

I point out that general meetings of people who aren't really ready for a topic aren't very productive; and that frankly I didn't think any community was ready for n "out of the blue" get-together on such a topic. I recommended strongly a quiet approach, finding interested parties within the community, hopefully locating a hustling architect, and planning on a series of stages to provide exposure, gratifying experiences, etc, in concrete steps. I think this exchange was profitable. 4

(Note: Tom was still with Raytheon, but working on Kibler's projects, and planning to move to work for ARPA in Kibler's office around 1 Feb 73). 5

12447 Distribution
Norton, James C. , Watson, Richard W. , Cox, Bonnar , Brown, David R. , Kudlick, Michael D. ,

DCE 13-MAR-73 11:57 12447

Visit Log: 13 Dec 72, Tom O'Sullivan

(J12447) 13-MAR-73 11:57; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww bc drb mdk ; Sub-Collections: BC SRI-ARC ; Clerk: DCE ;

DCE 13-MAR-73 12:28 12449

Phone Log: 9 Mar 73, to Tom O'Sullivan, ARPA HRRO

Phone Log: 9 Mar 73, to Tom O'Sullivan, ARPA HRRO

Tom has recently joined Col. Kibler in ARPA's Human Resources Research Office. Previous visits and corresspondence are recorded in Journal items:
(12440,), 19 Oct 72, DCE visited Col Kibler at ARPA
(12438,), 8 Nov 72, Tom visited ARC
(12439,), 16 Nov 72, Tom Called DCE
(12441,), 1 Dec 72, Col Kibler visited ARC
(12447,), 13 Dec 72, Tom visited ARC 1

The purpose of my call: was he ready to follow up on the CBI-Community Workshop-services support possibilities that he and I and Col. Kibler have discussed over the past months? I told him of our current $50K "minimum" for a subscription level. 1a

In summary, he and Col. Kibler apparently have been discussing with serious interest and intentions the ways and stages for developing their CBI community, with full consideration for including Workshop support for it. (Even using our terms, and with the RIGHT meaning.) 2

Tom is pulling together a plan (over the next two months) for applying their FY74 money to this end. He will be happy to keep in touch, and currently plans to include what he can toward such as a CBI-Community Workshop Architect, perhaps even a sort of embryonic CBI-NIC, etc. Expects to start slowly; is very much interested in the NLS Utility support that would be required, in the allocation and usage scheduling of its resources among subscriber groups, etc. 2a

I made him fully aware of IPT's bulk-subscription plan for ARPA/IPT application; he will talk to them about it. It probably would be to their mutual advantage for the CBI activity to be lumped in with the IPT subscription. I pointed out that this wouldn't be completely to our advantage (because we'd like not only to fill out the subscription, but to be sure that there was funding to give adequate people support to an important application area such as his). We understand each other on this matter; I assume it to be reasonable that the early CBI stuff would be lumped in with the IPT subscription, until Roberts sees adequate utilization of his subscription otherwise, and until the CBI activity picks up significant momentum. But also O'Sullivan can be expected to be reasonable about the people-support burden, and if they take the shared-subscription route we can consider asking them for some spcial support funding in that regard if it seems needed by us. 3

He fully appreciates the shared-screen dialogue mode, and

Phone Log: 9 Mar 73, to Tom O'Sullivan, ARPA HRRO

figures it to be highly imporatant in their plans (they figure that in CBI development there are special skills at several levels whose sharing in this manner would be highly important). Consequently, he was reassured to hear that the Utility will support DNLS. I told him of our search for cheaper DNLS terminals. 4

In this respect he wondered how a minimum-subscription capacity (of like 1.5 users) could support the multiple-party shared-screen dialogue that he'd like to be able to try; I pointed out that by my understanding of the mechanics this process would absorb less NLS-Utility resource than one "normally busy" DNLS user, since although it is loaded with extra overhead for servicing the multiple terminals, there would be probably less than the normal one-party service demand placed on the moving, editing, etc. during a collaborative session. 4a

He also appreciates the necessity for solid clerical-support being established as a first stage; and I encouraged him to leave open the possibility of his community beginning with typewriter terminals for the clerks -- a cheaper and easier-stage approach than having to worry about outfitting everyone with DNLS terminals at the outset. 5

O'Sullivan already recognizes that he is going to be too heavily loaded with matters internal to their office to carry effectively much direct support to the Community; he has already been onsidering people and means for getting help -- sort of equivaent to an architect. I gave him the name of Carl Zinn, of Michigan (see contact report of Zinn's 29 Jan 73 visit here -- 14114,). 6

Tom plans a West Coast trip sometime in April, and will plan to stop by. He may bring with him a fellow named Al Hickey (Sp?), a man who was in the field of programmed instruction as early as 1960, who has formed a number of independent (and successful) enterprises selling information services in the field of educational technology (I gathered that one such service was an annual survey of CAI programs). Tom mentioned that Hickey uses the term "integrating the field" in talking about such refernce services. I gather that there is some possibility of Tom's considering Hickey as a good bet to help provide special services to a CBI Community, and that these might be a sort of a combination of NIC- and architect-like services. 7

Phone Log: 9 Mar 73, to Tom O'Sullivan, ARPA HRRO

(J12449) 13-MAR-73 12:28; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww drb bc ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 13-MAR-73 15:52 12450

