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DoD Librarian Interfaces 32nd Military Librarians' Workshop Proceedings

Hosted by Naval Ocean Systems Center

NAVAL OCEAN SYSTEMS CENTER

San Diego, California 92152-5000

E. G. SCHWEIZER, CAPT, USN
Commander

R. M. HILLYER
Technical Director

ADMINISTRATIVE INFORMATION

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J.L. Buntzen, Head
Technical Libraries Branch

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H.M. Blanchard, Head
Technical Information Division

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and

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Naval Ocean Systems Center
San Diego, CA

Robert M. Hillyer
Technical Director
Naval Ocean Systems Center

Joan Buntzen
Head, Technical Libraries Branch
Naval Ocean Systems Center

Convention Center
San Diego Princess Hotel

MILITARY LIBRARIANS WORKSHOP
San Diego, CA

Wed. 12 Oct 88 (0840)

Paul Klinefelter
Chair, MLW Executive Board

I welcome you to this 32nd annual Military Librarians' Workshop. I remember very well how interesting and well-organized the tenth workshop was that was held here in 1966 under the sponsorship of the Naval Electronics Laboratory, the present host's predecessor organization. Now the beautiful site and fine program that Joan and Kathy have put together for the Naval Ocean Systems Center bid fair to surpass that earlier accomplishment. I also note with pleasure that Mr. Hillyer is on the program. He is, as many of you have reason to know, a truly supportive manager where technical libraries and technical information programs are concerned. My own sincere admiration for his vision and accomplishment date from his years as Director of Navy Laboratories. You are going to hear a very good friend.

I've been involved with these workshops for a long time. It seems to me that they get better and more useful to librarians every year. Again this year Joan and Kathy have laid out for us an act which will be very hard to follow. However, I predict that the School of Aerospace Medicine will come up with another outstanding conference next year in San Antonio.

Welcoming Remarks
Joan Buntzen, Head, Technical Libraries Branch
Naval Ocean Systems Center

On behalf of the Naval Ocean Systems Center, welcome to San Diego. I guess it is an honor to be serving for a second time as Program Chairman for the Workshop, and now as Host as well -- all within a period of eight years! I know from all of this experience that it is not possible to participate in the Workshop on such a scale without the dedicated effort of several key people. I refer to the Program Co-Chair Kathy Wright, also of NOSC, the other Program Committee members Lois Richards-Means and Linda Loughnane of MATRIS, the members of the Registration and Proceedings Committees, the NOSC Library staff, and Mrs. Kitty Pitts of the NOSC Public Affairs Office. If you have any questions, these people can be identified by their white badges.

In 1966, one of the NOSC predecessor labs, the Naval Electronics Laboratory, hosted the 10th Military Librarians Workshop. The theme then was "Library Employee Development." For the 1980 Workshop program, we organized presentations and discussion around the theme, "Information Management in the DOD: The Role of Librarians." This year, we examine "DOD Librarian Interfaces"--our interface with the future, with technology, and with our clientele.

In developing these Workshop programs, we have continued to be concerned with the librarian as the dynamic force in managing and planning information resources and services for our user communities. We continue to be concerned with urging DOD librarians to be aggressive and maintain a recognized standing as the information professionals in their organizations. In this year's program we have focused on several specific areas of library management in which to raise our current awareness: dealing with change and innovation, planning for the future, interfacing with information technologies, and informing our users.

As has often been the case, we are in a period of serious budgetary and financial concerns, if not crisis. At the same time, information science and technology have brought us to a point when our successes and our recognized potential have resulted in not only impressive statistics to show the boss, abut also vastly higher expectations by our computer-expert clientele. Where do we go from here? How do we finance more service, how can we continue to finance what we presently do, how do we select among the current and future technologies, and how do we keep up with the expectations of our users?

These are questions which challenge us as managers and should stimulate everyone here, as head of a large library or as a one-man operation. We hope that this year's program will provide you not only with increased awareness, but also with some solid concrete approaches to your work.

THE LIBRARIANS INTERFACE WITH DOD MANAGEMENT

by

R. M. Hillyer
Technical Director
Naval Ocean Systems Center
San Diego, CA

MILITARY LIBRARIANS WORKSHOP
12 OCTOBER 1988

THE LIBRARIANS INTERFACE WITH DOD MANAGEMENT

R. M. HILLYER

Good morning military librarians, friends of yours, guests, speakers, ladies and gentlemen. I would like to add my welcome to the 32nd Military Librarians Workshop. It is a pleasure for the Naval Ocean Systems Center to host this meeting. Captain Schweizer, the Commander of NOSC, asked that I extend his greetings and welcome as well. Welcome also to the city of San Diego.

I am sure that as librarians you insist on significant research on all major decisions. The selection of San Diego by your site committee was a good one. One might only ask why it took them 32 tries, after going through places like Dayton, Ohio, Silver Spring, Maryland, or Fort Huachua, Arizona, to pick the world's finest city. But the research finally paid off. Further, the selection of the month of October must have been carefully researched. It is the month of the lowest tourism rates, hotel rates have accordingly dropped, and the weather -- well, clearly they researched the weather. From such research one would easily conclude that October is the right month. The average temperature is 71 degrees F, the probability of fog in any one day is less than 1%. The probability of overcast, even for part of the day, is less than 5%. The probability of rain -- well, it doesn't rain in San Diego in the Fall. Great research, but the librarian gods must be angry with you, because this is the 12th day in a row with overcast, the third day in a row with fog, and that was not champagne drizzling at my house on Monday night.

[Description of Naval Ocean Systems Center here]

The short blurb on me in the program states that I have been an avid supporter of technical information programs. I am pleased to say that that is correct, and I therefore have well developed views on the importance of your profession to my areas of interest and work: science and engineering -- research and development.

I am afraid that, probably due to my background of an entire career in the Navy laboratory system, I am going to stray just a bit from the title of my presentation. I really will focus on the librarians interface with R&D managers.

The overall information climate today is not as good as it should be. There have been signs of understanding the need and strengthening the support, but frankly there has been an atrophy of support to the information programs within the DOD. Perhaps those of us in this room can lead the way in turning that inattention to attention.

I have noted the following trends in the Defense research and development business which support my conclusion that the information programs are not as strong as they should be.

Financial support to DOD information programs has not kept up with the need. For example, DTIC, even with the recent supportive shot in the arm caused by the DOD IG, is not funded to meet the need.

Fewer formal technical reports are being published, when measured by any reasonable measure.

Literature searches during research and development programs are often missing and more often incomplete. Management is more tolerant of short shrifting this important facet of R&D.

In our laboratories and R&D centers, the size of our library staffs has, as a rule, continually shrunken. One might argue that it is expected and correct that these staffs have become smaller, since we now have modern and efficient information retrieval systems which make the research librarian so much more efficient that we need fewer. What this argument fails to realize is that the same technology explosion which made these more efficient information retrieval systems possible, also resulted in the burgeoning of the data to be retrieved.

Headquarters libraries have suffered the same fate, more so.

Security restrictions and considerations have become a stumbling block to good information programs, rather than a tool to be used in a competent information program.

One might note that a common thread weaves its way through these symptoms: they are all driven by budget, by the cost of getting the service. I believe that this is a classic case of false economy. A moderate investment in technical library services will pay off handsomely in the cost of R&D.

However, I do not want to paint a total gloom and doom picture of failure; that is not the case. The national systems for storing and retrieving information are impressively improved and improving. The training and skill level of our librarians is higher than ever. As mentioned earlier, the information retrieval systems of today are efficient, powerful and labor saving.

Left unattended, the problem will only get worse. Therefore, we must attend to it. In today's economy there will be continued pressure on the federal budget. In today's society, much of that pressure will be borne by the Department of Defense. And in today's geo-political environment, much of the cut in DOD will be

taken by the research and development budget and the so-called "nice to have" services. We must be sure that our libraries, our information programs, do not fall victim to this pressure. That will take enlightened managers; that will take enlightenment; and that is our job -- yours and mine. We must continually and forcefully market these programs to all levels of management: activity, agency and department.

Let me say another word on the security restriction issue mentioned above. This problem area has always been a serious one, but one for which the librarian community had developed the tools, the systems, which allowed safeguarding of the material, yet easy access by properly cleared personnel. Today's security system has become far more complex, especially in view of the plethora of special access or compartmented programs. (As an aside, often the services or agencies are motivated to make these programs special access, not because the data are of critical importance to national security, but because it allows exceptions to the oversight of our terribly complex acquisition system.) We have not yet developed a system to extract the pertinent data, record it, and make it available through multi-level compartmentalization. I frankly am not sure that there is an answer to this dilemma. On one hand we must protect the data from the bad guys, and on the other find a way to make it available to qualified users. However, I am sure that this is a serious problem to your business, and one which is worth some special attention of your community.

Let me now turn to a less global view of library programs, one from within a laboratory or R&D center. I believe that one of the few things which make the difference between an excellent research and development organization and an average one is the existence of an excellent technical library. Indeed, I know of no first rate technical organization that does not have a first rate technical library. One might argue whether the organization made the library excellent or the library made the organization excellent -- the truth is neither. They go hand in hand, nurturing each other.

At the risk of offending some of my colleagues, I will use my own library as an example. One of NOSC'S two predecessor organizations was the Naval Electronics Laboratory Center (that was its most recent of five or six names). Its library was large and competent and enjoyed the reputation of being the best government technical library in the west. Its users included not only the technical staff of NEL, but those of other laboratories and faculty and students of west coast universities. Although I never traced the history, it is undeniable that it atrophied over the years, especially in the 70s and early 80s. I did do enough investigation to determine that there had never been a systematic decision to reduce the size and capability of the library -- one based on an analysis of need or cost effectiveness. It had simply been allowed to atrophy. Each time there was a budget problem, or a ceiling point problem (manage-to-payroll had yet to

be invented) there was a decision to take a small cut of the library resources -- and sure enough, fifteen small cuts make one big one.

When I first came to NOSC, I noted that the library services were not used to the degree that I expected. The library I found was excellent, with good people and good programs; it was simply too small and its use was spotty. I also noted some of the symptoms described earlier, especially the limited number of literature searches cited and the relatively minimal use of the library by the technical staff. I caused a small study of library utilization and learned that some groups used the library extensively and some hardly at all. Again I noted, on a different scale, the excellent correlation of the excellence of technical work within the groups and the use of the technical library. Then we noted another interesting factor: we had more libraries than we thought. We found more than several technical programs with their own private limited library. When I inquired why they had them, the answer was almost always the same: the Center library was unable to provide the service when we needed it. Why was that? Because they did not have adequate resources. I believe that this is known as catch 23.

Now, I've never been smart enough to size a library (or any other service organization) so I cannot give you any advice on how to do that. But, having decided that it was too small, I decided to use the bracket and halving method and simply doubled its budget (after asking for some plans from the librarians). We also closed some of the smaller counterfeit libraries. Although I won't bore you with the statistics here (if you really want them you can get them from Joan), the business in the library also doubled. Yes, Joan has reminded me that this means that we haven't reached the optimum size yet.

I know that I am preaching to the choir on the need for competent libraries. However, I do think that our experience is one which you might carry to your line managers and hope that it will help you gain support for a strong program.

I would like to leave you with the following thoughts:

> Competent library services are a necessary condition for a competent science and engineering organization.
>
> Every competent scientist or engineer knows this and further knows that it is also true in their personal work.
>
> Most managers of research and development in the Department of Defense were once competent scientists or engineers; but they have forgotten this, or, perhaps more kindly, haven't thought about it in those terms. You need to remind them.
>
> In an R&D organization it is better to have a technical library that is too big rather than one which is too small.

Introduction of Keynote Speakers

Joan Buntzen, Head, Technical Libraries Branch
Naval Ocean Systems Center

The two keynote speakers will discuss aspects of librarians interfacing with change -- meeting change creatively as managers, and also meeting the challenges of new technologies as professional librarians. The need to increase our sensibilities in dealing with change is well stated in a recent article by Brett Butler in the ASIS Bulletin. He said,

> "...venture capitalists have a word for the steady, dependable, unchanging business. They call it the 'living dead.' If library organizations do not change their passive, relatively fixed unarticulated images of their role in their environments, they are likely to become radio to the new information's television. Everyone reminds us that television did not replace radio. That's true, but it made radio a lot less important. Do we want to be a background music in the spectrum of information services?"

Our first keynote speaker on interfacing with change is Dr. Phillip Hunsaker who is Professor of Management at the University of San Diego and a noted author and lecturer. Dr. Hunsaker is going to discuss strategies for meeting change creatively, and the manager's role as an agent of change.

Pat Moholt of Rensselaer Polytechnic Institute will speak to us on the more specific implications of interfacing with change in the library setting. What are the challenges for library management and the library profession, especially in the areas of new and advanced information technologies?

STRATEGIES FOR ORGANIZATIONAL CHANGE: ROLE OF THE INSIDE CHANGE AGENT*

by

Philip L. Hunsaker
Professor of Management
School of Business Administration
University of San Diego
San Diego, CA

Dr. Phillip L. Hunsaker is a consultant, seminar leader, speaker, author, teacher and researcher in the areas of management and organizational development. He has authored over eighty publications including numerous articles in academic and professional journals, and the books: The Art of Managing People (Prentice-Hall); You Can Make it Happen: A Guide to Personal and Organizational Change (Addison-Wesley); Managing Organizational Behavior (Addison-Wesley); Strategies and Skills for Managerial Women (Southwester); Decision Dynamics (Ballinger)

*Portions of this paper were originally presented in Dr. Hunsaker's book, You Can Make it Happen: A Guide to Personal and Organizational Change

STRATEGIES FOR ORGANIZATIONAL CHANGE: THE INSIDE CHANGE AGENT

Phillip L. Hunsaker
University of San Diego

Abstract

This paper describes the role of an inside change agent and strategies for enhancing the success of change efforts. It discusses advantages and disadvantages of internal positioning, principles for enhancing influence, role differentiation, considerations in choosing change strategies, and a range of interpersonal strategies for bringing about organizational change.

When individuals are faced with a conflict of values between their personal lives and the organizations in which they work, it is not always possible or preferable to change the personal aspects of the situation. In such cases, the optimal course may be one of changing the organization to make it more compatible with one's personal needs. The following guidelines present a format for becoming an inside change agent.

When you plan to invest effort in making your organization more compatible with your values, it is important to perceive it as a social reality within which individuals make decisions. This shift in personal frame of reference changes our perspective of organizations from a "fixed given" which we can only respond to, to an "agreed upon social invention" which members of the organization have created for themselves and now take for granted. Since individuals not only create the organization, but "are" the organization, we can change the organization by changing the perceptions, awareness, and values of those who make it up.

Role of an Inside Change Agent

Ronald Havelock of the University of Michigan Institute for Social Research has combined in the experience of researchers and practicing change agents in an analysis of over 1,000 studies of innovation and the process of change[1]. Havelock's findings concerning the relative advantages of being an "insider" or "outsider" appear to be a good place to start in considering your role as an "inside" change agent.

Advantages and Disadvantages of the "Inside" Change Agent

"Outside" change agents posses several advantages, such as being independent and having an objective, new perspective. They also have several disadvantages, however, such as being a stranger, lacking "inside" understanding, and not being able to identify adequately with the problems. As insiders, we are intimately involved with the well being of our organization, as well as ourselves, which gives us a different motivation than monetary compensation for initiating change processes. Some of the advantages of being an inside change agent are:

1. You know the system: where the power is, who the opinion leaders are, where the strategic leverage points are.
2. You understand and speak the language of the organization: the special ways members refer to things; the tone and style of discussing things.
3. You understand the norms: the commonly held belief, attitudes, and behaviors; you probably follow and behave in accordance with them.
4. You identify with the organization's needs and aspirations: if the organization prospers, this will also probably help you; you have a personal incentive for helping.
5. You are a familiar figure: what you are trying to do is understandable as "member" behavior; you don't represent the threat of an unfamiliar outside force.

As an insider, you also have the following disadvantages:

1. You may lack an "objective" perspective: because of your involvement and history with the organization, you may be biased or not be able to see the organization as a whole system.
2. You may not have the special knowledge or skill required: since consulting is not your primary vocation you may not have had enough training to be a true expert in the change situation.
3. You may not have an adequate power base: unless you are at the top of the organization your plans may be confronted by superiors or competing peers.

