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Final Report

Covering 1 March 1974 through 31 December 1974

A KNOWLEDGE WORKSHOP FOR THE NAVY: AN EXPERIMENT IN TECHNOLOGY TRANSFER

By: ROBERT N. LIEBERMAN
Augmentation Research Center

Prepared for:

INFORMATION SYSTEMS BRANCH
OFFICE OF NAVAL RESEARCH
DEPARTMENT OF THE NAVY
ARLINGTON, VIRGINIA 22217
ATTENTION: MR. M. DENICOFF

CONTRACT N00014-70-C-0302

SRI Project 8622

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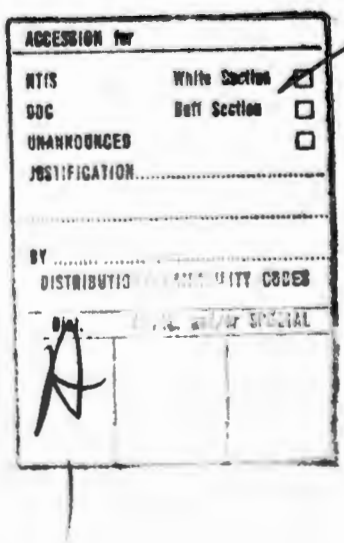

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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Following this introduction to ARC's concepts and facilities, several Navy Laboratories have subscribed to the ARC utility service and other Navy organizations have expressed interest.

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19. KEY WORDS (Continued)

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Abstract

In order to transfer the technology developed at SRI-ARC to Navy organizations, a videotape was produced to be shown at an all-Navy conference held at ONR.

Following this introduction to ARC's concepts and facilities, several Navy Laboratories have subscribed to the ARC utility service and other Navy organizations have expressed interest.

This report discusses various alternative methods of presenting a complex technological capability to a wide spectrum of Navy personnel. Because of the highly interactive, real-time nature of the capability to be presented, it was especially difficult to clearly indicate the "feel" of this system without showing the real-time interaction.

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Background

As a natural outgrowth of the previous ONR contracts [1] (references are listed at the end of this report) and in concert with the desire of the Augmentation Research Center at Stanford Research Institute (SRI-ARC) to have Navy organizations with real applications participate in the evolution of a complex system development, the emphasis during this year was on disseminating information about the NLS (ON Line System) to various Navy installations. 4a

In January 1974 SRI-ARC began providing a people and computer service to selected organizations interested in advanced information handling systems and techniques. By the end of 1974, 12 organizations were receiving services. This represents a user community of over 300 people. 4b

Our aim during the contract period was to let the Navy know about this service and determine which sites might be interested and suitable for participating. 4c

Introduction to NLS 5

The NLS software is a complex information handling system that enables individuals and groups to be more effective at many of their basic workaday tasks. The capabilities of the system and applications of it are described elsewhere [2] and [3]. A brief overview follows: 5a

1. Facilities are available for computer capture of text from direct typist input, typist to cassettes, magnetic tapes, and computer communications networks (e.g. ARPANET) which include computer to computer transfer of data.

2. Text manipulation and editing with a sophisticated, two-dimensional computer based system form part of the core capabilities of NLS.

3. Hardcopy output with extensive formatting controls (e.g., pagination, margins, type fonts) is provided.

   This also includes output to a COM device (Computer Output to Microfilm) which, in turn, can provide camera ready copies for commercial printing. A wide variety of character sizes and styles can be specified with many formatting options.

4. Basic to NLS is the ability to read and search text with a variety of view specifications and content filters.

   This enables the user to peruse text in a more effective manner and locate particular passages with the aid of the computer.

5. A unique feature is the structuring of computer-held documents with an hierarchical organization.

   This is basic to the way of reading while using our system, allows better organization of thoughts, and facilitates retrieval of information.

6. Extensive textual communication procedures and facilities are available.

   There is a facility to send computer-text mail to individuals or groups. Any mail sent by this subsystem receives a unique accession number, automatic delivery to specified individuals or groups, and permanent storage of the mail in what we call the Journal. The Journal represents the total collection of short messages, letters, documents and reports that have been submitted by any user of the system.

In addition, automatic indexing of all mail items is provided and is based on accession number, author, and title-words.

In effect, the Journal becomes a permanent repository of all dialogue among users of the system. [Privacy features are available to restrict reading and cataloguing of items in the Journal. However, the general openness of the Journal has provided a rich source of historical information.] Communication of mail items to anyone known to the system is possible, even if the recipient is "located" on another computer across the country.

7. Other facilities include a computer based calculator, computer programming support subsystem, user customizing subsystem [to modify the system for each individual], and various special user programs.

In concert with our goal of transferring these developments and our experiences to other possible users, SRI-ARC has established a computer and people service to which government and nongovernment organizations can subscribe [4]. 5b

This utility service will enable SRI-ARC to better evolve these workshop capabilities according to the feedback from "real" users. Furthermore, this reduces the risk that normally occurs in transferring new technology to nontechnological environments.

It is expressly our goal to carefully transfer our efforts in a gradual, coordinate method to managers, scientists, typists, and others. We are keenly aware of the vast, nontechnical areas that have such an important role in a successful transfer. 5c

Approach

Various methods of informing Navy installations about the system were possible. Because of time constraints, personnel availability, and fairness to all sites, we felt that a conference, where all would be invited, would be the best initial effort to catch the interest of the Navy.