Phone Log: 1 Nov 72, from Tom Pyke of NBS, re DNLS training at ARC for two of his staff

Phone Log: 1 Nov 72, from Tom Pyke of NBS, re DNLS training at ARC for two of his staff

Tom heads the Computer Systems Section, in the Information Processing Technology Division, of the Center for Computer Science and Technoloy at the National Bureau of Standards. Dr. Ruth Davis is Director of the CCST. 1

Main item on his mind was a request for two of his people to spend several days here at ARC intensively working at learning DNLS. Not a commitment for me to make without checking within our group, but I will look into it and let him know as soon as possible (after our next EMC meeting). 2

Suggested time would be the first few days of the week of 11 DEc 72 -- they will be in San Diego for the FJCC the end of the previous week. I mentioned our preference for such experimental people working off hours to ease the working-hours load on our resources. He felt that this would be perfectly agreeable -- e.g. evenings, or even beginning on Sunday 10 Dec. 2a

The people would be: 2b

Shirley Watkins, who has taken the NIC-TNLS course that was given at MIT. I gather that she is their NIC Station Agent; and also, she is currently the one putting together an extended bibliograhy on Computer Networks. (See forthcoming contact report from my visits at NBS on 17 and 18 Oct 72.) He has been working toward her becoming one of their experts on TNLS -- and he is interested in the DNLS learning time for a TNLS user. 2b1

Robert (Rob) Rosenthal, a systems programmer on Tom's staff. Rob doesn't yet know how to use TNLS -- Tom says that he purposely chose one each of a user and a non-user of TNLS. 2b2

Apparently this move on their part stems from the impact made by the DNLS demonstrations at ICCC, on a number of people -- he made a special comment about "the very very nice demonstration given to Ruth Davis by Dick Watson." According to Tom, Ruth had had the usual comment about how long it must take peopl to learn how to use DNLS, and (according to Tom) Dick had said that it only takes a few days -- so I guess somebody was asked to verify this claim. 3

But, also, Tom's Section is studying the possibilities of getting some local-processor display terminals for their use; they had been seriously thinking bout the new DEC termianl (of

Phone Log: 1 Nov 72, from Tom Pyke of NBS, re DNLS training at ARC for two of his staff

which a version was demonstrated at ICCC); apparently the DNLS capability has made them begin to give seious consideration to IMLAC. 4

Also, From my earlier discussions, I know that they have planned to give serious evaluation to a number of resources that can be offered over a network (as part of their study for the NSF Net), editing and information management systems being among them; toward this end he had agreed on something like a $15 to 20K/yr subscription to our NLS Utiliy -- adding the comment that they weren't endorsing any particular system, but they would want to pay for what resources they used in evaluation experiments. They may be re-evaluating their position with respect to NLS utilization by them (and by/for other's besides NSF with whom they collaborate on network questions.) 5

DCE 13-MAR-73 15:52 12450

Phone Log: 1 Nov 72, from Tom Pyke of NBS, re DNLS training at ARC for two of his staff

(J12450) 13-MAR-73 15:52; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww bc drb ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 13-MAR-73 16:26 12451

Visit Log: 11 and 12 Dec 72, Shirley Watkins and Robert Rosenthal, from NBS

DCE 13-MAR-73 16:26 12451

Visit Log: 11 and 12 Dec 72, Shirley Watkins and Robert Rosenthal, from NBS

See (12450,2) for background. Shirley and Rob came for a two-day special course on DNLS, which was handled directly by the team of Mike Kudlick and Paul Rech. During that time they had one side visit with JCN and another with me (the last part of their second day, Tusday 12 Dec). 1

I wanted to explore potential applications of NLS, of our fortcoming NLS Utility (and the Community Workshop support, etc.) with them. Discussed their internal possibilities, which included Software-Engineering studies (in a SEAS Community participation), special support for the several infomation services they are operating within the computer world (FANIC under Shirley, and the more general one under Margaret Fox). 2

Reference papers given them: Community Information services (12380,) and Knowledge-Workshop Architects Community (12427,). 3

Reviewed Tree Meta and L10, TNLS/DEX for PSO, NLS conversion into MPS and its future implications (like by three years haing MPS into minis, other mediums, and biggies -- and NLS modules distributed among them), evolutionary modules for exploratory users of NLS (or, its descendents). Hope that they can consider FANIC as a Center for early trial usage of these tools; Gave Shirley copy of RINS72 (10045,). 4

DCE 13-MAR-73 16:26 12451

Visit Log: 11 and 12 Dec 72, Shirley Watkins and Robert Rosenthal, from NBS

(J12451) 13-MAR-73 16:26; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww pr mdk ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 14-MAR-73 10:33 12452

Phone Log: 23 Jan 73, from Tom Pyke of NBS

Phone Log: 23 Jan 73, from Tom Pyke of NBS

1) He explicitly wanted to thank us for giving the special two-day DNLS course to Shirley Watkins and Rob Rosenthal -- see (12450,) and (12451,). He said that they came back "Extremely enthusiastic regarding NLS, and your group. ...Raving... ease of learning DNLS .." Mentioned that they (Tom's group) definitely planned to get a terminal suitable for running DNLS, and in the meantime expect to make ever heavier use of TNLS. 1