4. You may be hindered by past images: you may have to live down past failures or the hostility generated by past successes.
5. You may not have independence of movement required to be effective: the obligations of your job may severely limit the time and energy that you can invest in a change agent role.
6. It may be difficult to redefine your on-going relationships with other members of the organization: when taking on the change agent role you must be able to change the expectations that your associates have about how you will behave and how they will relate to you.

In order to capitalize on the advantages and avoid the disadvantages of being an inside change agent, many experienced professionals have suggested that insiders work together with outsiders as a team. Such a team would provide the insider with "expert" legitimacy for his efforts along with real expertise, an objective perspective, and moral support. If you do not have the advantage of outside support and are not in a position of power and authority within your organization, it is, nevertheless, possible to be effective in bringing about change.

Ten Principles of Being a Successful Inside Change Agent

These principles should be kept in mind in all change situations and are prerequisites to any specific change technique. These ten principles are as follows:

1. To bring about desired changes, it is first necessary to truly know yourself. We must be aware of our needs, values, and objectives in order to be able to determine what it is that we need to be happy in our organization.
2. For change strategies to be effective, we must truly understand the organization. Knowledge of values, norms, key people, subsystems, cliques and alliances is prerequisite for assessing the situation and planning realistic change efforts. Your personal knowledge can be supplemented through contacts with "political" colleagues.

3. In order to make informed decisions, we must keep lines of communication open. One of the most devastating blockages to change efforts occurs when we cut off communication with out adversaries. This can cause affirmation of negative stereotypes without the possibility of new disconfirming information that could shed new light on the situation.

4. It is important to determine how others feel about the situation and whether they agree with your desires. If no one else agreed with your assessment of the situation, maybe another self-assessment is called for. On the other hand, if you can identify potential allies who share your desires, they can contribute to an effective team effort with a higher probability of success.

5. The situation should be analyzed from the many points of view of all parties involved. Assessing the perceptions of a proposed change from adversaries' points of view may reveal how they would have overlooked an important point that would change their minds. It might, on the other hand, demonstrate something that convinces you to alter your own position.

6. A thorough understanding of all dimensions of the proposed change is a prerequisite. The innovator must be "the expert" in the change to maintain his own credibility, and to aid others in understanding what he is trying to bring about. This knowledge should include all strengths, weaknesses, evaluations, and possible objections.

7. Successful changes are not usually accomplished without continued effort. The innovator must be persistent and continually make inroads whenever opportunities present themselves. Giving up before you even start leads to very predictable negative results.

8. A sense of timing is just as important as the strategy employed. Waiting for the opportune moment, as opposed to reacting spontaneously, can make a key difference in the success of a change effort.

9. Sharing credit with others can also be vital in creating enthusiasm about a desired change. People support and feel committed to ideas they feel part of.

10. Avoiding win-lose strategies and seeking changes where everybody wins can avoid standoffs where everyone loses what they want directly or indirectly through hard feelings.

How to Define Your Role as an Inside Change Agent

Regardless of your formal job title or position, there are four primary ways in which a person can act as a change agent. These roles have been defined by Ronald Havelock [2] as:

1. Catalyst: The catalyst role is needed to overcome existing inertia and start the organization members working on their serious problems. The catalyst's primary role is to make personal dissatisfaction known and by upsetting the status quo, catalysts energize the problem-solving process.

2. Solution Giver: As a solution giver you have a chance to apply your ideas about what the organizational change should be. In order to have your suggestions accepted, however, you must know when and how to offer them, and how others in the organization can adapt them to their needs.

3. Process Helper: This is a critical role concerning the "how to" or process of change. It involves the activities of showing organization members how to (a) recognize and define their needs, (b) diagnose problems and set objectives, (c) acquire relevant resources, (d) select or create solutions, (e) adapt and carry out solutions, and (f) evaluate solutions.

4. Resource Linker: A person in this role brings people and other resources together so that they can be applied to the problem. Resources include not only people with necessary skills and knowledge but also, financial and political backing.

In defining your own role you should keep in mind that all of them are necessary and that you may be able to fill more than one of them yourself. The roles are not mutually exclusive. Also, it is possible for you to be effective in these change roles regardless of whether you are "line" or "staff," or working from above or below.

Tips for Being Successful in Each of the Change Agent Roles

All four change agent roles are important and partly interrelated. The overall task of any change agent is to establish and build a relationship with the organization members he wants to help with a change, work with them collaboratively in a problem-solving process, and leave them with the ability to solve similar problems effectively themselves in the future.

1. How to be an effective catalyst -- A catalyst is the initial change advocate who stresses the need for change to further the interests of the organization or disadvantaged subgroups and individuals. Catalysts are often deeply committed and emotionally involved in the change effort because they personally feel injured, or they identify with some subgroup which they feel is being exploited. To maximize their effectiveness as an emotionally involved change advocate, catalysts need to make certain that they:

a. think reasonably about steps that need to be followed to win support for their cause and to reduce resistance to the changes they desire.

b. try to see the situation from the point of view of the existing organizational leadership.

c. promote a feeling of common identify and purpose in those supporting the change effort.

d. form alliances with others who can take on other types of change roles, such as process helper and linker.

e. have a sense of timing. Catalysts need to assess the support for change and judge the most opportune moment for bringing it about.

2. How to be an effective solution giver -- Most of us have, at one time or another, thought that we had a better solution to an organizational problem than the one adopted. Whether or not we were effective in being a "solution giver," however, depended on how well we communicated our solution to others. As solution givers, we need to concentrate on the following check points:

a. find out the real needs of the organization before you decide it needs the solution you have in mind.

b. adapt innovations so that they are maximally beneficial to all members of the organization.

c. have more than one solution to offer and be adaptable.

d. insure those affected by the change continued assistance beyond the point of adoption.

e. help organization decision makers be good judges of solutions so they can decide for themselves what is best for all.

f. build an open and authentic relationship with others in the organization by knowledge-sharing and helping.

g. become a resource linker to aid the organization in implementing the solution.

3. How to be an effective resourse linker -- A resource linker is one who matches resources of one person or group with needs of another. Persons with skills in communicating and relationship building are important change agents in this role. To be most effective resource linkers should:

a. listen to what the organizational leadership has to say about their problem and what they have done in trying to solve it. A resource linker must understand "where the organization is at" before he can successfully match its needs with the right kind of resource, at the right time, in the right way.

b. establish two-way communication between resources and the organizations.

c. show organizational leadership resources they have within themselves and among their own group, as well as outside resources.

d. continue to build additional networks after the initial problem is resolved. Each new resource link established adds to the organization's capacity to work collaboratively on problems.

4. How to be an effective process helper -- The helping process is needed from the very beginning stages of establishing a relationship and diagnosing the problem, through the acquisition of relevant resources, choosing a solution, gaining acceptance, and stabilizing the change. Three things necessary to building and maintaining an effective process helper relationship are as follows:

a. define your relationship with the organization. In order to accomplish this, it is necessary to first determine the nature of the group you are going to work with directly. Once this is done, formal and "informal" key people (opinion leaders) should be identified to help you understand the norms, values and beliefs of the target group and the strictness of these characteristics.

After you have assessed the situation, you can then determine whether opinion leaders, formal authorities or representatives of major factions or others will be best to work with regarding their credibility, respectability or public relations ability and compatibility with you.

Next; a determination needs to be made of other groups to which the target group is related. This may be the larger organization or the community surrounding an organization. Again, norms, values, objectives and the degree of influence it represents for the target group need to be identified. In addition, it is also important to find out the relative potency of different influentials, such as pressure groups, in the larger environment and how to approach these influentials.

b. Successful management of initial encounters with the target group. How those in the target group see you and feel about you initially will determine whether or not you will be able to proceed with the change process at all.

The change agent must start the relationship by establishing high trust and friendliness. A start in this direction can be made with simple things like a smile, firm handshake, warm greeting, straight look to the eye, or using first names. You should also try to be a familiar person by using the appropriate dress, speech, and bearing, and identifying some common interests.

In order to establish the image that you can be helpful you should find the earliest opportunity to do something for the client that will be perceived as such by him. Only a token is usually necessary, such as providing a useful piece of information, a book, or a technique. Finally, you must show the client that you are a good listener, that you are interested, and that you care. This can be communicated by asking for clarifications, nodding, paraphrasing, and other verbal and nonverbal techniques.

c. Accurate assessment of your relationship. Ronald Havelock[1] has identified nine characteristics of a change agent-client relationship that comprise an ideal. Although they do not cover everything, they may serve as a yardstick against which we can measure our own circumstances. They include the following conditions: (1) Reciprocity: Both the change agent and target group should be able to give and take, transfer information both ways, and mutually appreciate the problem; (2) Openness: Both should be willing and ready to receive new inputs from each other; (3) Realistic Expectations: Reasonably realistic expectations should be set from the start so that the change effort will not be plagued by undue disillusionment; (4) Expectations of Reward: The change agent must be seen as providing a valuable resource which can solve problems

and significantly improve the situation; (5) Structure: Definitions of roles, working procedures, and expected outcomes are necessary to provide a sufficient structural basis for successful interactions; (6) Equal Power: Under most circumstnaces, lasting effectiveness and commitment can best be brought about where neither party has the power to compel the other to change. (7) Minimum Threat: Because the idea of change is threatening to most of us, everything possible should be done to minimize the perception of threat; (8) Confrontation of Differences: A relationship which allows the honest confrontation and talking through of differences may be stormy at times, but it will also be healthy and strong when the going gets rough; (9) Involvement of All Relative Parties: As noted earlier, the change agent must relate to influential others in the community. They should at least know that you are there, why you are there, and approve of your being there.

A change relationship can be an exciting and rewarding experience for everyone involved, but it can also degenerate into a meaningless exercise which only produces frustration and disappointment. Some examples of "danger signals" are given below: [2]

1. If the organization lacks the ability to assemble resources, communicate, or elicit concern from key members, or if it seems to possess excessive rigidity and tendencies to externalize conflicts and see issues only in black-and-white terms, these conditions may signal innate incapacity to change.

Even if these degenerative organizational conditions do not exist, you as a change agent may have done everything right and still be greeted with hostility or indifference. Negative responses to a well-managed initial encounter effort signal that the future is not very bright. If you are

greeted in an overly enthusiastic manner, on the other hand, the organizational leadership may only want to use you as a pawn: This is a common type of exploitation where the change agent is supported only to serve special interests in an internal power struggle. A change agent may in rare instances be able to turn this type of situation to an advantage, but in general it should be avoided.

Considerations in Choosing a Change Strategy

It is important for anyone desiring to bring about a change to develop strategies to fit his own unique characteristics and circumstances. The strategies discussed in the following sections may provide useful ideas, but it is your own experience, level of competence, and overall objectives which are most important in developing a game plan. Some general considerations, which should always be a part of your strategy building, are listed below.

Personal skill and style

A change agent should have a realistic understanding of his own skills and best styles. Stick to techniques you know are applicable and are competent to administer. When picking an appropriate strategy mix, also be aware of the resources you and the organization have access to for making them work. These include internal, external, human, material, informational, and motivational resources.

Type of relationship

Political and economic tensions must also be considered in picking a strategy. If you are considered an expert and people have confidence in you, the number and types of tactics which will be acceptable are greater than if you are considered a peer or novice.

Special characteristics of the organization

One of your first steps as a change agent is to make a thorough assessment of the organization to understand its weaknesses, strengths, ideologies, structural characteristics, and other special features. These considerations should then be carefully weighed to determine appropriate strategies. Specific situational

factors such as time, place, and circumstance, can provide restraints and guides to appropriate strategies.

Characteristics of the strategy

The strategy must also be analyzed in relationship to the organization to determine whether it is compatible with organization ideologies, how much adaptation will be required to make it fit this situation, the probability of its success, how long before results are apparent, how much can hope to be accomplished, how much effort must be put into it by whom and for how long.

Feasibility

Three primary considerations in evaluating competing strategies are: benefit; practicability, and diffusibility. How much good would it do if it worked? Will it really work, especially in this particular organization? Will it be accepted by members of the organization? By asking these questions it is often possible to reduce the number of possible approaches to one or two.

Implementation

When you start planning how to implement the particular strategy, or strategy mix, you have decided upon, the relevance of the above criteria will become immediately apparent. If you do not possess sufficient skill, have not established an appropriate relationship, or have failed to consider a value conflict between the organization and strategy characteristics, the infeasibility of your proposed strategy will be clear when you try to implement it.

Interpersonal Strategies for Organization Change

The strategies presented in this section refer to behavioral skills you can apply personally to bring about changes in others' behaviors and attitudes. Some of the reasons for presenting these interpersonal techniques is to raise your awareness of different approaches to increasing your personal control over situations through the ways you communicate and utilize your own human resources and those of others around you.

These strategies obviously represent an incomplete list. They are basics, however, and may provide the insights to give you that extra personal power to effectively bring about the changes you desire. They may also stimulate other ideas and alternatives that are unique to your situation and personality style. Some of the interpersonal change strategies you may want to consider are summarized below. For more thorough explanations of these and similar strategies, you may wish to consult the references by Richard Byrd[3], Samual Culbert[4], Ronald Havelock[1], and Ellen Langer and Carol Dweck[5] listed at the end of this paper.

Directed thinking

Directed thinking means clearly specifying what it is you hope to accomplish in an interpersonal situation and systematically considering all factors which may influence achieving it. Spontaneity is often good for building strong interpersonal relationships, but it can also hurt people. When we hurt or insult others without thinking, it often is very difficult to undo the damage, and sometimes the damage is irreparable.

There is an abundance of information available in any interpersonal situation to help guide your behavior in a directed way. The following questions can help you select and organize information in a meaningful way: How has this person or group reacted to similar situations? What approaches worked in the past? Which ones did not? How does this person or group feel about me? How can I influence this impression? How does this person or group feel about the change being proposed? What is their point of view? Why? What are the most effective ways of communicating the change ideas? What unique considerations are relevant to this person or group in this situation?

Disclaimers

The context in which we are interacting has a great deal of influence on others' reactions. If the target person, or target group, feels that you will personnally benefit from the change you are suggesting, they may feel that they

are being manipulated for your personal gain, or that you are unduly biased. To counter this attitude, you need to "disclaim" their feeling that you are promoting the change just for your personal benefit. If you will benefit from the change, you need to own up to this but convince the target group that it is also a good thing for them regardless of your situation. Then they can listen to what you have to say without constantly being on guard to detect what they expect to be your own hidden agenda.

If the situation you are trying to change is one in which you are obviously very emotionally involved, your credibility may be reduced even if you make a disclaimer. This may sometimes help in these circumstances to present a more balanced account of the situation including positive and negative sides of the proposed change and the strategies you are suggesting. This approach is more apt to lead others to believe that you have done a thorough investigation regardless of your emotional concerns.

Authentic Feedback

Authentic feedback consists of non-evaluative interpretation of how a person's or group's behavior affects you. It can often lead to the target person's or target group's increased understanding of problems their own behavior creates. Such self-diagnosis can decrease resistance to change when the personal need for it is demonstrated and accepted.

Sometimes leveling is done in emotional and evaluative manners. This type of confrontation is often risky, but sometimes necessary to get feelings out and open the door to suppressed organizational problems.

Initial agreement

Agreeing with a person or group at the beginning of our change effort is important to insure that you are not turned off immediately. Showing that you have something in common serves to favorable dispose the target group to both yourself and your proposal. If you contradict yourself later on, or propose contrary approaches, members of the target group are more apt to be open to you and your

ideas if they believe that you are similar to them.

Inoculation

If you are fairly certain that there are members of the target group, or other influential people, who will later attempt to refute your position, it is a good idea to try and inoculate key decision makers against arguments which may change their minds. This can often be done by sharing possible counter-arguments with the target group during your presentation and demonstrating their fallacies. This technique tends to build resistance to opposition who may later voice such objections.

Limited Choice

People like to feel that they have some power over what happens to them, but when they are faced with an unlimited number of alternatives to choose from it is very difficult to make a decision. The strategy of providing a limited choice maximizes your changes of having the target group accept a change proposal you favor because it lets the people make a choice but only from alternatives acceptable to you. The key is to phrase your questions as if a given event will take place and the target group is to choose how or when. When a person is confronted with a limited choice of alternatives and asked to choose from them, most often he will do so, and only rarely will he question initial assumptions or raise additional alternatives.