The conference would indicate the versatility and possible applications of the NLS system, and would try to focus on the manager who wanted to augment his office.

We decided upon an open conference, even though we would have preferred to demonstrate the system to a small, homogeneous group because of both the versatility of the system and the value to us of feedback from our audience (a large group often precludes much interaction with the audience). Because of the constraints mentioned above, however, we rejected a series of smaller, homogeneous meetings.

The medium of the presentation was important since the NLS capabilities can best be shown with a display work station (a CRT computer terminal and microprocessor).

This requires either a movie, videotape, numerous slides or viewgraphs, or a special hookup to an ARPANET TIP (a communications minicomputer).

A connection to a local TIP was not feasible and a movie was not financially within the bounds of this contract.

Thus, we decided that a videotape presentation was the only way for Navy personnel to "get a real feel" for the system.

Fortunately, SRI-ARC has some video equipment that enables mixing of display and camera input. Despite the amateur nature of the video recorders and cameras, the hardware was adequate for our initial attempt of a 30 minute videotape.

The careful wording of the script and composing of the proper visual scenes consumed considerable time.

The difficulty stemmed from the nature of NLS, which is a sophisticated, highly technical system.

The demonstrated applications had to be fairly short and require little system orientation for their presentation.

Yet, the description had to be clear enough to be understood in a one-pass viewing.

In addition, the technical aspects of NLS tend to be "dry" in a normal presentation. Our first draft tape indicated that this was very undesirable in the videotape medium.

Visual effects to better demonstrate the system required some expertise on the limited equipment to which we had access. This ability had to be acquired by the personnel available to the project. 6I

Our decision to use the mixing, split screen, and multiple camera facilities was well founded but cost considerable time and effort because of the experience that had to be gained and the need for the presence of three or four people during the taping. Personnel were simply not available to maintain this high level of participation. 6J

This is reflected somewhat by the first 10 minutes of the videotape, which have a bit more sophistication than the remainder of the tape.

The editing of the tape did not consume much time but the complexity of doing many edits prevented us from including several minutes of a montage scene that we initially thought would be an excellent introduction to an application of our system. 6K

Early in the contract period we experimented with converting videotape to 16mm film. This proved less than satisfactory and the early decision to use videotape for recording and presenting stood. 6L

To a small extent, we investigated the possibility of filming the script directly by 16mm cameras. We made some sample shots and on that basis decided not to use this method. They showed that the lighting conditions necessary for filming CRT screens precluded sharp, clear pictures. The method would also have been more costly than using videotape equipment. 6M

Reactions to the presentation 7

Some 50 Navy people from various organizations attended the conference held at ONR on 7 November 1974. We gave a short introduction to the videotape and then used three TV monitors to show the 42-minute tape. 7a

Most of the audience seemed attentive during the viewing of the tape. However, the question and answer period that followed was not especially lively, with only a few participating. 7b

Other Navy Contacts 8

During the year we communicated with several Navy installations. This included NSRDC, NAVCOSSACT, and NMSCA. 8a

NSRDC 8b

The Naval Ship Research and Development Center has been interested in computer networking for a few years, and has obtained NLS service for some time. When the Utility was initiated, NSRDC purchased one slot. It is now subscribing to two slots. Part of this use is for a Navy Laboratory project in which several of the Navy Labs are participating.

In effect, NADC (Naval Air Development Center), NCSL (Naval Coastal Systems Laboratory), NELC (Naval Electronics Laboratory Center), NRL (Naval Research Laboratory), NSRDC (Naval Ship Research and Development Center), NSWC (Naval Surface Weapons Center), NUC (Naval Undersea Center), NUSC (Naval Underwater Systems Center), and NWC (Naval Weapons Center) are utilizing the utility service under the NSRDC allocation. Their use is expected to grow in the next year.

The capabilities of our service are helping these geographically dispersed Labs to communicate and formulate reports together.

NAVCOSSACT 8c

The interest at NAVCOSSACT was sufficiently high that they contacted NSRDC to see if they could use part of their NLS subscription. An arrangement was made and NAVCOSSACT will have access to the NLS Utility service for six months beginning in January 1976.

NAVCOSSACT also has a keen interest in the mouse and keyset, which SRI pioneered several years ago.

It is likely that they will be using these specially designed devices for their hardware terminal development effort.

NMSCA 8d

A demonstration of the teletypewriter version was given to personnel of NMSCA early in the contract period.

NMSCA is in a position to know several parts of the Navy with

information needs that could make good use of this new technology. Possible prime candidates were discussed.

We thought, however, that the planned, general meeting open to all would be the first step in attracting these potential users.

Conclusions 9

It is apparent that a professional film maker is needed to construct an appropriate 16mm film on the NLS system, or a live demonstration must be given in order to attract people and to create the necessary interest in the utility capabilities. 9a

These approaches have been unavailable to SRI because of cost; instead we have found from this year's experience that personal, one-to-one conversations with prospective users is the most effective way to raise curiosity about the NLS system. 9b

The method of using slides with recorded audio has some potential but clearly it must also be done by professionals in close contact with our staff. 9c

One important result of this exercise was the considerable information gleaned from taking the naive users' point of view in making the videotape. This gave us valuable insights into the way new users of NLS view the system and possible methods of introducing it to them. 9d

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