2) Regarding their ability to subscribe to our NLS Utility: 2

OMB (Office of Management and Budget) has impounded a good bit of their FY73 funds; they had had something like a 40% raise in their funding rate for this year -- all cut (for good, as far as he knew). Other groups are letting people go; his group won't be that bad off. Still have equipment budget, apparently, but purchase of outside computer service comes under the part that was cut. So, in FY73, they can't consider much if any subscriber support for the NLS Utility. FY74 will be "a different story". 2a

3) Regarding the NLS Utility in general: 3

He had a number of direct questions regarding kinds and costs of NLS Utility service. Said he'd have to have figures on cost per hour, for instance, in order to set up a service contract. 3a

I told him of our current minimum subscription module being $50K/yr; he seemed quite sure that they wouldn't e able to swing that sum within his NBS domain, but he said that he might try forming a consortium of groups from among those who now make use of their TIP -- for instance, NSA has a 9600 baud line, and are experimenting with a DEC GT40 display terminal. 3b

We did a little quick arithmetic from what I estimated the user load cuold be for the miminum-service module -- and he arrived at $25 per terminal hour for DNLS. He considered this not to be too bad at all, with regard to the problem of justifying the rate within their purchasing system. 3c

No action yet; get in touch again when we are ready to be explicit and to follow through. 3d

12452 Distribution
Norton, James C. , Watson, Richard W. , Cox, Bonnar , Rech, Paul ,
Kudlick, Michael D. ,

DCE 14-MAR-73 10:33 12452

Phone Log: 23 Jan 73, from Tom Pyke of NBS

(J12452) 14-MAR-73 10:33; Title: Author(s): Engelbart, Douglas C.
/DCE ; Distribution: /jcn rww bc pr mdk ; Sub-Collections:
SRI-ARC; Clerk: DCE ;

DCE 14-MAR-73 14:55 12453

Phone Log: 13 Mar 73, to Tom Pyke of NBS

Phone Log: 13 Mar 73, to Tom Pyke of NBS

We are ready to pursue the question of their subscribing to the NLS Utility. See (12452,) for prior discussion on this issue. 1

Apparently their budget cuts are deep, and extend through FY74; he says that from the current level of NLS usage and interest, he is willing to commit at least $10K/yr (beginning in FY74). He recognizes that we had set a $50K/yr minimum, and he hopes that we can consider waiving this limit in his case. 2

He doesn't seem now to feel up to hustling together a group of other users, outside NBS, that together could meet the $50K minimum (this possibility was briefly mentioned in our 23 Jan phone talk, see -- 12452,3b). 2a

NSA, for instance, has almost no exposure and experience with NLS, and is likely to require more energy toward these ends than he can easily provide. He would imagine, for instance, that subscription to the NLS Utility would initially be viewed in the light of how competetive it might be in cost and service to available text editing systems -- "do you compete wih MTST?". (I mentioned that we'd be interested in the answer to that question, but we weren't very much interested in a user group if they had no larger scope to their potential involvement in knowledge-workshop improvement than that.) 2a1

Tom mentioned that some 15 other agencies are using their TIP to access the ARPANET. 2a2

The "package" mode in which we are planning to sell subscription service apparently will make it easy (as Tom views it, from what he understood of our plans) for them to go through their paper work. Can do a "sole source" buy. 2b

Interest in using NLS is growing within his group. Their progress toward a display terminal that can support DNLS seems stalled, although he would like very much to see it done, and he has a fair degree of pressure toward that end from several of his people. He mentioned something like, "If we could pay $5 to 6K for each display terminal, as supported by a local mini (cost apparently not including the mini), then we'd like to get three or four". 2c

He mentiond several times that the demand for better terminals has been proliferating -- upper/lower case, better font, faster, etc., and seems to attribute much of this to a stimulus from what NLS provides when one has better terminals. 2c1

Phone Log: 13 Mar 73, to Tom Pyke of NBS

It seems that NBS could pay more into the Utility if/when there is increased use of NLS (anywhere within the NBS organization). It is possible that we could stimulate more use by promotion, on-site teaching, etc., but he suggests that natural growth via enthusiastic users would be best -- and there is a nucleus who currently are enthusiastic. Tom repeated what he has told me before: he thinks that usage growth would be considerably facilitated if we did some things to reduce the formidible threshold that most people see when they contemplate trying NLS -- either simplified initial documentaton, and/or possibly a simplfied introductory subsystem that allows basic access, editing, sending, outputting, etc. 2d

I feel that Pyke's group represents such an important nucleus with respect to the future Workshop Communities that we will quite possibily choose to make an exception, and let them buy in at the low rate if it is at all feasible. (I didn't tell him this, though). He assumes that we aren't ruling him out because of the below-minimum subscription matter, and that we will very likely be returning to talk further. 2e

Note: This year, his group is spending a total of $65K on ARPANET computer services, with about half for TENEX at BBN, and most of the rest for service from UCLA and UCSD. 2e1

He had some interesting comments about trends that he could see (in answer to questions from me): 3

The issue that seemed important in high government circles last Oct. (when I had a long visit with him at NBS), was "productivity, of people and industry". This has apparently passed on to some new type of emphasis. For instance, they had been budgeted for a fairly significant program in "automation technology." This was cut way back, and, for instance, relatively heavier emphasis has been put on the activity associated with "flammable fabrics," something from which there appears to be quicker, visible results. 3a