Obligating in Advance

The advantages and disadvantages of a commitment become more prominent at different times. The advantages are more clear when the action is to take place in the future. As the event becomes more immediate, however, the disadvantages become more eminent. Since most people feel compelled to meet their obligations, it is to your advantage to gain commitement to participate in a change effort well in advance of its planned occurrence. If participants feel that they have made a prior obligation, it will be more difficult to back out when the anxieties

associated with the approach of the event occur.

Positive Expectation

Indicating to a person that you expect that he will be a valuable participant in a change effort can often act as a self-fulfilling prophecy, i.e., he will behave in a way to fulfill your expectations in order to prove himself worthy of your high regard. Successful utilization of this approach also decreases begrudging participation because people feel that they are important and are doing something valuable for you, which they are.

Compliments

Trying to get someone to change through criticism has negative consequences even if the strategy is successful. People usually take criticism as a slap in the face and react defensively and with hostility towards its source. Phrase your criticism in positive terms and frost it with preceding compliments. For example, a line manager could say to a staff group leader, "We like your work very much. If you people would take a little more interest in personally relating these ideas with ours, we could probably make even better use of them."

Indirect Comparisons

Another way to suggest ways of improving without bringing out defenses, is to use indirect comparisons. With this technique, corrective information is given in terms of another person or group in a similar situation. It is important, of course, that the target group is aware that it is behaving in the same fashion for this tactic to be effective. The awareness of present, indirect comparisons allows target groups to evaluate the suggestions without losing face and becoming defensive.

Holding Out

Holding out is a blocking strategy sometimes representing all that a change agent performing a catalyst's role can muster. It is a method of preventing a

a decision or calling attention to a negative program that needs your approval or participation to be successful. Failing to cooperate or go along with a decision or plan of action is dangerous and unpleasant, but in some situations the risk and abuse is necessary to get your point across.

Going Around Superiors

You may find yourself in a situation where your superior in the organization simply will not agree to consider a change which you feel is vitally necessary for the organization. Under such conditions, you may feel that your only alternative is to go over your superior's head to gain support for the desired change. This is a dangerous maneauver because it will violate the trust of your supervisor and make you vulnerable to any sanctions he is able to apply. If you have applied the ten principles for being a successful inside change agent, presented earlier in this paper, and you still want to proceed, you will have a fairly good chance of being successful.

Threatening Resignation

This is your ultimate weapon. If you are a valuable employee, your opposition will listen to you when you lay your job on the line. Obviously, this is an extremely dangerous strategy, and the warnings administered with respect to going around superiors should be doubled or tripled in this case. Never call wolf with this strategy.

Media Dissemination

Disseminating your ideas and proposals to others in the organization through newspapers, memos, or bulletin announcements, is a relatively risk free strategy which may be effective in gaining support of opinion leaders or other influencial organization members. It is a good approach to raise awareness concerning a problem situation and start people thinking of ideas to improve it. The same thing can be done on a smaller scale through word of mouth.

Support Groups

Support groups consist of organization members who share a common concern

for changing some aspect of the organization. They are important for testing ideas, expressing empathy, and supporting one another under heavy opposition. Such group meetings can produce increased awareness about the nature and consequences of a purposed change and provide us with a better perspective on how to gain more control over our organization life.

Gatekeeping

Gatekeeping refers to a process-helper role where you facilitate the communication process so that everyone concerned has an equal chance to participate and be heard. Through a simple comment as, "What do some of the rest of you think?", it may be possible to decrease the influence of some of your more assertive opponents and solicit important information from those who support you and the desired change.

Summary

Being aware of the advantages and disadvantages of internal positioning provides the foundation for the internal change agent to build an effective action plan for change congruent with the specifics of the organizational situation being confronted. Basic principles have been described to help define the specific type of role the internal change agent should engage in, and how the chances for success can be increased.

It is also important to develop specific change strategies which fit the change agent's unique characteristics and circumstances. Then interpersonal strategies for influencing others can be utilized to increase personal control over situations through the ways you communicate and utilize your human resources.

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CHALLENGE FOR THE LIBRARY*
(ABSTRACT ONLY)
by

Pat Moholt
Associate Director of Libraries
Rensselaer Polytechnic Institute

*The full text of Pat Moholt's speech is not available. For amplification see Moholt, Pat. "Libraries and the New Technologies: Courting the Cheshire Cat," Library Journal, November 15, 1988, pp. 37-41.

CHALLENGE FOR THE LIBRARY

Abstract of Remarks

Our first task is to rethink or refocus our view of the library and its mission. We come from a long archival tradition. Our practice has been to collect based on probable use. Furthermore, the library has been relatively autonomous, and administratively and programmatically isolated.

I have referred to the library at this point in time as the Cheshire Cat. The new information technologies embody change and in such an environment libraries have been, to quote a cliche, "cautiously optimistic". The way we operate has been changing as a result of the successive application of technology. The major difference now is the change that affects what we do, not just how we do it. The library is becoming disembodied, disappearing, like the Cheshire Cat, slowly but relentlessly.

It may help to ask **why** is a library rather than **what** is a library.

The **why** of a library has to do with expertise: in the handling of information, its organization, storage and retrieval; in interpreting the needs of users and helping them find useful information. The **why** also has to do with proven efficiency in handling of information, its procurement, structuring and use. The mission or the **why** is identifying information resources, providing methods of access, and assisting in the interpretation of those resources. These are constants and none of them necessarily mean books on the shelves.

The **what** of a library as we have known it, is a building, its collections and its staff. All of these are changing. We are too often guilty of confusing function and form.

NAVY RESEARCH IN THE ARCTIC
(ABSTRACT ONLY)
by

CAPT Merrill H. Dorman, USN
Director, Arctic Submarine Laboratory
Naval Ocean Systems Center
San Diego, CA

Abstract of comments delivered by Captain Merrill H. Dorman, Director Arctic Submarine Laboratory, following the luncheon on 12 October.

The Director, Arctic Submarine Laboratory is in a unique position in that he not only manages a Research and Development Program for Submarine Arctic Warfare improvements but is also a member of the staff for both Commanders Submarine Force, U.S. Pacific and U.S. Atlantic Fleets who operate all the submarines in the U.S. Navy. It is from this perspective that he gave a brief summary of the remote under ice environment: how for thirty years U.S. nuclear submarines have adapted to operate safely in the more than five million square miles of ice covered Arctic Ocean; how a submarine avoids the potential hazards of collision with ice keels, which extend downward as much as 189 feet anywhere in the Arctic, and of collision with ice bergs, which though limited in location can extend to a depth of 2,000 feet; more importantly how a submarine surfaces through the dynamic moving roof of ice over head was described in some detail. The vertical surfacing procedure is complex, time consuming, never routine, and takes the submarine out of his normal operating envelope, severely limiting his capabilities for hours at a time. The severe density gradients caused by almost permanent stratification of low salinity was was noted as being an aspect unique to the Arctic. In short the Arctic is the most complex ASW environment that a submariner faces and presently no other U.S. Navy ASW forces can operate in the ice covered regions.

A brief description of the programs that have been established to improve our Arctic operating capabilities was provided including the procedures for building a temporary camp on sea ice in temperatures down to minus 40 degrees Fahrenheit and for melting holes through ice to allow divers to work beneath the ice. A few examples of submarine operations independent of the ice camp include the placing of meteorologic buoys and surfacing at the North Pole for unique sailor liberty and public affairs releases. The Arctic Submarine Laboratory's Experimental Ice Pool which conducts through-ice experiments in natural sea ice was also described.

In summary, Captain Dorman presented a number of interesting points about the remote Arctic Ocean environment and numerous pictures depicting observations made in that cold harsh region, all of which were limited by very stringent security restraints.

SERVICE UPDATES
by

Tony Dakan
Chief, Library Branch
Directorate of MWR Operations
U.S. Air Force Library & Information Systems
HQ, AFMPS/DPMSPL
Randolph AFB, TX

Mary Bonnet
Army Library Management Office
HQDA (SFIS-FAL)
Alexandria, VA

Stanley Kalkus
Director
Navy Department Library
Washington Navy Yard
Washington, DC

AIR FORCE LIBRARY AND INFORMATION SYSTEM

ANNUAL REPORT - 1988

Along with other branches of service, the Air Force Library and Information System fell victim to the DOD spending freeze. The annual Air Force Librarians Workshop, scheduled to follow ALA, was cancelled, but 72 Air Force librarians did show up, and Command Librarians were able to hold meetings with their librarians. We also scheduled several very successful librarian/contractor meetings. A pre-ALA workshop to be held in Dallas next year will continue the theme "The Path to Mission Excellence". Non-Air Force librarians are invited to participate on a space available basis.

Air Force libraries were declared mission sustaining activities by the Congress in its reassessment of Morale, Welfare and Recreation. As such they are authorized full appropriated fund support, even though they remain under Morale, Welfare and Recreation. Libraries have been prohibited from the use of nonappropriated funds for any materials or services, beyond occasional petty cash expenditures for publicity materials, refreshments, prizes, and the like. While the congressional language led to a precipitous withdrawal of nonappropriated funds for personnel in some libraries, the conversion of nonappropriated funded positions to appropriated funds has already begun, and is rapidly picking up speed. We're necessarily maintaining a wait and see attitude towards the future. Central funding of materials and services is fortunately not tied to this issue, and we continue to maintain a viable baseline.

Rapid advances in library procurement followed a very successful nine vendor blanket purchase agreement test, aided by an

increased use of automation and FEDLINK contracts. Since the bulk of funds to buy commercial publications and services for libraries and organizations alike are allocated from a central pot at Air Staff level, a central procurement system is the logical means of ensuring the best return on dollars spent. Future plans call for the increased purchase of common-use publications with a number of central BPAs administered by the Air Force Librarian's office. Annette Gohlke, Assistant Air Force Librarian received a $3,808 cash award for her suggestion that let to the streamlining of Air Force procurement procedures.

Automation continued to expand, highlighted by the acquisition of DataTrek in all Strategic Air Command libraries, and CLSI in all Military Airlift Command libraries. Both of the integrated systems were funded with FASCAP dollars realized from projected manpower savings, and are rapidly nearing full operation. The Air Force Academy library began retrospective conversion of some 200,000 pre-1974 records, installed the CheckPoint security system, and made its online public catalog available in all faculty offices, and to cadets through the local area network.

The Air Force Weapons Laboratory Library, Kirtland AFB, New Mexico, scored a first with it's purchase of STILAS, an integrated automation system developed jointly by DTIC and the SIRSI Corporation. STILAS, which is now on a FEDLINK contract, stands for Scientific and Technical Information Library Automation System. We hope that details of the system will be published widely in the future, since it clearly is applicable to all types of libraries. Margaret O'Drobinak, director of the Air Force Test Group Technical LIibrary at Edwards AFB, California, reports that she expects to be

the next STILAS buyer in Air Force.

The first phase of Air Force library integration into the Army's Patron-Oriented Automated Library System (PALS) in Europe is nearing completion, with seven libraries almost ready to go online. Phase two, which will bring in additional libraries in Germany, Italy, the Netherlands, and the United Kingdom, is now underway. Reference service to library users in Europe was enhanced with the signing of contracts with University Microfilms International and the British Lending Library for their documents on demand services, the addition of DIALOG to regional reference libraries, and the publication of a command union list of periodicals, which is also available online to Faxon Linx users.

Library construction was surprisingly brisk, with new libraries at K. I. Sawyer and Wurtsmith AFBs, Michigan; a housing area branch library at Misawa AB, Japan, built and paid for by the Government of Japan; and approved funding for a new base library at Minot AFB, North Dakota. Even more exciting was the ground breaking for a new $12 million multi-use building at Wright-Patterson AFB, Ohio, to house a 40,000 square foot Air Force Institute of Technology library.

With the ratification of the INF treaty, two newly opened GLICM site libraries in The Netherlands and Belgium were closed. While others may meet a similar fate, library service to isolated areas in Europe took on new life with the installation of two "instant mini-libraries" in Germany and Belgium. These completely equipped libraries in miniature were developed by the Army in Europe, and made available to the Air Force. The unit receiving the library agreed to provide the space, carpeting, drapes, and a library

technician to manage the operation for a minimum of 20 hours per week. Furniture and shelving was purchased from Army stock, while the Air Force library service center in Germany provided materials, supplies, and staff training. Only two days were required to set the library up and hold the opening day ceremony after everything was delivered to the site.

Classification and grade inequities, especially among general librarians, continue to be one of the most vexing problems. A narrow interpretation of the outdated OPM classfication standards, based on no understanding or appreciation of what and how librarians work, is common among Air Force position classifiers. Within the Strategic Air Command, however, there is at least a glimmer of hope. In response to a request for a command-wide functional review of librarian classification, civilian personnel conceded that they "See potential for the classification of base libraries to be an 'impact of the person situation'". This means that the only flexibility in the librarian guide is in the evaluation of Factor I, Scope of the Assignment (2), but that scope of assignment can be affected by using data automation services, being part of an interlibrary loan network, satisfying reference needs for a large portion of the user population pursuing undergraduate or graduate programs, and providing technical and scientific information to other bases. Could this be a breakthrough, applicable throughout Air Force? We hope so.

We proudly salute these Air Force librarians: Joe Burke, winner of the Air Force MWR Meritorious Award for general librarians, and the director of the only military library to receive a John Cotton Dana Library Public Relations Award; Lee McLaughlin, winner of the

Air Force MWR Meritorious Award for technical librarians; and Beulah Phillips, winner of the Air Force MWR Meritorious Award for academic librarians, and the Dan Berkant Award presented by the Alamo Chapter of the Air Force Association.

Air Force librarians face a possibly uncertain future with confidence, dedication, and enthusiasm.

TONY DAKAN
Director, Air Force Library
and Information System

(12 October 1988)

ARMY UPDATE

Army Library Statistics

The Army Library Management Office (ALMO) has generated extensive statistics about our libraries from the Army Library Management Reporting System. These are the types of information that Pat Moholt indicated this morning, are not a real measure of productivity in libraries. I agree that these are not the most useful. The Department of the Army has 313 libraries in 10 commands plus independent agencies, of the following types: academic, consolidated, general, law,, medical, patient, technical, HQ/Systems offices. There are 1979 library staff; 593 librarians, 841 library technicians, 20 technical information specialists, 386 NAF employees and 137 other.

Library Technician Training Package

The Library Technician Training Package is a self-paced training package which contains twelve modules consisting of a video cassette and a workbook with training exercises. It was developed for library technicians, but is useful for library interns, supervisors of interns and library patrons. The video cassettes are available from Army Visual Information Support Centers on installations now. Copies of the workbook will be available this fall.

Army Library Institute

The Army Library Institute for FY88 was deferred in response to Deputy Secretary of Defense directive to restrict DOD outlays in the last two quarters of FY88. It has been rescheduled for March 13-17, 1989 in Little Rock, AK. ALI will be hosted by the Army Corps of Engineers. Air Force, Navy and DOD librarians are welcome to participate. Contact Steve Balonda at HQ, USACE, ATTN: CEIM-SL, Washington, DC 20314-1000 (Telephone 202-272-1010, AV 285-1010) for information and registration materials after 1 January 1989.

Army Library Directory

The Army Library Directory was developed from FY87 ALMRS data. It was issued September, 1988. The Directory provides name and address of library, command and type of library, Librarian's name and telephone. Subject strengths and availability of materials by type are also included. It serves as both a directory to Army libraries and interlibrary loan tool.

Army Civilian Training Education and Development System

The Army Civilian Training Education and Development System (ACTEDS) provides a training plan based on Job Analysis of librarian positions. The revised plan is going through approval process and will be field-available in the next several months.

NAVY UPDATE

It is impossible to give a report on the activities of the Coordinator of Naval Libraries and not mention the Navy Department Library. The library staff provides support to the Coordinator and the only full time staff member of the Coordinator's office, the secretary, provides secretarial support to the library. For example Claudia Tillery is now typing the manuscript of the long overdue 7th edition of the U.S. Navy A Bibliography. Also don't forget it is primarily your library and also that it represents the Department of the Navy and the Naval libraries.

Distinguished visitors call frequently, Colonel Jose Priego Fernandez del Campo, Chief of the information division of the Spanish Ministry of Defense was one of the visitors who was primarily interested in the function of the Coordinator. The Inspector General of the Norwegian Navy, Admiral Grimstvedt visited the library to donate a recently published book on the Norwegian Navy.

In spite of the excellent support of the Navy Department Library staff, the problem of staffing the function of Coordinator properly, remains. Under the expansion program one billet was to be added last fiscal year and another one in FY 89. We do not know what will happen this year but I hope that I will be able to report some good news at the MLW workshop next year.