He mentioned that the "current, IN term" now seems to be "energy." 3b

On a different matter entirely -- Tom is on the Technical Program Committee for the 1974 National Computer Conference. There will apparently be a very large program; he spoke of a possibility for a number of sessions being devoted to the topic of "interpersonal communications via networks." 4

Phone Log: 13 Mar 73, to Tom Pyke of NBS

He is personally quite interested in this. For instance, he and Sig Treu (University of Pittsburgh) did some experimenting on a paper-writing collaboration using NIC services, and Treu presented a paper reporting the experiment at some recent conference. 4a

I told him that it was certainly a relevant topic; but that if a relatively large part of the program were aimed in this direction, I'd be quite worried about how substantial could be the contributions unless there was a rapid growth in the number of people who were really doing significant working methods based upon such. I really think that there has been plenty of talk already about how nice it all would be, or about "toy" experiments. 4b

12453 Distribution
Watson, Richard W. , Norton, James C. , Cox, Bonnar , Brown, David R.
,

DCE 14-MAR-73 14:55 12453

Phone Log: 13 Mar 73, to Tom Pyke of NBS

(J12453) 14-MAR-73 14:55; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /rww jcn bc drb ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 16-MAR-73 15:25 12454

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

Visitors -- All from:
Department of Computer Science
Research Laboratories
General Motors Corporation
Warren, Michigan 48090 1

Dr. George G. Dodd, Asst. Dept. Head (313 575-3008) 1a

John D. Joyce -- special interest in data base systems, interactive analysis 1b

Hank Shutz -- Special interest in Programming Languages, expecially for mini computers. 1c

Luthar Russel -- Special interest in Machine Perception 1d

Their interests and activities were described by Joyce in his 12 Jan 73 letter to Rosen confirming their visit (XDOC -- 13337,), following is a summary listing that I abstracted: 2

Being launched or underway now: 2a

Implementing CODASYL DBTG data base system 2a1

Definition of data bases and translation between different bases 2a2

Interactive data analysis 2a3

Practical data compression 2a4

System performance and evaluation (target, a "system-perfomance theory") 2a5

Improving programmer productivity, via: programming style; debugging aids; ...; partially automatic testing/verification 2a6

Soon to be launched: 2b

Computer networking -- to anticipate and solve internal-GM computer-connecting problems 2b1

Minicomputers -- expecting heavy usage by GM, therefore work on: building and testing application programs and operating systems for minis; e.g. via cross compilers/interpreters running interactively on big TSS,

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

and finished product moved into mini only for final checkout. 2b2

Future plans: 2c

Programming tools for small-scale, low-cost graphics 2c1

Computer-aided instruction, within GM 2c2

Rudimentary AI techniques, for "practical" problems, e.g. space and packaging problems 2c3

Plus "Other potentially fruitful areas for industrial computer research." 2c4

Past work, which they are willing to discuss 2d

Large, virtual-memory time-sharing systems 2d1

Terminal languages and support for large-scale graphics 2d2

Compiler for a dialect of PL/I 2d3

Pre-visit ARC notes: During their visit I would like to establish enough contact between GM and ARC, among people, interests, and plans, so that in particular this contact can be most effective at sounding out the possibility of GM becoming an active participant in our Bootstrapping Community. 3

The following GM interests seem to have overlap with ARC: 3a

NLS "Workshop" to provide users and developers with more effective and integrated working aids -- substantive work, collaboration, publication, etc.: 3a1

"Definition of data bases and translation beteen different bases 3a1a

"Interactive data analysis 3a1b

"System performance and evaluation (target, a "system-performance theory") 3a1c

"Computer-aided instruction, within GM 3a1d

Rudimentary AI techniques, for "practical" problems, e.g. space and packaging problems 3a1e

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

Special "SEAS Workshop" relatedness: 3a2

"Improving programmer productivity, via: programming style; debugging aids; ...; partially automatic testing/verification 3a2a

"Minicomputers -- expecting heavy usage by GM, therefore work on: building and testing application programs and operating systems for minis; e.g. via cross compilers/interpreters running interactively on big TSS, and finished product moved into mini only for final checkout. 3a2b

"Programming tool for small-scale, low-cost graphics 3a2c

"Terminal languages and support for large-scale graphics 3a2d

Potential value to them of Org/Community Info Service (see CCC paper -- 12445,), and sharing our ARPANET experience: 3a3

"Computer networking -- to anticipate and solve internal-GM cmputer-connecting problems 3a3a

Regarding their interests in minis: Important range of mini applications seen in "intelligent terminals for knowledge workshops" 3a4

How about Knowledge-Workshop Bootstrapping as an area for them to develop in house (and in collab with a KWAC, see -- 12427,)? -- "Plus Other potentially fruitful areas for industrial computer research. 3a5

Preliminary GM-info description: Initial meeting in Jack Goldberg's conference rooom, with Jack Goldberg, John Wensley, Charley Rosen, Peter Hart, and me. They spent about an hour describing in more detail (than the letter) their activities; and we reviewed relevant activities of the three Labs (AIC, ISL, and ARC). Added items of relevance from their description were the following: 4