We continue to have our quarterly meetings of the Navy and Marine Corps librarians of the Washington DC Metropolitan Area. Minutes of the meetings are sent to all Navy libraries. Occasionally I do receive a phone call or a note with comments

and questions. I do appreciate them, at least I know what your reactions are; and I wish more of these were coming.

This report is really an up-date on the subjects discussed at these meetings.

CLSI - We are experiencing numerous problems communicating with this company. The hardware was delivered almost a year ago, installation took place in May and only two weeks ago we had the "pre-installation" training. The first time we were able to talk to someone knowledgeable about our program. However nothing has happened since. The next step is to load the Union List of Serials and make it available on-line to all Navy libraries (AV), also the list of Naval Libraries will be available on-line.

Union List of Serials - The latest edition was distributed along with the individual lists of the participating libraries. The transfer of data from FAXON to CLSI is funded so when we succeed to get some action from CLSI we should not experience any other problems.

List of Libraries - The updated list was recently distributed and we hope to be able to maintain it current. That of course depends on Navy Librarians sending us the information. From time to time we will remind everyone to send us corrections.

Inter-library Loans Fee Payment Project - It seems to be working. I have not received any statements from Costabile, but the last time I talked to them we had plenty of money left, and we do have until November to use it. As soon as I receive a report from them I will be in touch with those libraries using this service, to verify the arrangements and also to ask them to

transfer funds to us for use after November.

Procurement of Periodicals - In the past I was given and giving conflicting reports. But I believe that now we can say that at least for this year this "cost reduction" reporting was dropped. I have a copy of the DOD IG report, which requires no action.

One paragraph referring to DOD instruction 4115.41 is rather amusing - I hope our implementing SECNAV instruction is clearer: "No specific definition was given in DoD Instruction 4115.41. Instead, the DoD Instruction separately defined publications as "Commercial Periodicals," General Interest Periodicals," "Mission-Essential Periodicals," and "Periodicals." This condition led to confusion at the user level about what should be included in an inventory of commercial publications purchases. We found 11 of the 51 activities visited included one or more of the following items in their commercial publications procurement lists: Books, microfiches, abstracts, indexes, DoD telephone directories, and Government publications. Personnel at two DoD organizations were concerned whether videos should also be included as commercial publications."

FEDLINK - OPNAV instruction on procurement of FEDLINK services is in draft form. Basically the same as the instruction on procurement of periodicals. Librarians are the central point for processing inter-agency agreements. So far I have positive comments, with one exception; I would like to hear from more of you before we have the instruction published.

SECNAVINST 5070.2B on Management of Naval Libraries is some-

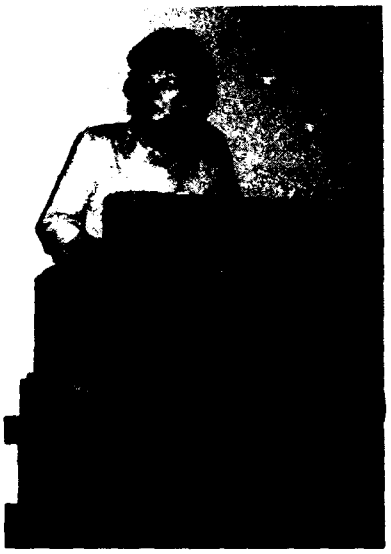
where at OPNAV. I tried to trace it before coming here but there just was not enough time. OPNAVINST on cruisebooks is also somewhere at OPNAV.

Marine Corps - The 26th of last month we had an informal meeting at Quantico with Marine Corps Librarians representing different types of libraries. The present structure and relationship among the Marine Corps libraries were discussed. The Marine Corp is planning to build a library and research institute at Quantico, obviously there are some funding and other problems to be solved.

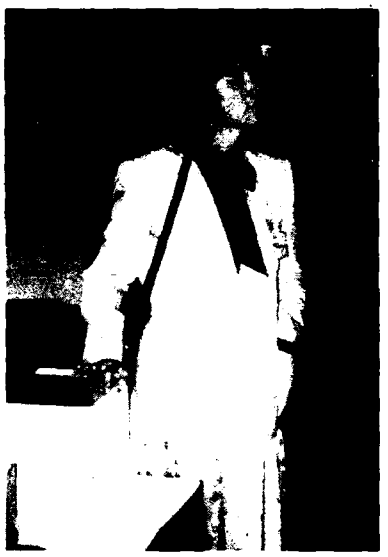
NETC - In November of last year I served on a NETC Inspection team. My job was to inspect the general library program. This was a great opportunity for me to find out more about the program. Since Mr. Coble retired his position was not filled. Marjorie Homeyard was detailed into the job but refused an extension of the detail, needless to say rightfully so. Commander Speed was then in charge and more recently Dr. Maloy temporarily took over, until a new Head of the General Library Program is selected. In my inspection report, I listed the fact, that the position not only was vacant for a long time but was not even advertised, as a major discrepancy. There is nothing else to report on that program excent that it continues to be poorly funded.

Video "Slow Fires" - Describing the increasing loss of large bodies of materials because of the use of acidic paper during the last 125 years, was purchased by the Navy Department Library and is available on loan in either Beta or VHS format.

Mexican
Fiesta




Speakers
and
Presentors




Speakers
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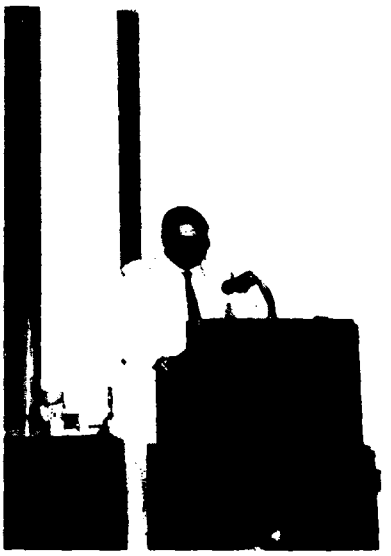


CONNECTING THE EQUIPMENT

by

Bob Pasqueretta
Manager
NOSC Computer Resource Center
Computer Sciences Corporation
San Diego, CA

Connecting the Equipment

Robert J. Pasqueretta

NOSC Computer Resource Center

The primary objective of the presentation was to familiarize the Librarian community with computer terms, types of personal computers, and the GSA requirements contracts for hardware and software components. In addition, specifications for commonly used hardware and peripherals were compiled in an handout. The types of personal computers discussed covered the XT class through the IBM PS/2, with a short elaboration on each class. The GSA requirements contracts discussed were the Zenith/Air Force/Navy Desktop II (Z248 AT compatible) system, the Zenith Z184 LAPHELD system, and the Low-End Scientific/Engineering Workstation(LSEW) system.

An overview of the standard types of hardware was presented. These are the system unit, keyboard, disk drives (both floppy and fixed), printers, mouse pointing devices, monitors, and memory. Also presented was optional hardware peripherals such as modems, plotters, tape drives, math co-processors, add-in memory cards, serial/parallel I/O cards, and surge suppressers/universal power sources.

The common categories of software were presented and discussed. these categories are databases, spreadsheets, word processors, project managers, business graphics, communications, integrated applications, and languages. The industry standard software packages (most commonly used) for each category were listed. As a capstone to the discussion, standard configurations for each GSA contract were presented, along with recommended software from each category of application.

As time permitted, there was a short discussion of the ways to connect systems together and share peripherals such as printers and plotters. This included examples of the types of personal computer local area networks (LANS) and peripheral sharing devices.

CONNECTING THE EQUIPMENT

BOB PASQUERETTA

NOSC COMPUTER RESOURCE CENTER

OBJECTIVES OF PRESENTATION

- BECOME FAMILAR WITH PC TERMS (BUZZ WORDS)
- BECOME FAMILAR WITH GSA REQUIREMENTS CONTRACTS
- TYPES OF HARDWARE
- TYPES OF SOFTWARE
- WAYS TO CONNECT HARDWARE
- TYPICAL DESKTOP CONFIGURATIONS
- SPECIFICATIONS INFORMATION

TYPES OF PERSONAL COMPUTERS

- XT CLASS
  8088 CPU (16 BIT INTERNAL/8 BIT EXTERNAL)
- AT CLASS
  80286 CPU (16 BIT INTERNAL/16 BIT EXTERNAL)
- SUPER AT
  80386 CPU (32 BIT INTERNAL/32 BIT EXTERNAL)
- CLONES (NON IBM MANUFACTURED SYSTEMS)
- BRAND NAME CLONES
  COMPAQ, NCR, ZENITH, AST, WYSE, HP, ETC.)
- NO-NAME CLONES
  LESSER KNOWN BRANDS, COMPUTER STORE BRANDS
- IBM PS/2 SYSTEMS WITH MICRO-CHANNEL BUS
- ENHANCED INDUSTRY STANDARD ARCHITECTURE (EISA)

GSA REQUIREMENTS CONTRACTS

- ZENITH AIR FORCE/NAVY CONTRACT
  Z248 AT CLASS DESKTOP COMPUTER

- ZENITH LAPTOP CONTRACT
  Z184 8088 LAPHELD COMPUTER

- ZENITH DAHLGREN CONTRACT
  LOW-END SCIENTIFIC/ENGRG WORKSTATION (LSEW)
  Z248 AT CLASS DESKTOP COMPUTER
  ONLY NAVY LABORATORIES
  CONTAINS TEMPEST ENGINEERED SYSTEM
  EXPIRES 12/21/88

TYPES OF HARDWARE

- SYSTEM UNIT
  CONTAINS DISK DRIVES, MEMORY, COMMUNICATION PORTS (SERIAL/PARALLEL), POWER SUPPLY, ADD-IN CARDS

- KEYBOARD
  STANDARD AT STYLE (IBM 5160 EQUIVALENT)
  ENHANCED 101 KEY (SEPARATE KEYPAD AND CURSOR POSITIONING KEYS, 12 FUNCTION KEYS)

- DISK DRIVES
  FLOPPY DISKS (FORMATTED)
    5.25 INCH INDUSTRY STANDARD
      360 KB
      1.2 MB
    3.5 INCH INDUSTRY STANDARD
      720 KB
      1.44 MB

TYPES OF HARDWARE

FIXED DISKS (HARD DISKS)
- FOR AT CLASS SYSTEMS - 20-300 MB CAPACITIES
- 20-65 MS (THOUSANDTHS OF A SECOND) SEEK TIMES

- MOUSE POINTING DEVICES
  - BUS - USES ADD-IN CARD
  - SERIAL - USES SERIAL PORT
  - OPTICAL - USES LED AND SPECIAL LOCATING PAD
  - TRACK BALL - USES MECHANICAL MECHANISM

- PRINTERS
  - DOT MATRIX - MOST WIDELY USED
    - NEWEST HAVE NEAR LETTER QUALITY(NLQ)
  - LASER - TECHNOLOGY BECOMING LESS EXPENSIVE
    - NOW AVAILABLE ON GSA CONTRACTS
  - IMPACT (DAISEY WHEEL) - OLDER TECHNOLOGY
  - PARALLEL - STD CONNECTING MECHANISM
  - SERIAL - OPTIONAL CONNECTING MECHANISM

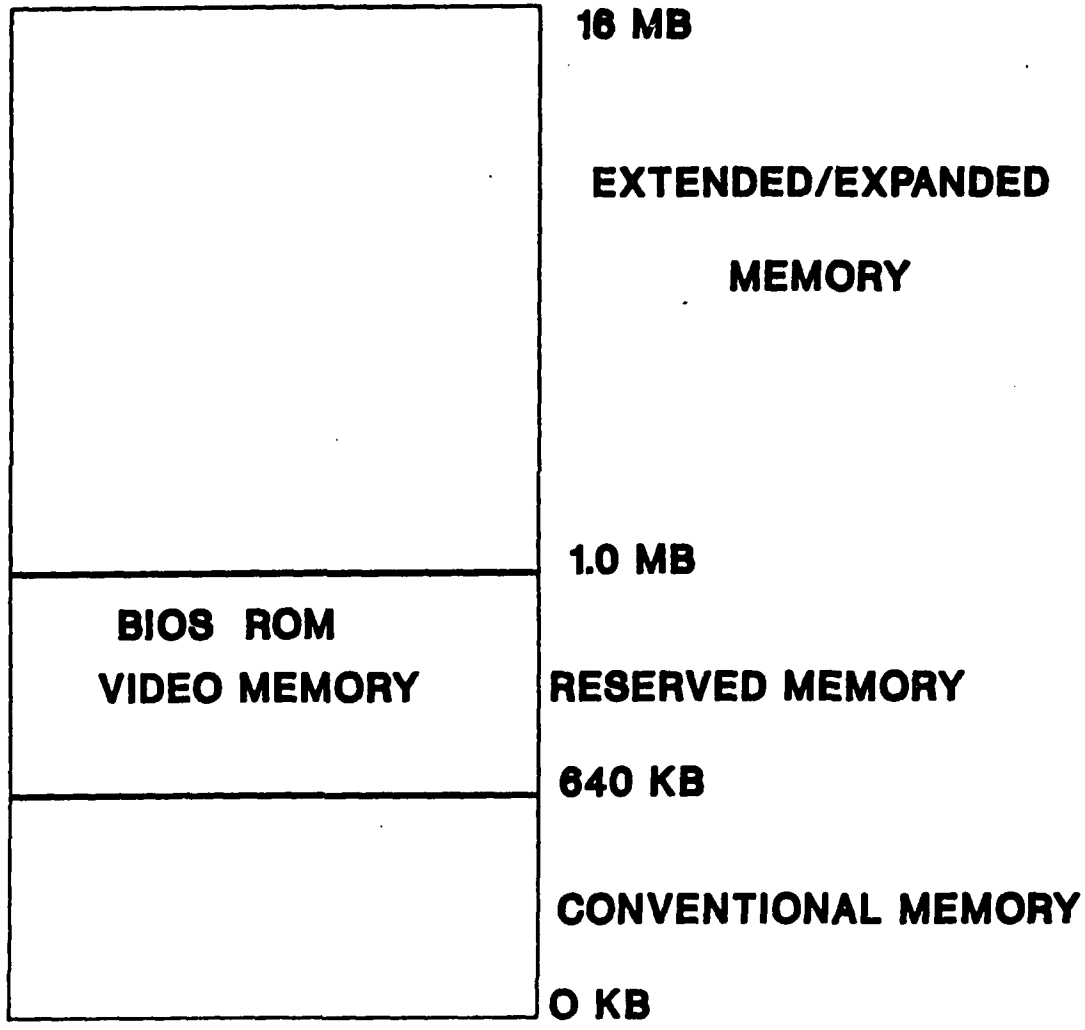
TYPES OF HARDWARE

- MONITORS
  - MONOCHROME - 720 x 348
    HERCULES COMPATIBILITY PROVIDES ON SCREEN GRAPHICS (INDUSTRY STANDARD)
  - COLOR GRAPHICS ADAPTER (CGA) - 640 x 200
    PROVIDES LOW LEVEL RESOLUTION WITH 2 COLORS (INDUSTRY STANDARD - NOT RECOMMENDED)
  - ENHANCED COLOR ADAPTER (EGA) - 640 x 350
    RESOLUTION SIMILAR TO MONOCHROME
    MEDIUM RESOLUTION WITH UP TO 4 COLORS
    CURRENT INDUSTRY STANDARD
  - VIRTUAL GRAPHICS ARRAY (VGA) - 640 x 400
    UPCOMING INDUSTRY STANDARD
    UP TO 64 COLORS FROM PALATTE OF 262,000
    REQUIRES ANALOG (OR AUTOSYNC) MONITOR
    HIGHER RESOLUTION TO 1024 x 768 WITH EXTRA MEMORY

TYPES OF HARDWARE

- TYPES OF MEMORY
  - CONVENTIONAL MEMORY
  - RESERVED MEMORY
  - EXTENDED MEMORY
  - EXPANDED MEMORY (EMS)
    - LOTUS-INTEL-MICROSOFT (LIM) V4.0 (INDUSTRY STANDARD)
    - THIRD PARTY ADD-IN CARDS - UP TO 32 MB
    - ALLOWS EXECUTION OF PROGRAMS AND STORAGE OF DATA WITH USE OF:
      MICROSOFT WINDOWS V2.1 OR LATER
      DESQVIEW V2.01 OR LATER