Re. Machine Perception: they are outfitting a lab with a PDP11/45 (connected to a 360/67 system), TV camera, manipulators, etc., 4a

Re. minicomputers: there is a tremendous ("huge, mushrooming") acquisition and application of minis around the

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

Corporation. Reasons: often don't have to name them "computers" so their acquisition doesn't get reviewed consistently; GM has policy that any capital acquisition under $25K only needs local-manager approval; reliability counts very, very heavily in their production systems, and n minis can support a much more reliable total system than can one maxi with n times the power. 4b

Percentage of computer dollars tied up in minis is increasing 4b1

Apply them often for extremely simple jobs: eg. to count parts, or to monitor a production machine and report its functioning status, etc. Often a mini will be a minimal 4K model, with "one wire coming out of it," which leads to the special programing problems -- they are too small to run the standard operating systems, or an effective compiler, so that their programs need special development considerations. 4b2

Re. Programing Methodology, or Productivity: The guy who is specially interested in this wasn't along today. Dodds commented that the Corporation has several thousand programmers, and that 50 to 80% of their work involves trudging though very old code (like in COBOL), making some simple mod, or finding out why it suddenly doesn't work like it used to. 4c

Re. Networking: Among their Divisions (Pontiac, Fisher, parts distribution, etc.) there are now many special purpose computer communication systems. For instance, dealers able to query a data base interactively during the day, while his clerical staff is spooling data on parts, warranty information, etc.; then at night the system polls each of the spooled data devices and accumulates the material for batch processing. 4d

It isn't clear what their real needs are, or the payoff considerations; and nobody can say for instance whether an ARPANET approach would really pay for them. 4d1

Security of files: Even within the Corporation there are strong feelings for protecting some kinds of design and financial data from other divisions. So they definitaly are interested in the privacy question. 4e

Organizational Development: Dodds mentioned a system they

are trying wherein foremen of work teams are considered to be running their own independent cost centers, doing business with "companies" to the north and south of them (other teams), buying, selling, etc. Quality another performance analyses are applied. Foremen are even being given portable handsets with which to enter data from the floor. Apparently this OD system is going over very well in its prototype applications, as judged by improved attendance records, morale, etc. Widespread adoption would probably place more demand on data proessing and communication, and (I inferred) perhaps a new level of privacy concern. 4f

Computer Graphics: Their "big application systems" are working well, after almost a decade of development and application evolution. Gradual acceptance in the design and analysis groups is taking place, and continuing evolution has shifted outside the Research Labs. Dodds' description of the processes and labs associated with acceptance and system evolution strongly bear out our "cultural lag" concepts, and the strategy of gradual, evolutionary approach that involves the user groups (and that needs local architects). 4g

Note: It would probably be quite valuable for a case study to be made and documented, taking into account the comments and experiences of the different kinds of people involved, and covering the whole decade. It seem to be an especially relevant, high-technology innovation and transfer case. 4g1

George mentioned the ("sensible", user-oriented) sorts of evolution in user features and control language that took place after the evolution came into the hands of the user-oriented groups. (Good lessons here.) 4g2

But the Res Lab's interest in graphics now has to do with the expected widespread, more general future use; and they feel that the control languges should become much cleaner -- Dodds makes analogy with the automobile-control situation, where such erstwhile user-operated controls as spark, choke, carbuator mixture (that even I remember using) have disappeared. 4g3

Miscellaneous: 4h

They commented that the size of the Research Laboratories is expected to go from about 1500 to about 2250 people over the next five years. Most of the growth aparently is to be

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

in "social" and "environmental" areas; this trend is a result of GM's inviting a panel of University presidents (and others, probably) to study their research investments. 4h1

Dodds heads a group called "Computer Research", which has about 22 people in it. This is part of the "Computer Sciences Department" which has about 90 people (about half of whom are kept busy in the Dept's internal computer operations activity). 4h2

I showed them our facility, and we spent about an hour in my office, talking, looking at printouts (Journal, NIC), and demonstrating DNLS. Briefly did a screen link to Dirk in the Conf. room, and briefly showed them the Video Projector (as they were leaving). A few topical notes about our discussion during this period and during lunch are: 5

I kept pushing the idea of a Software Engineering "knowledge-workshop" R&D Community, and the relevance to their corporate and research needs; I thought ARC could prove this to them, if the right guy from GM could come for a day or so. This needs following up; Dodds is the man to contact for this purpose. 5a

Speaking of potential Workshop Utility subscribers, George Dodds mentioned a group within GM that does a great deal of document development and production -- candidates for a DPCS community? (Note, get further info from Geo) 5b

Reference material -- Dodds took away one copy of our most recent RADC report; also I gave them each a copy of the paper "Coordinated Information Services for a Discipline- or Mission-Oriented Community" (12445,), and "SRI-ARC Summary for IPT Contractor Meeting" (13537,). Also they have Quickprint copies (right-margin statement numbers turned on) of the pre-meeting contents of this contact report -- one full printout, and one that was one-line truncated and clipped to three levels. 6

Followup: I should contact George Dodds within a month to follow up actively on the possibilities for their subscribing to the NLS Utility, and for helping them examine various prototype exploratory uses that might be valuable to them. 7

DCE 16-MAR-73 15:25 12454

Visit Log: 6 Feb 73, Dodd, Joyce, Shutz and Russel from General Motors Research Laboratories.