MEMORY MAP FOR 80286 CPU



TYPES OF HARDWARE

- OPTIONAL HARDWARE
  - MODEMS
    - INTERNAL AND EXTERNAL
    - 300/1200/2400 CPS - STD BELL INTERFACE
    - 9600 CPS AND UP NON STANDARD INTERFACES
  - ADD-IN MEMORY CARDS
  - SERIAL/PARALLEL ADAPTER CARDS (I/O CARDS)
  - SURGE SUPPRESSORS
    - PROTECT SYSTEM FROM ELECTRICAL SURGES
  - UNIVERSAL POWER SOURCES (UPS)
    - BATTERY BACKED POWER
    - POWER REPLACEMENT
  - PLOTTERS
  - CABLES
  - TAPE DRIVES
    - BACKUP DEVICES
    - USE STANDARD CARTRIDGE MEDIA (DC SERIES)
  - MATH CO-PROCESSOR - SPEEDS COMPUTATIONS

TYPES OF SOFTWARE

TYPICALLY USED APPLICATIONS

- DATABASES
- SPREADSHEETS - FINANCIAL MODELING
- WORD PROCESSORS
- PROJECT MANAGEMENT
- BUSINESS GRAPHICS
- UTILITIES
- COMMUNICATIONS
- INTEGRATED APPLICATIONS
- LANGUAGES

TYPICALLY USED SOFTWARE

- DATABASES
  - DBASE III PLUS (INDUSTRY STANDARD)
    - CLONES
      FOXBASE PLUS, DBXL, QUICKSILVER, CLIPPER
  - RBASE FOR DOS
  - DATAEASE, DATAFLEX
  - HIGH LEVEL RELATIONAL
    ORACLE
    INFORMIX
    INGRES

- SPREADSHEETS
  - LOTUS 1-2-3 (INDUSTRY STANDARD)
    - CLONES
      TWIN, VP PLANNER
  - EXCEL (ONLY FOR 80286 CPU'S - UPCOMING STD)
  - SUPERCALC 4

TYPICALLY USED SOFTWARE

- WORD PROCESSORS
  - WORDPERFECT V4.2/V5.0 (MOST POPULAR SOLD)
  - WORDSTAR V4.0/V5.0 (FIRST INDUSTRY STD)
  - MICROSOFT WORD V4.0
  - SPRINT V1.0 (EMULATES ABOVE THREE)
  - MASS-11, WORDMARC, MULTIMATE
- PROJECT MANAGEMENT (LOW END)
  - HARVARD TOTAL PROJECT MANAGER II
  - TIMELINE
  - MICROSOFT PROJECT
  - SUPERPROJECT 4
- BUSINESS GRAPHICS
  - HARVARD GRAPHICS
  - MICROSOFT CHART
  - CHARTMASTER (PART OF MASTER SERIES)
  - ENERGRAPHICS

TYPICALLY USED SOFTWARE

- UTILITIES
  - NORTON ADVANCED V4.0
  - PAUL MACE UTILITIES
  - SIDEWAYS
  - DESKTOP MANAGERS - SIDEKICK PLUS, METRO
  - FILE CONVERSION - PERFECT EXCHANGE
  - MEDIA CONVERSION - UNIFORM

- COMMUNICATIONS - MODEM CONTROL
  - CROSSTALK
  - SMARTCOM
  - PROCOMM - SHAREWARE AND COMMERICAL
  - KERMIT - PUBLIC DOMAIN AND FREE
  - XMODEM - OLDER STD - ALSO PUBLIC DOMAIN

TYPICALLY USED SOFTWARE

- INTEGRATED SOFTWARE APPLICATIONS
  (CONTAIN SEVERAL APPLICATIONS WITH INTEGRATED DATA EXCHANGE BETWEEN THEM. USUALLY HAVE A SPREADSHEET, DATABASE, GRAPHICS, WORD PROCESSOR AND COMMUNICATIONS)
  - ENABLE - AVAILABLE ON AIR FORCE/NAVY CONTRACT
  - SYMPHONY
  - FRAMEWORK
- LANGUAGES
  - MOST WIDELY USED IS BASIC
  - OTHERS C, ASSEMBLER, FORTRAN, PASCAL, ETC.

TYPICAL CONFIGURATION

AIR FORCE/NAVY GSA CONTRACT:
MINIMUM CONFIGURATION:

	CLIN #	PART #	DESCRIPTION	COST
	0003	ZWX-248-62	ADVANCED SYSTEM	$ 1628
	0011	ZVM-1380	EGA COLOR MONITOR	302
	0014AB	CA-10-A	SURGE SUPPRESSOR	30
	0015AA	ZM-2401	2400 BPS MODEM	148
	0015AC	HCA-200-PG	9-25 BIN ADAPTER	5
	0038	LG - 7	LOGITECH MOUSE	50
	0039	Z-404-SD	ASYNC COMM CARD	27

OPTIONAL EQUIPMENT:

	0016AA	IR-445	40MB TAPE BACKUP	297
OR	0016AB	ZD-60	60MB TAPE BACKUP	827
	0017	Z-416	MATH CO-PROCESSOR	143
	0007	AL-2000	DOT MATRIX PRINTER	528

TYPICAL CONFIGURATION

- ZENITH LAPHELD CONTRACT

MINIMUM CONFIGURATION:

CLIN #	PART #	DESCRIPTION	COST
0001AB	ZWL-184-52	LAPHELD SYSTEM	$ 1499
0002	-	PC-XFER SOFTWARE	20
0003AA	ZA-180-54	5.25 EXTERNAL FLOPPY	157
0005AA	02	2.5 AMP BATTERY	33
0005AB	150-308	EXT BATTERY RECHARGER	7
0007AA	ZA-180-37	COMPUTER CARRYING CASE	13
0007AB	ZA-180-24	5.25 DISK CARRYING CASE	9

OPTIONAL EQUIPMENT:

0004AA	M1109	BROTHER PRINTERW/CABLE	204
0007AE	ZA-180-26	BROTHER CARRYING CASE	10

TYPICAL CONFIGURATION

SOFTWARE:

MINIMUM CONFIGURATION:

- WORD PROCESSOR
  - WORDPERFECT
  - WORDSTAR
  - SPRINT
- DESKTOP MANAGER
  - SIDEKICK PLUS
  - METRO
- BACKUP PROGRAM
  - FASTBACK PLUS
  - PC FULLBACK

TYPICAL CONFIGURATION

SOFTWARE:

OPTIONAL PACKAGES:

- LOTUS 1-2-3, QUATTRO, EXCEL
- DBASE III PLUS, FOXBASE PLUS
- WORDPERFECT, WORDSTAR, SPRINT
- HARVARD TOTAL PROJECT MGR II, TIMELINE
- HARVARD GRAPHICS
- PROCOMM, CROSSTALK
- NORTON UTILITIES(OR MACE), SIDEWAYS, PERFECT EXCHANGE, UNIFORM

- SUBSTITUTE ENABLE AND REMOVE DATABASE, SPREADSHEET, AND WORD PROCESSOR.

A WORD ABOUT CABLES

- CAN'T CONNECT PERIPHERALS WITHOUT CABLES
- MOST OVERLOOKED ITEM WHEN ORDERING EQUIPMENT
- CAN BE CONFUSING

- SOME STANDARD TERMS
  - PARALLEL, CENTRONICS, IBM CENTRONICS
  - SERIAL, RS232, EIA, MODEM, NULL MODEM
  - DB9, DB25, PIN, SOCKET

- REQUIRED CABLE TYPES
  - COMMUNICATIONS OR MODEM CABLE
    FOR ZENITH OR STD AT SYSTEM DB9S TO DB25P
  - PARALLEL PRINTER CABLE
    DB25P TO CENTRONICS DB36P

- OTHER TYPES
  SERIAL PRINTER (NULL MODEM) CABLE IN EITHER
  DB9S TO DB25P OR DB25S TO DB25P CONFIGURATION

NETWORKS AND PERIPHERAL SHARING

- PERIPHERAL SHARING DEVICES
  - ALLOWS MULTIPLE COMPUTERS OR SHARE A PRINTER, PLOTTER OR OTHER OUTPUT DEVICE
  - ALLOWS ONE COMPUTER TO OUTPUT TO MULTIPLE DEVICE VIA ONE OUTPUT PORT (EITHER SERIAL OR PARALLEL)

  - TYPES OF DEVICES
    - OUTPUT QUEUING DEVICES
      - INTELLIGENT PRINT BUFFERS
      - REDIRECTORS
    - SIMPLE PRINT BUFFERS
    - SWITCH BOXES

NETWORKS AND PERIPHERAL SHARING

- LOCAL AREA NETWORKS(LANS)
  - STANDARDS SETTING BODIES
    - IEEE 802 COMMITTEE
    - CCITT (INTERNATIONAL TELEPHONE AND TELEGRAPH CONSULTIVE COMMITTEE) - OSI REFERENCE MODEL
      - APPLICATION
      - PRESENTATION
      - SESSION
      - TRANSPORT
      - NETWORK
      - DATA LINK
      - PHYSICAL

NETWORKS AND PERIPHERAL SHARING

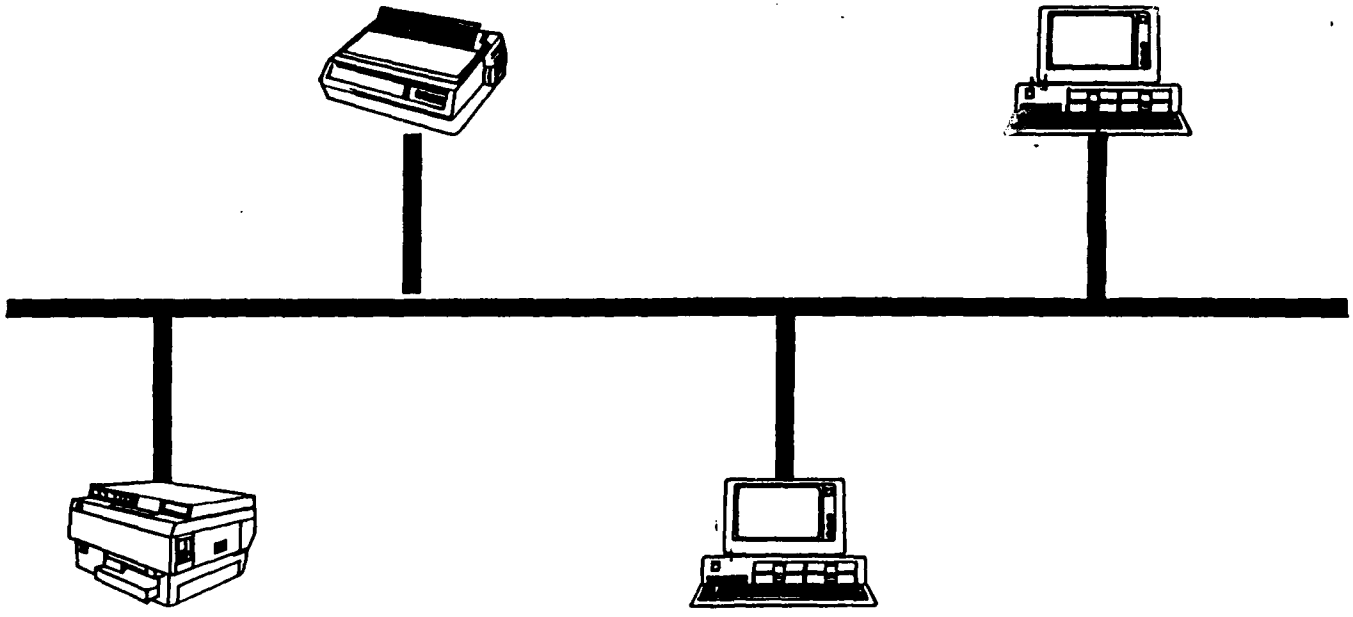
- TOPOLOGIES
  - BUS
  - STAR
  - RING

- PROTOCOLS
  - TOKEN - USED IN BOTH BUS AND RING TOPOLOGIES
  - CSMA/CD - CARRIER SENSE MULTIPLE ACCESS
    COLLISION DETECTION
    USED IN BUS TOPOLOGY
  - DLC - DATA LINK CONTROL
    USED IN SATELLITE COMMUNICATIONS AND
    IBM SNA NETWORK

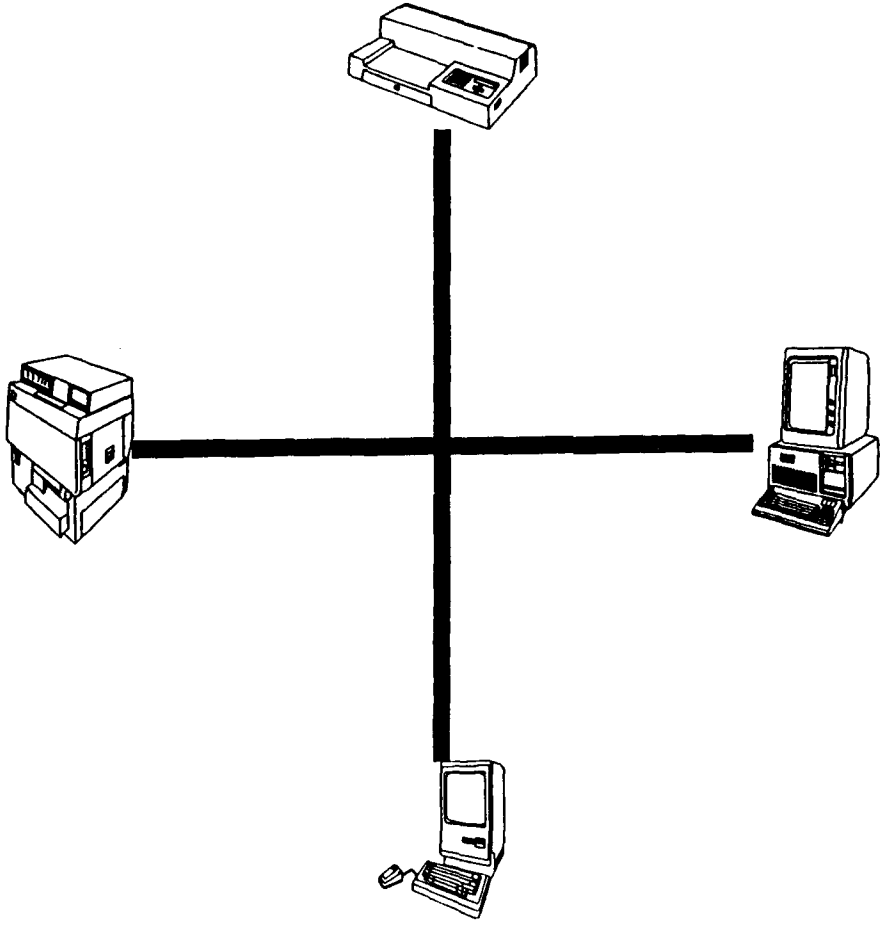
NETWORKS AND PERIPHERAL SHARING

- EXAMPLES OF SOME PC LANS
  - IBM'S PC NETWORK AND TOKEN RING NETWORK
  - XEROX'S ETHERNET
  - NOVELL NETWARE
  - 3COM PC NETWORK
  - MICROSOFT MS-NETWORK
  - SYTEK LOCALNET/200
  - UNGERMANN-BASS NET/ONE

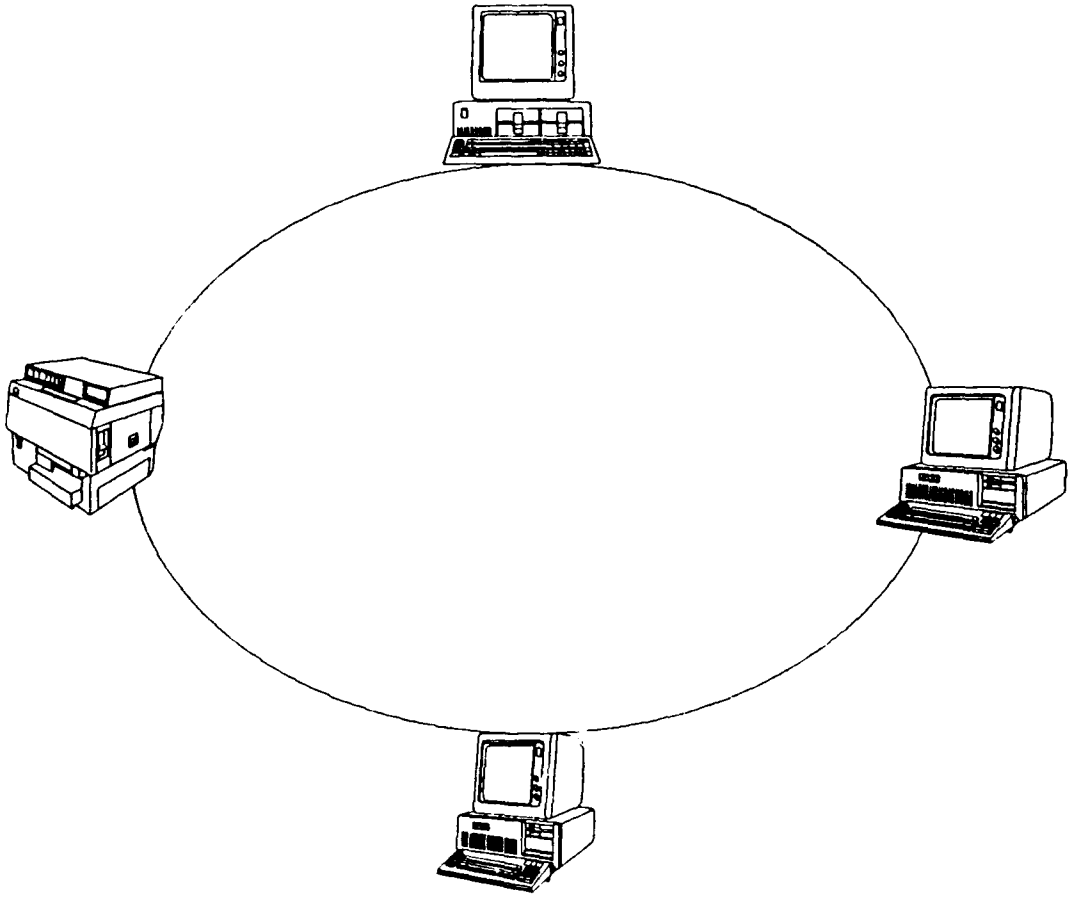
BUS TOPOLOGY



STAR TOPOLOGY



RING TOPOLOGY



CONNECTING THE EQUIPMENT

QUESTIONS

AUTOMATION OF SERIALS AND ACQUISITIONS

by

Mary-Deirdre Corragio
Head, Technical Services
Naval Weapons Center
China Lake, CA

THE AUTOMATION OF SERIALS AND ACQUISITIONS

INTRODUCTION

Good morning. I've really been looking forward to being here today. We are rather isolated at the Naval Weapons Center (NWC) particularly from the library world. As I'm sure you can relate to, travel dollars are not always easy to come by. Fortunately, I have been able to attend several conferences and workshops and I've often expressed that the most valuable part of attending conferences is the sharing of ideas, talking with other librarians, particularly other military and government librarians who face similar regulations like procurement, and similar restraints, like MTP, and with whom I have been able to compare situations and actual, that is real, solutions. Over the past few years, Joan and I have spent countless hours comparing how did you do this, what are you doing to cope with the latest, have you received the memo on?... I was therefore very pleased when she asked me to participate in this program. I feel that I have an opportunity to return the "favor," that is, the ideas of information sharing. In this vein I've entitled my presentation ---

"BACK ROOM TIPS FROM YOUR NWC BOOKIE"

In the past several years, I've been very involved with several automation projects, particularly those concerning acquisitions

and serials. Each of the situations has been different, and in almost every case had totally different fiscal, equipment, and staffing situations. The options for the automation of acquisitions and serials control are enormous. To attempt to present an accurate picture of what the market offers is not feasible in such a short session. Also, I wouldn't be able to address all your needs, because this is an audience of librarians and library administrators with similar problems but in different stages, with different equipment and funding.

I'm sure many of you are thinking, "I don't have a lot of time. I don't have a lot of money. I don't have a lot of staff. I don't have any equipment." Well, take heart; I've faced the same problems. But there are resources available to us; and if you have a well-defined problem, the determination to automate, and some creativity, you'll develop a solid plan and accomplish your goal.

My goal today is to share some information, some ideas that have proved valuable to me regarding different ways of dealing with common problems associated with the automation of acquisitions and serials. I'll share what we at NWC were doing BC (before computers), what we're doing now, and, in some instances, what we plan for the future. My aim is to concentrate on the workshop aspect and give you some "how to do it." The emphasis of the workshop will be on the practical, so the ideas we discuss today you can take home and use.

To accomplish this I've highlighted three of our automation projects. I selected three areas which cover common problems but

had different solutions. In each case it was a matter of identifying the problem, finding what options were available to us at that time, and then selecting the best solution. That is really the key to any successful automation project: knowing what's available to you and what's going to work for you, now.

The three projects we'll be discussing are

CONTINUOUS PURCHASE FILE (CPF) --- Serials tracking for collection development using a Univac mainframe computer.

CHECKMATE --- Periodicals control and check-in system using an IBM PC.

ACQUISITIONS ACCORDING TO MAC — A variety of acquisition tasks accomplished using an Apple Macintosh computer.

But first let's talk about the groundwork. All successful automation projects are well planned and involve the same basic stages of the planning process: problem definition, requirements formulation, system design, implementation and testing, and evaluation and acceptance of the system.

PLANNING PROCESS

Planning is the most important aspect of any project. Planning includes considering the available resources--including money, material, and personnel. Decide on how much of each you are willing to invest in your project. A good, solid plan

- Minimizes time spent later dealing with problems
- Relates directly to the size of the problem
- Includes staff involvement

• Forestalls anxiety and elevates enthusiasm

Planning and organizing are essential, but don't spend more time than you need analyzing, debating, and proving that you need to automate. Plan well, but then get on with the project.

DEFINITION OF THE PROBLEM

Explore the manual operation from all aspects. Divide the processes into activities and define each. Outline the scope of the problem and the constraints. Determine exactly what you want to accomplish; describe the initial information to be stored and manipulated. Expand that definition to include all possibilities.

FORMULATION OF THE REQUIREMENT

This is a critical stage of the planning process but if the problem has been adequately stated, this will not be a formidable task. Fully and clearly describe the expected results---first briefly, then in detail explain the intended use of the system. Describe the features that you wish to have in considering what is justifiable, that is what you can accommplish, afford. Establish input and output requirements, the data elements to be included, and the data access points.

SYSTEM DESIGN

This involves the design of the output and in more involved projects, the program design. Don't assign this task to someone else. You and your staff should get directly involved in structuring the format. You're involvement will ensure a workable database designed for the way you do business.

IMPLEMENTATION AND TESTING

This phase of the process will go smoothly if the initial stages were adequately planned. Be prepared to operate the manual system concurrently while you implement the automated version. Since this could be a hideous prospect, choose a test set and experiment. Experimenting brings out the bugs. Remember to test from the user, not the designer, viewpoint. Sometimes it's hard to tell where the testing stops and the evaluation begins. If you understand that testing is aimed at deciding "Does the system work?," then evaluation answers the question, "How well does it work?"

EVALUATION AND ACCEPTANCE

Evaluation is a measure of both efficiency and effectiveness. Effectiveness is dependent on the ability of the system to satisfy the purposes for which it was designed and developed. Efficiency can be measured by the time and cost to generate the product or perform designated tasks. Acceptance implies that you are satisfied that the system performs adequately and meets your requirements.

PROJECT DESCRIPTION #1

This planning process is easily exemplified by describing the first automation project, the Continuous Purchase File (CPF). First however, we need a mutual understanding of the definition of a serial. Considerable time has been spent defining a serial. I'm not going to enter the debate today; but before we discuss the first two areas, I want to define briefly the term, serials, as we apply it

at the NWC Technical Library. Basically, we use the term loosely as defined in the Anglo-American Cataloging Rules and then we divide the serials into two groups. So, a serial is "a publication issued in successive parts, usually bearing numerical or chronological designations, and intended to be continually published at stated or unstated intervals."

In the first group are periodicals, magazines, and journals, whether scholarly, esoteric, or glossy. Presently, these items are not cataloged and are filed alphabetically on the shelves by title or society name. In the second group are all other serial-type materials. These serials are treated like books---they are shelved and cataloged as books. The basic criteria for this group is, does the material lend itself to being treated like a serial? If yes, and we've also decided that these items are the core of the collection and must be kept up-to-date, then they are designated to be listed in our Continuous Purchase File (CPF).

CONTINUOUS PURCHASE FILE (CPF)

PROBLEM DEFINITION

In the late 1970s the problem of gaps and outdated material in the book collection became intolerable. A manual tracking system existed which was little more than a tickler file. It was also apparent that the tickler file was far from a definitive list. In 1979 a committee was formed to compile a list of titles considered essential to the Technical Library's collection. Bibliographic records for the completed list of titles were constructed on index cards. Not all the records contained the same

information and the information was not located in the same place on each card. It was unlikely that the manual card system could continue to provide the kind of information we needed to maintain such a system as an acquisition tool.

GENERAL REQUIREMENTS

- Create a serials control system for the titles previously designated for continuous purchase for collection development
- Minimize the associated acquisitions and cataloging processes
- Facilitate the timely purchase of these items
- Create financial and statistical reports
- Improve acquisitions record management

SYSTEM DESIGN

In designing a database to control serial procurement of the latest editions we found it obvious that the most important function this system can perform is tracking titles by date of publication. At first glance it appeared that identifying the publication month would be sufficient; however, since we were dealing with annual, semiannual, quarterly, monthly, and irregular publications, we needed to be more specific.

We were very concerned that the system be user friendly. (At the time, "user friendly" was talked about, written about, and generally worried about; now we take it for granted.) We wanted input screens that we could control, specific output format, and explicit reports designed from the staff's input. The programmer produced exactly what we requested.

The system was designed to run on a Univac mainframe computer, programmed in COBOL, and accessed through a UTS 400. We went this route because money designated for computer equipment was not available, but money for contractor computing support was. We already had access through a dedicated phone line to the Center's Univac; we had three other in-house systems hosted on the Univac. We already had a delivery order with the contractor personnel to provide ADP support, so it was very easy and logical to plan another small system.

We've been using the CPF system for about 4 or 5 years. While the annual costs aren't much, the present climate of fiscal constraints has made me begin to explore the possibility of moving this system to the Macintosh.

SPECIFIC REQUIREMENTS

DATA ELEMENTS--title, subtitle, notes, RLIN number, reference or circulating, catalog call number, publisher, month published, frequency, order number, order date, vendor copies, estimated cost, actual cost, date received

ACCESS POINTS--title, reference, month published, RLIN number, publisher

VOLUME--approximately 2000 titles. Adequate tracking and conscientious management have allowed us to pare this down to the present total of 777 titles.

MANAGEMENT DATA/REPORTS--1) A cumulative monthly report consisting of copies ordered, estimatec cost, copies received, and actual cost for each month as well as total to date for each of these items. 2) A reference report listing reference titles.

3) A report accessing month published to tell what to purchase each month. 4) A report by RLIN number. (This report was particularly useful when we began the retrospective conversion. We used the CPF as a pilot for the conversion and identified those titles requiring conversion by the lack of an RLIN number.)

DESIRABLE FEATURES--System use should be self-explanatory and require minimal user training. Documentation and screens should allow the user easy access. Reports can be run on demand.

IMPLEMENTATION/TESTING/EVALUATION/ACCEPTANCE

The data was loaded and tested by our cataloger who took on the task as a special project. When she had the first run, she edited all the data and researched all the missing bibliographic information. The bulk of our testing was conducted by actually using the system as the acquisitions and tracking tool it was designed to be. Evaluation was ongoing. Evaluating the manual was very important to us also. As we tested, we evaluated and marked up the manual. We met with the programmer, made the changes, tested again, and refined the changes. We did not accept the system for at least 8 months after it was delivered. When we were satisfied, we accepted the system and moved into a maintenance stage where any additional changes could be made. We have not made a significant change in 2 years. One change we did make was to add a publisher report to use with publisher catalogs.

PROJECT DESCRIPTION #2

The second serials automation project I'm going to discuss today involved the problem of check-in and control of periodicals. The same planning process was involved as with the CPF but in a more simplified version I won't go through the process in detail in this project description.

CHECKMATE -- SERIALS CONTROL/CHECK-IN

For the past 3 years the Technical Library has been using CHECKMATE to manage its periodicals. CHECKMATE II, the current version, is a serials management program that provides an automated capability for performing serials check-in, claiming, routing, and ordering functions. The program is capable of keyword, title, ISSN, and subject searching and can produce accounting and management reports.

In 1985 the library's Technical Services Branch was rapidly becoming overwhelmed by a serials check-in and claiming backlog. Manual check-in for over 800 titles was slow and labor-intensive. Claiming was a nightmare requiring physical viewing of each card. Checking the entire kardex weekly or even monthly was impossible and we were getting further and further behind. Updating meant replacing all the cards annually---an unbelievable typing task. It was apparent that automated support could provide the solution needed for collecting and producing information for serials control.

At that time, the library was formulating a proposal for procuring an integrated online library system (IOLS). This prospect raised

some concerns about the cost-effectiveness of purchasing an automated serials system, because it was felt that an IOLS would solve the problem and procurement of a serials check-in at that point might result in a duplication of effort later. We didn't have a lot of money, a lot of time, or a lot of staff, but we still had a lot of problems that needed to be alleviated immediately. We really couldn't afford to wait for an IOLS.

Therefore, our selection of an automated serials check-in system was based on the following criteria: we required a system that would install quickly, at a minimum cost, using equipment that could be used for other purposes besides serial control. After assessing the available systems, we selected CHECKMATE. CHECKMATE met the aforementioned requirements and had the automation capabilities and maintenance support we also needed. Not only could we afford CHECKMATE but it was easily attainable. This <u>really</u> was the driving force for selecting CHECKMATE.

The installation of CHECKMATE in 1985, including formatting and loading our records, took 3 months. In 1987 we graduated with CHECKMATE to version II. Although CHECKMATE performs many functions, we primarily use the check-in, claiming, and routing features. With the expansion of the keyword search from 64 to 2,000 hits and faster claiming capabilities, our benefits from CHECKMATE increased significantly. Our future plans include the possibility of utilizing CHECKMATE records for conversion to our IOLS.

CHECKMATE, which at the time cost less than $3000.00, has more

than paid for itself. Our most significant cost recovery has resulted from our ability to make quick and accurate claims. CHECKMATE runs on an IBM PC. When daily check-in is complete we utilize the machine for word processing tasks associated with the serials check-in.

The CHECKMATE record is straightforward and easy to read. Training time for vacation and backup staff is minimal. Ease of use enables each branch member to regularly act as backup. The CHECKMATE staff provides strong technical support and all questions and problems have been handled with a friendly, encouraging attitude.

In 1985 we anticipated that it would be at least 3 years until the serials portion of an IOLS would be installed. Three years have passed, and we now estimate another 2 years before the serials check-in portion of our IOLS will be operational. For us, CHECKMATE proved to be the right solution at the right time.

PROJECT DESCRIPTION #3

The third area I'm going to focus on is the automation of acquisitions functions utilizing a Macintosh desktop computer. We have one here with us today and we'll be showing some examples to you.

ACQUISITIONS ACCORDING TO MAC

The planning process is less obvious when automation is achieved

using a PC. That's because the software is already written, it's highly flexible, inexpensive, mistakes are easily rectified, and changes are easily achieved. But define the problem, formulate your requirements, and your off and running. While planning is less obvious, it's still needed.

A little over a year ago the Technical Library didn't even own a Macintosh. I owned one personally and was campaigning for procurement of MACs in the library. Now we have six and counting. This is my favorite part of the presentation. I love to talk about how the Mac has made our life easier in countless ways.

Why the Mac? We've found that the Mac is appropriate for many small and mid-sized tasks. We have two IBM PCs: one we use for accessing RLIN searching, cataloging, producing labels and charge cards, and ILL; the other PC is used for CHECKMATE. While the IBMs can be used for library operations, they don't lend themselves to the tasks as easily as do the MACs.

When all we had was an IBM, we were grateful to have it and exploited it to our best advantage. However, limitations prohibited widespread use. The primary limitation was the time the machines were used for dedicated major function. But given the choice to buy another IBM or a Mac, I chose the Mac.