(J12454) 16-MAR-73 15:25; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww mdk pr jfv chi wlb bc drb dls ; Sub-Collections: SRI-ARC; Clerk: DCE ;

DCE 16-MAR-73 15:48 12460

Phone Log: 9 Mar 73, Don Aufenkamp, NSF

DCE 16-MAR-73 15:48 12460

Phone Log: 9 Mar 73, Don Aufenkamp, NSF

Called him 9 Mar 73 to check on his state of interest in receiving proposals from us involving Networks, Central Information Services, etc. as he and I had discussed last October. 1

Says that he is open and interested for FY74. In response to general inquiry regarding state of things, he implied that things were "o.k." -- with life's natural situation of funds being more limited than initial anticipation. Said that he felt the "Message is beginning to get through" about what computer networking is about (in the resource-sharing sense as opposed to the specific implementation schemes); felt that the EDUCOM-run seminars had been productive, at least in getting people's heads moving. 2

I probed a bit as to the scope of proposal (in nature, not $) that he oculd consider; seems to be as before, he's pretty much open to considering whatever we propose. In particular, I checked on the "three-party" possibility, where some group other than ARC would be granted the funds to a) tie onto the ARPANET, b) buy a hunk of K-W Utility service, and c) support local guys doing direct collaborative development on K-W sytem with us. 3

(I checked this because I'd like to consider getting people such as Dick Garrett's Bunch at Purdue, Bob Kinchloe at Stanford, Andy Van Dam at Brown, etc., into a collborative mode early -- possibily getting multiple benefit here: getting the Utility filled, getting some added Workshop-development power enlisted, and getting a start at the "core" part of the Bootstrapping Community.) 3a

Note: It is still a completely open matter as to what we do propoose to Aufenkamp. It will be decided via EMC and other deliberations. 3b

I promised to send several "essay-like memos" -- thinking of "Architect Community" (12427,), "Community Workshop" (12445,), "72 ARC Summary for IPT" (13537,), NCC paper "The Augmentd Knowledge Workshop" (14724,) and NCC paper "Design Considerations for Knowledge Workshop Terminals" (14851,). 4

He expects to hear from us in about a month (as soon as possible, from our needs), with proposals or serious thinkpieces. From earlier discussions with him, I think he would consider funding several different things (so we might well send two or more proposals) and could think in terms as high as $100,000 (which is a bit large fo some of his exploratory grants, but he

recognizes that our higher-loading and more "professional"
approach entail higher costs). 5

Phone Log: 9 Mar 73, Don Aufenkamp, NSF

(J12460) 16-MAR-73 15:48; Title: Author(s): Engelbart, Douglas C. /DCE ; Distribution: /jcn rww bc drb ; Sub-Collections: SRI-ARC; Clerk: DCE ;

AAM 1-NOV-72 11:58 12475

Additional site information on UKICS

Dear Jeanne and/or Dick,
We will be installing a Network node in England next year. The English have now provided me with names and addresses which should be used to update and correct all appropriate mailing lists:
The name of the site is UKICS.
The technical Liaison is Dr. Adrian V. Stokes.
The Station Agent is Prof. Peter Kirstein (already in the NIC with initials PK. Note that Prof. Kirstein is currently on mailing list C).
The mailing addresss for both these individuals is the same address that is currently listed for PK.
The telephone number for both these individuals is
London ("area code" = 01) 387-3421.
Please do what needs to be done to insure that the UKICS site has a complete set of information. Regards, Alex

1

AAM 1-NOV-72 11:58 12475

Additional site information on UKICS

(J12475) 1-NOV-72 11:58; Title: Author(s): McKenzie, Alex A./AAM;
Distribution: Watson, Richard W., North, Jeanne B., Kirstein, Peter/RWW
JBN PK; Sub-Collections: NIC; Clerk: AAM;

AAM 1-NOV-72 6:27 12476

Technical Liaison for Norway TIP

Dear Jeanne and /or Dick,

We will be installing a TIP in Norway sometime next year. I now have the name and address for the Technical Liaison for that site, namely:

Yngvar Lundh
NDRE
2007 Kjeller
NORWAY

Please add his name to the appropriate distribution lists.

Thanks,
Alex McKenzie

1

AAM 1-NOV-72 6:27 12476

Technical Liaison for Norway TIP

(J12476) 1-NOV-72 6:27; Title: Author(s): McKenzie, Alex A./AAM;
Distribution: Watson, Richard W., North, Jeanne B./RWW JBN;
Sub-Collections: NIC; Clerk: AAM;

AAM 1-NOV-72 6:43 12477

Use of lineprinter on TIP from TNLS?

Smokey, how does one use the recently-created facility to send portions of TNLS documents to TIP lineprinters in a nice way?
Alex 1

AAM 1-NOV-72 6:43 12477

Use of lineprinter on TIP from TNLS?

(J12477) 1-NOV-72 6:43; Title: Author(s): McKenzie, Alex A./AAM;
Distribution: Wallace, Donald C. (Smokey)/DCW; Sub-Collections: NIC;
Clerk: AAM;

Souvenir Network Maps

A number of different individuals working at ICCC planned to rip off the network map as a souvenir. At the time, I complained loudly about the high cost of the maps and perhaps persuaded people to leave them for me. As it turns our, I can get additional UNMOUNTED copies made and mailed out for about $2 each (the high cost turned out to be for making a master). Therefore, if you want a copy and are willing to pay two bucks for it please let me know. I will have a set made up to satisfy all orders which I have received by December first, after that I doubt that I will feel like accepting further orders. 1

AAM 1-NOV-72 6:53 12478

Souvenir Network Maps

(J12478) 1-NOV-72 6:53; Title: Author(s): McKenzie, Alex A./AAM; Distribution: Levin, Joel B., Bressler, Robert D. (Bob), Padlipsky, Michael A., Plummer, William W., Kahn, Robert E., Watson, Richard W., Karp, Peggy M., Thomas, Robert H., White, James E. (Jim), Cerf, Dr. Vinton G., Metcalfe, Robert M. (Bob), Vezza, Albert, Roberts, Diane C., McKenzie, Alex A./XIC3; Sub-Collections: NIC XIC3; Clerk: AAM;

Teletype (TI) Users Meeting

The requests for teletypes to be kept in people's homes or offices for long or short times far exceeds the supply. The following people seem to me to have irrefutable claims on a teletype for their home or office: 1

DCW JDH (one but maybe not two) KEV DIA WRF BER KFB KIRK (but maynot not in the morning) LLL MEJ NDM CHI. 1a

The following people have more or less good reasons to compete for the remaining tty's: 2

DCE PR JCN BAH MDK JAKE DSK JCP 2a

I would like these people who are competing for teletypes to meet with one another and me in the conference at 11 o'clock Friday. Please come prepared to justify your need for a teletype or to compromise with the others who have needs probably as good as yours. 3

We have 17 T-I's, 16 of which are being used by the following people: 4

CHI (at home)
LLL
DIA (at home)
WRF (at home)
DSK (at home)
DCW (at home)
KEV (at home)
BER
KFB
JDH (at home)
NDM (at home)
KIRK
PR
WHP
JAKE
BAH 4a

In addition, the following people have 33 TTY's: 5

JDH (at home)
DCW
DSK
WRF 5a

DVN 1-NOV-72 16:35 12479

Teletype (TI) Users Meeting

(J12479) 1-NOV-72 16:35; Title: Author(s): Van Nouhuys, Dirk H./DVN;
Distribution: Engelbart, Douglas C., Rech, Paul, Norton, James C.,
Hardeman, Beauregard A., Kudlick, Michael D., Feinler, Elizabeth J.
(Jake), Kaye, Diane S., Peters, Jeffrey C./DCE PR JCN BAH MDK JAKE DSK
JCP; Sub-Collections: SRI-ARC; Clerk: BER;
Origin: <VANNOUHUYS>TTYUSERS.NLS;2, 1-NOV-72 16:31 BER ;

DHC 1-NOV-72 10:00 12480

Moving day

Up to now, I have been using the ARPA directory. How do I transfer everything, including ident file and Journal affiliation over to the UCLA-NMC directory?

tnx. D/

1

DHC 1-NOV-72 10:00 12480

Moving day

(J12480) 1-NOV-72 10:00; Title: Author(s): Crocker, David H./DHC; Distribution: Van Nouhuys, Dirk H./DVN; Sub-Collections: NIC; Clerk: DHC;

DVN 1-NOV-72 8:31 12481

How to Make the Search for Statment Names Follow the Logical Structure of a File When More than One Statement has the Same Name

Further investigation reveals that if all the statements that contain duplicate statement names are edited at the same time (e.g. by substituting left parenthesis for left perenthesis throughout the file) search for statement names follows the tree walk. 1

In our experience, once a file is fixed it stays fixed, but there have been few cases and perhaps we have been lucky., 2

We are embarrassed to admit we do not fully understand the problem or the solution. 2a

DVN 1-NOV-72 8:31 12481

How to Make the Search for Statment Names Follow the Logical Structure of a File When More than One Statement has the Same Name

(J12481) 1-NOV-72 8:31; Title: Author(s): Van Nouhuys, Dirk H./DVN; Distribution: Crocker, David H./dhc ; Sub-Collections: SRI-ARC; Clerk: DVN;

DVN 1-NOV-72 9:26 12482

Problems with Inter-Host Sndmsg

In the best tradtion of our aqualntance (or perhaps not the best)
I just tried to send you an inter-host tennex message and it
replied: "NEIGUS[at BBN-NET] -- can't" 1

How can that be? 1a

DVN 1-NOV-72 9:26 12482

Problems with Inter-Host Sndmsg

(J12482) 1-NOV-72 9:26; Title: Author(s): Van Nouhuys, Dirk H./DVN; Distribution: Neigus, Nancy J./njn ; Sub-Collections: SRI-ARC; Clerk: DVN;

JBN 1-NOV-72 10:44 12483

1st ANNUAL FALL DOCUMENT INVENTORY

1

The week of ICCC appears to be a good time to help correct the literature situation we all face: when we need them, we can't find the documents bought for NIC and ARC. 2

Please pull out all such materials in your office, and execute one of the following as appropriate: 3

Publications you are finished with: 3a

Put on the rolling orange table in Jeanne's office 3a1

Publications you don't need right now but don't want to lose track of: 3b

Make a Xerox of the cover, or get someone to make it for you or insert a slip asking to have a Xerox made for you, and put on the orange table in Jeanne's office 3b1