Training time was another major limitation. Learning to use spreadsheets and word processors on the IBM involved considerable classroom instruction. The payoff didn't match my training investment. Training on the Mac takes next to nothing. Because the

Mac is easy to learn and use, the staff will just sit down and give it a try. Several members of the staff are voluntarily transferring their manual tasks to the Mac. There is constant exploration for opportunities to take advantage ofthe Mac. If we have any "problem" with the Mac, it's that staff enthusiasm is so high we could use several more!

MAJOR USES

• **STUB LOG** • Several members of the Technical Library (including) myself have BPA authority. We are required to keep a stub log of all the requisitions and to produce this log when we are audited. Originally we kept the log manually. When we got an IBM PC, we set up the log using Lotus 1-2-3. We sent two people to train on the IBM and one was still in the learning curve when we received the Macs. She transferred the log to the Mac using Excel and has since taught several others to use the Excel version of the log without difficulty. The log contains the following information: stub number, date, vendor, number of copies, cost, library (Technical, Center, Computer), CPF, and the NWC work code. The last time we were audited we printed the section to be audited and sent it to Supply. We were able to continue buying without disruption.

• **STATUS OF ACCOUNTS** • We have 3 deposit accounts, 10 (and counting) FEDLINK accounts, and several contracts that have to be monitored monthly to determine if any action needs to be taken. An Excel spreadsheet was set up to track the costs and compute the balances. The monthly report gives spending trends at a glance, keeps me from getting into a deficit situation, and is a great tool

for budget planning.

• PERSONS DELEGATED TO SIGN REQUESTS FOR PERIODICAL ORDERS •

The instruction concerning the purchase of periodicals requires that requests be signed only by persons authorized to do so. We maintain a list of persons delegated to authorized requests for periodical orders on a relational database called OverVue. We update the list as requested and send a copy annually to each department asking that they add, delete, change names.

• PERIODICAL COLLECTION DEVELOPMENT INFORMATION

For the past 2 years we've been engaged in a review of the periodical collection. We are conducting a survey by subject, and have collected a great deal of information from patrons regarding each title. The collective information has been entered into a data base and is sorted in various ways. Before any collection development action (cancel, discard, procure) is taken on a title, we check to see what information we have with regard to patron use or preference.

OTHER USES

Word Processing

Presentations

Vu-graphs

Graphics for advertising library events and programs

Statistical and organizational charts

Forms

Electronic Mail

OTHER PROBLEMS AND CONCERNS

Several problems and concerns are common to all forms of automation---primarily, funding and staffing. Many people think that the cost of equipment and staff will be so prohibitive that they never attempt to automate. While these are two areas to plan for, they are not reasons to reject automating.

STAFFING

My experience has been that staffing has not expanded permanently because of automation but neither has it eliminated positions. Large projects sometimes call for temporary expansion such as a system analyst/programmer for design and programming or a data entry technician. Even smaller projects often warrant hiring a temporary data entry person to load the data. This is particularly true in small libraries with little staff. Sometimes the opposite happens and staffing warrants expansion because of the ease with which other information is obtainable once you've automated. Also, you'll do a better job producing information. And find you can accomplish many other jobs that you've always wanted to do but that required too much effort or manpower.

If your staff is absolutely stretched to the limit and you can't utilize them to implement an automation project, other sources are available for obtaining assistance.

ALTERNATIVE STAFFING ASSISTANCE

- Work Experience high school student

• Library graduate/college student---Independent study projects or cooperative programs

• Joint Partnership Training Act (JPTA)---This 9-week summer program is for underprivileged high school and college students. We have employed as many as 3 students each year for the past 8 years with excellent results. Some amount of time is invested in training, but the results make it worthwhile.

• Technical Mentor Program

• Temporary NTE 1 year, 700-hour appointments, or WAE (When Actually Employed)---These appointments work nicely because most installations have hiring authority for the clerical series.

We have tried all of the above; and with the exception of the temporary, 700-hour, and the WAE employees, all were cost free to the library.

FUNDING

Plan for what you can get. You know your fiscal history and the politics of your organization. Don't plan for a $300K integrated system if there is absolutely no chance of obtaining it in the near future. Go for what you can get. Remember, the idea is to make your life easier now, not 5 or 10 years from now. If a more elaborate system is really warranted, fine; put the system in the long-term budgeting and planning process. Meanwhile you have a job to do. Choose something within your price range that can give you immediate relief.

SUPPORT SYSTEM

Develop a support system, whether formal or informal, a network of other users who work the same equipment, or software, or who process the same type of information. Their help will be invaluable to you. Our network consists of patrons, friends, husbands, brothers, kids, Apple Users Group, other Military Librarians. Whenever we have a question, a problem, or situation we can't solve ourselves, we run through our list of supporting characters, choose a likely candidate, and give him or her a call.

CONCLUSION

For every serials or acquisitions automation problem there is a solution. If this is your first attempt at an automation project, look at your group's biggest headache. Look for the time consuming, labor-intensive tasks that would be suitable for automation: routing, claims, financial records, invoice tracking, cancellations, item identification (bar code reading), order entry and receipt control, binding records, patron records, tracking overdues---the list is endless.

PARTING WORDS

My philosophy is that of a practicalist, not a purist. If you can you find it, store it so it's retrievable, I'm satisfied. I'm not concerned with the ideal solution. I am concerned with getting the job done quickly, efficiently, effectively, and at minimal cost to the organization. I've enjoyed sharing some of my automation experiences with you, and I hope I've given you some ideas that you can easily apply in your situation. Thank you for attending this

workshop. Good luck!

LIFE CYCLES OF INFORMATION SYSTEMS

by

Mary T. Chrysler
Information Resources Manager
Naval Ocean Systems Center
San Diego, CA

OBJECTIVE:

Convey an understanding of Information Systems (IS) and how to obtain and manage an IS employing Life Cycle Principles.

MAIN IDEAS:

1. Understanding the nature of an IS.
2. Technology Assessment
3. Life Cycle Theory (DOD 7920.X)
4. Project Management Documentation
5. Acquisition Theory
6. Wrap Up - Discussions

1. INFORMATION SYSTEMS (IS):

Classic definition:

People, equipment, and facilities operating together in accordance with established procedures to collect, refine, combine, communicate, store, or retrieve information.

IS vs. AS

Emphasis shifted to Product (Information) vs. means to produce it.

Example of Library IS:

Integrated Online Library System (IOLS)

1. Acquisitions of all publications
2. Cataloguing of all publications
3. Circulation control
4. Bibliographic Searching

Classic Questions about Information

WHAT? WHEN? WHERE? WHY? HOW?

WHAT INFORMATION?

Books
Periodicals
Subscriptions
Reports
Bills

WHEN IS THE INFORMATION NEEDED?

Right now
Yesterday
Tomorrow
Next week
Next year

WHERE IS THE INFORMATION TO BE USED?

Here

Library
Activity

Elsewhere

Command-wide
City-wide
Defined region
State-wide
Country-wide
World-wide

WHY IS THE INFORMATION NEEDED?

World crisis
Mission Critical
Weapons Systems
Command-Control
Intelligence
Security
Cryptologic support
Command Priority
Labor Saver
Nice to Have
Blue Sky Desire

HOW IS THE INFORMATION

Now processed?
Obtained?
Used?
Distributed?

CAN THIS INFORMATION BE OBTAINED ... FASTER? EASIER? BETTER?

2. TECHNOLOGY ASSESSMENT

MICROS VS. MAINFRAMES

o Is the Mainframe dead?
o The future of desktop technology.
o Micros vs. mainframes
o Decentralized micro applications
o Mainframes as file servers for micros?
o Downsizing

NEW COMPUTER ARCHITECTURES

o Does the Gov't need new architectures?
o What kinds of hardware are available?
o Are there adequate application software packages?
o Do adequate programming environments exist?
o Where is the industry headed?

PROPRIETARY OPERATING SYSTEMS VS. PORTABILITY

o What is portability?
o What are common applications environments?
o What is the status of standards?
o How do you decide whether to specifiy an operating system?

COMPUTER GRAPHICS

o Trends in hardware

  Color laser printers
  Postscript Printers
  Large Screen projectors
  Film recorders

o Where Standards fit...
  (CGM, Postscript, HPGL...)

o Software for PCs (Drawing and editing systems)
o Integrating graphics into desktop publishing

OPTICAL STORAGE TECHNOLOGIES

o Applications and markets
o WORM, MO and CD-ROM, 3 1/2" to 14"... (too many variations)
o Standards: Who will set them?
o When and how will systems vendors support optical storage?
o When does it make sense to buy optical storage?
o Will there be an American optical storage industry?

DATA BASE MANAGEMENT SYSTEMS

o Relational Databases
o State of the art and prospects for distributed d.b.
o User interfaces
o Status of dbm standards: SQL
o HW architectures, SW arch. and how they affect dbms; Distributed processing, db machines.

3. LIFE CYCLE THEORY (DOD 7950.X)

- A Management Discipline

- Defines Practices and Procedures

Intent: To support mission accomplishment by providing systems which are:

- Effective

- Efficient

- Affordable

- Manageable

- Coordinated

Two Pronged Approach of Checks and Balances:

1. Decisions (Approvals) at Milestones

2. Program Management Plan Documented.

Cradle to Grave, or better yet, Conception to Cremation Management!

MISSION ELEMENT NEED STATEMENT (MENS) NTE 6 pages

Milestone 0 - MENS: Project Initiation

SYSTEM DECISION PAPERS (SDPs)

SDP I: NTE 12 pages (plus annexes)
SDPs : NTE 20 pages (plus annexes)

S Concept Development
D Definition and Design
P System Development
S Deployment and Operation: Milestone 4

TIME AND MONEY CONSIDERATIONS:

o Time for Approvals
o Time for Procurement
o Time (How long) to Retain System (Life Cycle)
o Time to Replace System

o Cost of Systems

- Relative to Approvals and Documentation
- Types of Funding (ACP, R&D, OM&N, OPN...)

LEASE VS. PURCHASE

4. PROJECT MANAGEMENT TECHNIQUES

(Project = IS)

The P.M. Plan should contain:

1. Project Charter: Identifies P.M. authority, responsibility and accountability for managing the project.

2. Plan of Action and Milestones (POA&M)

APPENDICES:

3. Resources Annex

   a. General Functional Requirements
   b. Economic Analysis
   c. Program Objective Memorandum (POM) Issues/ Productivity Enhancement Capital Investment (Budget Approvals)
   d. Budget Estimates and Total IS costs

4. Acquisition Strategy (Plan) Annex

5. Support Planning Annex

   a. Configuration Management
   b. Logistics
   c. Training
   d. Standardization and Interoperability
   e. Transition Strategy
   f. Alternate Operations Strategy
   g. ADP Security and Privacy Act Issues
   h. Data Communications
   i. System Documentation

6 Test and Evaluation Annex

Note: P.M. Plan does not need an approval but should be available for inspections by auditors, etc.

5. ACQUISITION THEORY

a. APPROVAL PROCESS:

- o Brooks Bill and congressional interest
- o Warner exemption
- o Navy method of approval delegations, MENS and SDPs (Decisions)

b. PROCUREMENT PROCESS:

Key regulations:

- o CICA
- o Defense Appropriations Bills
- o DOD "Freeze"

Nature and causes of delays:

- o Inflexibility of the FAR and FIRMR
- o Transactions costs associated with ensuring a high level of competition.
- o The ease with which vendors can file protests. (GSBCA)
- o The limitations on contract negotiations with vendors once they have responded to specs in a solicitation.
- o The difficulty of shaping procurements to reflect new techniques and initiaitves.

Creative contracting:

- o SBA 8(a)
- o GSA schedules
- o Indefinite Quantity Contracts
- o Requirements Contracts
- o Aggregated requirements

OTHER THAN "FULL AND OPEN" COMPETITION (SOLE SOURCING)

Specification Precedence for Information Resources:

1. Functional (Maximum Competition)
2. Equipment Performance
3. Plug - to - Plug Compatible (Functional Equivalent)
4. Brand Name or Equal

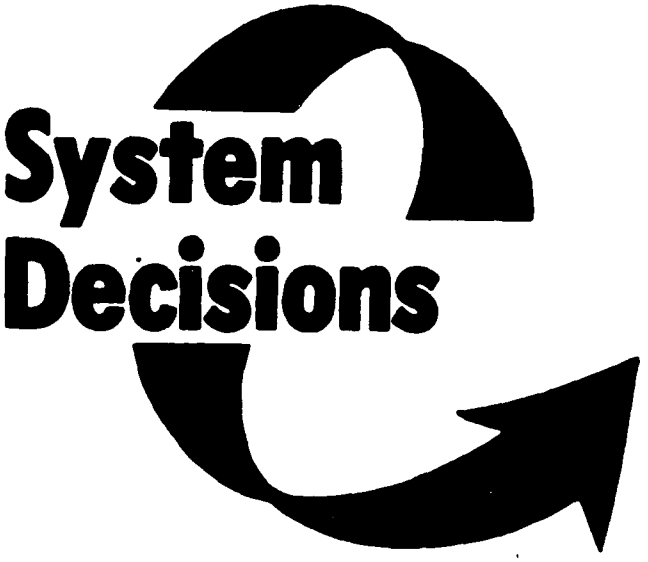
---

5. Specific Make and Model (Sole Source)

6. CONCLUSION

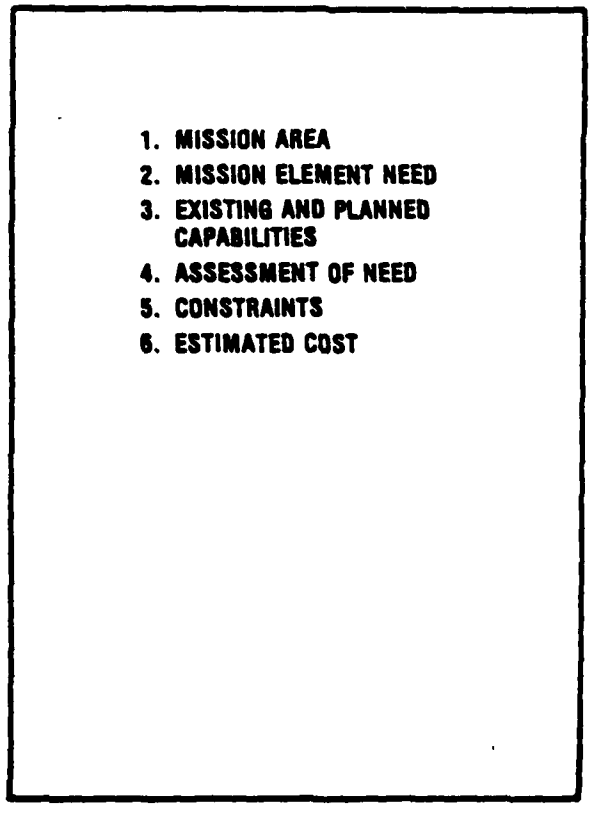
- o Understanding of an IS
- o Planning of an IS
- o Execution of the IS Plan
- o GOOD LUCK!

APPENDICES



APPENDIX A

MENS FORMAT



APPENDIX B

SYSTEM DECISION PAPER FORMATS

MILESTONE I

1. OVERVIEW
2. ALTERNATIVES
3. SCHEDULES OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. DATA COMMUNICATIONS
7. PROBLEM AREAS
8. CONFLICTING VIEWPOINTS
9. APPROVALS

APPENDICES

A. SFR
B. ECONOMIC ANALYSIS
C. BUDGET EXHIBITS
D. DATA COMMUNICATIONS PLAN

MILESTONE II

1. OVERVIEW
2. REQUIREMENTS
3. ALTERNATIVES
4. SCHEDULE OF EVENTS
5. RESOURCES
6. ACQUISITION STRATEGY
7. CONFIGURATION MANAGEMENT
8. LOGISTICS
9. TRAINING
10. STANDARDIZATION
11. INTEROPERABILITY
12. TRANSITION AND ALTERNATIVE STRATEGY
13. SECURITY
14. PRIVACY
15. SOFTWARE
16. DATA COMMUNICATIONS
17. ADP EQUIPMENT CONFIGURATION
18. SUPPORTING DOCUMENTATION
19. TEST AND EVALUATION
20. PROBLEM AREAS
21. CONFLICTING VIEWPOINTS
22. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS
C. DATA COMMUNICATIONS PLAN

MILESTONE III

1. OVERVIEW
2. ALTERNATIVES
3. SCHEDULE OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. CONFIGURATION MANAGEMENT
7. LOGISTICS
8. TRAINING
9. TRANSITION
10. SECURITY
11. PRIVACY
12. SOFTWARE
13. DATA COMMUNICATIONS
14. ADP EQUIPMENT CONFIGURATION
15. SUPPORTING DOCUMENTATION
16. TEST AND EVALUATION
17. PROBLEM AREAS
18. CONFLICTING VIEWPOINTS
19. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS

MILESTONE IV

1. OVERVIEW
2. EVALUATION
3. SCHEDULE OF EVENTS
4. RESOURCES
5. ACQUISITION STRATEGY
6. CONFIGURATION MANAGEMENT
7. LOGISTICS
8. TRAINING
9. ADP EQUIPMENT CONFIGURATION
10. SUPPORTING DOCUMENTATION
11. APPROVALS

APPENDICES

A. ECONOMIC ANALYSIS
B. BUDGET EXHIBITS

APPENDIX C

ABBREVIATED SYSTEM DECISION PAPER (ASDP)

1. Need. Outline the need for automation as related to specific elements of the activity's mission. Briefly summarize the functional requirement and the information dependent tasks. Describe the current method and evaluate the impact on operations of maintaining the status quo capability.