Publications you will need back after ICCC: 3c

Write your name on a yellow slip and insert slip, and place on orange table in Jeanne's office. These items will come back to you next week. 3c1

1st ANNUAL FALL DOCUMENT INVENTORY

(J12483) 1-NOV-72 10:44; Title: Author(s): North, Jeanne B./JBN; Distribution: Hoffman, Carol B., Lee, Susan R., Michael, Elizabeth K., Dornbush, Charles F., ARC, Guest O., Feinler, Elizabeth J. (Jake), Handbook, Augmentation Research, Kelley, Kirk E., Meyer, N. Dean, Byrd, Kay F., Prather, Ralph, White, James E. (Jim), Vallee, Jacques F., Kaye, Diane S., Rech, Paul, Kudlick, Michael D., Ferguson, Ferg R., Lane, Linda L., Auerbach, Marilyn F., Bass, Walt, Engelbart, Douglas C., Hardeman, Beauregard A., Hardy, Martin E., Hopper, J. D., Irby, Charles H., Jernigan, Mil E., Lehtman, Harvey G., North, Jeanne B., Norton, James C., Page, Cindy, Paxton, William H., Peters, Jeffrey C., Ratliff, Jake, Row, Barbara E., Riet, Ed K. Van De, Van Nouhuys, Dirk H., Victor, Kenneth E. (Ken), Wallace, Donald C. (Smokey), Watson, Richard W., Andrews, Don I./sri-arc ; Sub-Collections: SRI-ARC; Clerk: JBN; Origin: <north>docinvent.nls;1, 17-OCT-72 9:48 JBN ; 3 NOV 72 5:21AM

JCN 1-NOV-72 8:10 12484
Hardware Operations: Martin Hardy as the New Pusher

HJOURNAL=" JCN 3 NOV 72 5:23AM 12227";

JCN 1-NOV-72 8:10 12484

Hardware Operations: Martin Hardy as the New Pusher

Martin Hardy has agreed to perform the role of pusher for our ARC Hardware Computer Service Operations (CSO). 1

His performance in this role has now started. He will undoubtedly need our support as he organizes the hardware operations activity to suit his needs. I am very pleased that he has agreed to be the pusher for this area. 1a

This function has been performed very well by Ed Van De Riet for the last few years. 1b

Ed has plans for gradually phasing out of the ARC program during the next year and a half. With Martin taking over the hardware responsibility from Ed at this time, we feel we will have a good transfer of the "know-how" that Ed has acquired while at the same time allowing Ed to focus on the diagnostic and documentation tasks we have had to defer for a long time. 1c

JCN 1-NOV-72 8:10 12484
Hardware Operations: Martin Hardy as the New Pusher

(J12484) 1-NOV-72 8:10; Title: Author(s): Norton, James C./JCN ;
Distribution: Hoffman, Carol B., Lee, Susan R., Michael, Elizabeth K.,
Dornbush, Charles F., ARC, Guest O., Feinler, Elizabeth J. (Jake),
Handbook, Augmentation Research, Kelley, Kirk E., Meyer, N. Dean, Byrd,
Kay F., Prather, Ralph, White, James E. (Jim), Vallee, Jacques F., Kaye,
Diane S., Rech, Paul, Kudlick, Michael D., Ferguson, Ferg R., Lane,
Linda L., Auerbach, Marilyn F., Bass, Walt, Engelbart, Douglas C.,
Hardeman, Beauregard A., Hardy, Martin E., Hopper, J. D., Irby, Charles
H., Jernigan, Mil E., Lehtman, Harvey G., North, Jeanne B., Norton,
James C., Page, Cindy, Paxton, William H., Peters, Jeffrey C., Ratliff,
Jake, Row, Barbara E., Riet, Ed K. Van De, Van Nouhuys, Dirk H., Victor,
Kenneth E. (Ken), Wallace, Donald C. (Smokey), Watson, Richard W.,
Andrews, Don I., Stone, Duane L./SRI-ARC DLS ; Sub-Collections:
SRI-ARC; Clerk: JCN ;
Origin: <NORTON>HARDWARE.NLS;4, 31-OCT-72 10:46 JCN ;

KEV 1-NOV-72 10:06 12485

modifying work station tables

this is a suggestion as to how to modify workstation tables to make more efficient use of space. I would appreciate any comments, and aggreements and/or disagreements, or alternative suggestions.

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I would like to see a little effort expended to improve our work station tables. 1

I think with a little effort, we could come up with a design that would be far more efficient in terms of space utilization, e.g., 1a

Each table should have (in the upper right corner ?) a recessed well that could hold pens and pencils below table level. 1a1

thus each station could constantly have a supply of pens and pencils, without the constant problem of the orange juice cans getting in the way, and/or falling over. 1a1a

Each table should have (in the upper left corner ?) a recessed shelf, covered by a sliding cover, that holds a telephone (every station should have a phone) and a headset for the phone. 1a2

For those of us who smoke, it would be nice if each table had a recessed ashtray (in the middle right ?). 1a3

I would recommend that the ashtrays have a sliding cover to be as unoffensive as possible. 1a3a

Each table sould have (on the right or left sides or both ?) a pocket for holding yellow pads of paper. 1a4

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