2. Proposed Solution. Summarize the selected ADP solution (including hardware and software) intended to satisfy the information processing need and identify various assumptions and constraints considered in the selection. Indicate milestone schedule of planned events, e.g., target dates for acquiring equipment and implementing various applications.

3. Other Alternatives Considered. Summarize other alternatives considered and explain why each was not selected as a proposed solution to the need for automation.

4. Cost and Benefits. Summarize projected costs (personnel, hardware, software, and facilities) of each alternative in becoming an operational system and identify the expected benefits (improvements to functional support, cost savings, etc.). Give cost/benefit rationale for selecting the recommended alternative.

5. Interface Considerations. Describe planned and potential interface with systems/procedures external and internal to the organization. Indicate anticipated advantages or problems associated with system interfaces.

6. Funding. Are there funds available to support the life cycle costs of the selected alternative? Identify the source and type of funding.

7. Other Comments. Include any additional information that will facilitate understanding and evaluating this ASDP. Training, security/privacy, maintenance, mobility and site preparation requirements should be addressed in this section.

8. Joint Signature

Functional Requirement Validated: _____
Requestor

Development/Acquisition of System Approved: _____
Approving Authority

APPENDIX E

MILESTONE CHECKLIST

The checklist in this appendix is a flexible list of criteria to be applied by review and approval authorities at each Milestone. It is intended as a guide to help Project Managers and others prepare for milestone review activities. The checklist is not all inclusive; it lists typical criteria that have been applied in the past and that have application to a broad range of systems. All of the criteria may not be applicable to every system.

Milestone 0

1. Problem described in the MENS is a valid concern, mission related, and worth solving.

2. The MENS describes a mission need, not a set of hardware and software.

3. Constraints that affect the ability of the Navy to meet the mission need have been clearly identified and described.

4. The resources required are reasonable.

5. The schedule proposed is achievable.

Milestone I

1. The mission need is reaffirmed to be essential.

2. A Project Manager has been appointed and chartered, and necessary staffing approved.

3. The alternative system design concepts adequately reflect a broad segment of the technology base and provide an acceptable competitive environment.

4. The functional objectives have been prioritized.

5. The general functional requirements, including security requirements, have been developed and validated.

6. The alternatives considered satisfy the mission element need.

7. The projected resource investment for the selected alternatives has been estimated and is consistent with the stated constraints.

8. Preliminary plans adequately describe a concept for training, logistical support, organizational relationships, post-deployment support and operation of an automated system.

9. Use of available and existing automated systems has been adequately considered.

10. The acquisition strategy effectively integrates the technical, business and management elements of the project and supports the achievement of project goals and objectives.

11. Joint Services considerations have been adequately treated in the planning.

12. Standardization and interoperability requirements have been adequately considered.

13. Risk and obscure areas have been identified and adequately treated in the planning.

14. Strategies to facilitate the transition of the current functional system to any of the alternative systems to be explored have been conceived.

15. Configuration management has been established for control of functional requirements.

16. Electronic countermeasure performance requirements have been identified.

17. Interfaces with other systems have been adequately identified and defined.

18. Plans for critical design reviews have been developed.

19. Areas involving new technology, unstable requirements, and fund availability have been identified and assessed.

20. An Economic Analysis has been prepared.

Milestone II

1. The mission need is reaffirmed.

2. The functional system design has been revalidated and the baseline for the functional system has been established.

3. Specifications for hardware, software, firmware, and data base have been developed.

4. Plans for logistics support, security protection, training, operational test and evaluation, configuration management, organizational relationships, development, acquisition, and post-deployment support have been updated.

5. Risk analysis to reflect that total system development has been reassessed.

6. The Economic Analysis has been updated.

7. Configuration management for the total system has been established.

8. Acquisition plans to obtain the required ADPE and other resources are finalized.

9. Planned computer resources will meet stated operational needs.

10. Future changes to hardware, software, firmware and data bases can be accommodated without system redesign.

11. Interface and interoperability requirements can be met.

12. Trade-off between hardware, software, firmware and manual procedures have been made.

13. If parallel development efforts will be used, control mechanisms are established.

14. Contractor versus Government development issues have been resolved.

15. Planning for preparation of test and evaluation plan is adequate.

16. Test data are representative of the total range of data and conditions that the system might encounter.

17. Testing will clearly identify whether deficiencies are software or hardware related.

Milestone III

1. The mission need is reaffirmed.

2. Computer programs and data bases have been fully developed.

3. Standardization and interoperability requirements have been satisfied.

4. System support documentation has been developed. This includes maintenance manuals, user manuals, and operation manuals.

5. Unit and system(s) level test and evaluation results support a decision to proceed with deployment.

6. The results of the functional configuration audit, the physical configuration audit, and the product verification review have been evaluated; all support products (e.g., users manual, maintenance manual) have been reviewed.

7. An intensive internal review has confirmed that the developed system satisfies the design and functional requirements.

8. Life cycle schedule, cost and budget estimates are realistic and acceptable.

9. The Economic Analysis has been updated.

10. The system is cost effective and affordable and remains the best acceptable solution.

11. Trade-offs have been made to balance cost, schedule and performance effectively.

12. The acquisition strategy has been updated and is being executed.

13. The end products of development are controlled as configured items.

14. Business planning supports the acquisition strategy and provides flexibility for delivery dates and quantities when options are used.

15. Issues concerning delivery, quality assurance and facilities are identified and satisfactorily resolved.

16. The project management structure and plan are sound and adequately supported.

17. Planning for deployment is adequate including manpower and training, logistics readiness, operational considerations, security, and integration with existing operational systems.

18. Incomplete modules are identified, and a schedule is established for completion and deployment.

19. System deficiencies revealed in testing have been satisfactorily resolved.

20. Post-deployment support facilities are ready for operation.

21. Plans for anticipated system improvements have been established.

22. ADPE acquisition is or schedule.

Milestone IV
(Periodic Review)

1. The mission need is reaffirmed.

2. All changes to the system are accounted for in the configuration management system.

3. System operates costs effectively and efficiently, in all respects.

4. The Economic Analysis is updated.

5. System is essential to the function supported.

6. The system is adequately funded.

7. If operated and maintained in-house, contract operation is not appropriate (every fifth year).

8. System security measures are effective.

9. Training, logistic support, organizational relationships, post-deployment support and operations are adequate for the system.

10. ADPE is not saturated, or plans for eliminating saturation have been developed.

APPENDICES

APP

APPENDIX A

1. PROJECT CHARTER FORMATS

MILESTONE I

1. PROJECT IDENTIFICATION
2. MISSION AND OBJECTIVES
3. SCOPE
4. PROJECT MANAGER RESPONSIBILITIES AND ACCOUNTABILITY
5. USER'S RESPONSIBILITY AND ACCOUNTABILITY
6. PROJECT MANAGER AUTHORITY
7. RELATIONSHIP AND CHANNELS OF COMMUNICATIONS
8. ORGANIZATION AND LOCATION
9. PROJECT TRANSITION/DISESTABLISHMENT

MILESTONE II

1. PROJECT IDENTIFICATION
2. MISSION AND OBJECTIVES
3. SCOPE
4. PROJECT MANAGER RESPONSIBILITIES AND ACCOUNTABILITY
5. USER'S RESPONSIBILITY AND ACCOUNTABILITY
6. PROJECT MANAGER AUTHORITY
7. RELATIONSHIP AND CHANNELS OF COMMUNICATIONS
8. ORGANIZATION AND LOCATION
9. PROJECT TRANSITION/DISESTABLISHMENT

MILESTONE III

1. PROJECT IDENTIFICATION
2. MISSION AND OBJECTIVES
3. SCOPE
4. PROJECT MANAGER RESPONSIBILITIES AND ACCOUNTABILITY
5. USER'S RESPONSIBILITY AND ACCOUNTABILITY
6. PROJECT MANAGER AUTHORITY
7. RELATIONSHIP AND CHANNELS OF COMMUNICATIONS
8. ORGANIZATION AND LOCATION
9. PROJECT TRANSITION/DISESTABLISHMENT

MILESTONE IV

1. PROJECT IDENTIFICATION
2. MISSION OBJECTIVES
3. SCOPE
4. PROJECT MANAGER RESPONSIBILITIES AND ACCOUNTABILITY
5. USER'S RESPONSIBILITY AND ACCOUNTABILITY
6. PROJECT MANAGER AUTHORITY
7. RELATIONSHIP AND CHANNELS OF COMMUNICATIONS
8. ORGANIZATION AND LOCATION
9. PROJECT RANSITION/DISESTABLISHMENT

APPENDIX B

2. PLAN OF ACTION AND MILESTONES FORMAT

MILESTONES I THROUGH IV

USING EXAMPLES SHOWN BELOW, A MINIMUM OF TWO CHARTS ARE REQUIRED. FOR MILESTONES II THROUGH IV, UPDATE AS APPLICABLE AND BRIEFLY EXPLAIN ANY DEVIATIONS FROM PREVIOUS MILESTONE.

Figure 3-01 POA&M LIST

a. This figure itemizes project actions.

Action ID	Description	Responsible Official	Initiation dates		Completion dates	
			Estimate*	Actual	Estimate*	Actual
1.1						
1.2						
2.1						
2.2						
2.3						
etc						

*Estimate is updated at the submission of the PMP at each major milestone.

Figure 3-02 POA&M BAR CHART

b. Figure 3-02 depicts the itemized actions in Figure 3-01 in a time-line format to show the correlation between the actions and the time frames in which they will be accomplished.

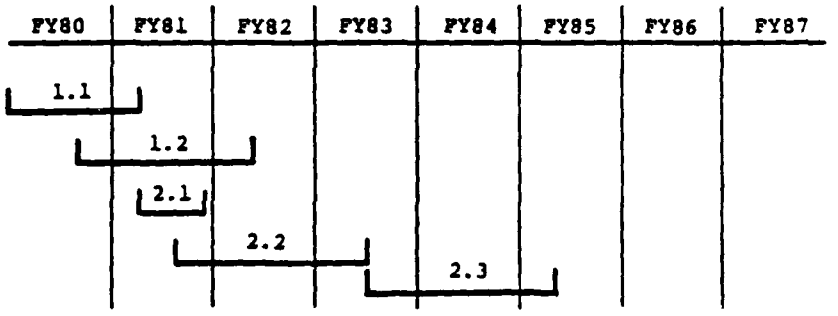
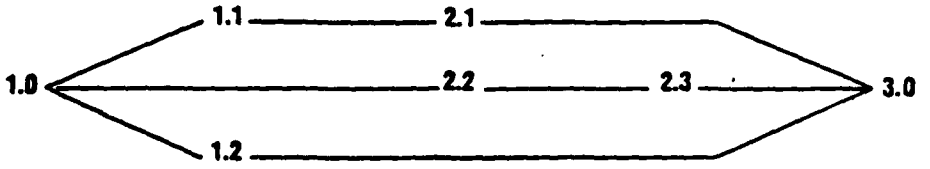


Figure 3-03 POA&M EVENT DEPENDENCY NETWORK

c. This chart or similar display is a typical network diagram showing the dependencies between actions listed on Figure 3-01.



APPENDIX C

3. RESOURCES ANNEX

3.1 GENERAL FUNCTIONAL REQUIREMENTS FORMATS

MILESTONE I

1. EXISTING METHODS AND PROCEDURES
2. OBJECTIVES/PERFORMANCE REQUIREMENTS
3. PROPOSED METHODS AND PROCEDURES
4. INTERFACE WITH OTHER SYSTEMS
5. OPERATIONAL ENVIRONMENTS
6. REQUIREMENTS FOR BACKUP CAPABILITY
7. SYSTEM FLEXIBILITY

MILESTONE II

FIGURES 3-03 THROUGH 3-05 SHOULD BE UPDATED AND SUBMITTED.

MILESTONE III

FIGURES 3-03 THROUGH 3-05 SHOULD BE UPDATED AND SUBMITTED.

MILESTONE IV

NO UPDATE IS REQUIRED.

3.2 ECONOMIC ANALYSIS FORMATS

MILESTONE I

1. METHODOLOGY
2. OBJECTIVE
3. ASSUMPTIONS
4. ALTERNATIVES
   a. CURRENT SYSTEM
   b. PROPOSED SYSTEM
5. COST ANALYSIS
6. BENEFIT ANALYSIS
7. COMPARISON OF ALTERNATIVES
8. SENSITIVITY OF ANALYSIS
9. CONCLUSIONS
10. RECOMMENDATIONS

MILESTONE II

SEE FIGURE 3-07 FOR DECISIONS REQUIRED DURING THE DEFINITION/DESIGN PHASE.

1. METHODOLOGY
2. OBJECTIVE
3. ASSUMPTIONS
4. ALTERNATIVES
   a. CURRENT SYSTEM
   b. PROPOSED SYSTEM
5. COST ANALYSIS
6. BENEFIT ANALYSIS
7. COMPARISON OF ALTERNATIVES
8. SENSITIVITY OF ANALYSIS
9. CONCLUSIONS
10. RECOMMENDATIONS

MILESTONE III

1. METHODOLOGY
2. OBJECTIVE
3. ASSUMPTIONS
4. ALTERNATIVES
   a. CURRENT SYSTEM
   b. PROPOSED SYSTEM
5. COST ANALYSIS
6. BENEFIT ANALYSIS
7. COMPARISON OF ALTERNATIVES
8. SENSITIVITY OF ANALYSIS
9. CONCLUSIONS
10. RECOMMENDATIONS

MILESTONE IV

1. METHODOLOGY
2. OBJECTIVE
3. ASSUMPTIONS
4. ALTERNATIVES
   a. CURRENT SYSTEM
   b. PROPOSED SYSTEM
5. COST ANALYSIS
6. BENEFIT ANALYSIS
7. COMPARISON OF ALTERNATIVES
8. SENSITIVITY OF ANALYSIS
9. CONCLUSIONS
10. RECOMMENDATIONS

3.3 POM ISSUES/PECI FORMATS

MILESTONE I

FOR MILESTONE I, FURNISH COPIES OF ALL POM ISSUES OR PECI PROJECTS THAT HAVE BEEN SUBMITTED OR APPROVED. ALSO, INCLUDE THE STATUS OF THE POM ISSUES OR PECI PROJECTS.

MILESTONE II

UPDATE PREVIOUS INFORMATION AS APPROPRIATE. INCLUDE COPIES OF ANY NEW POM ISSUES OR PECI INITIATIVES.

MILESTONE III

UPDATE PREVIOUS INFORMATION AS APPROPRIATE. INCLUDE COPIES OF ANY NEW POM ISSUES OR PECI INITIATIVES.

MILESTONE IV

UPDATE PREVIOUS INFORMATION AS APPROPRIATE. INCLUDE COPIES OF ANY NEW POM ISSUES OR PECI INITIATIVES.

3.4 BUDGET ESTIMATES AND TOTAL AIS COSTS FORMATS

MILESTONE I

SUBMIT DATA USING FIGURES 3-08 THROUGH 3-11 TO SHOW LCM COST.

MILESTONE II

UPDATE FIGURES 3-08 THROUGH 3-11 AS APPLICABLE.

MILESTONE III

UPDATE FIGURES 3-08 THROUGH 3-11 AS APPLICABLE.

MILESTONE IV

UPDATE AS APPLICABLE EXPLAINING HOW AND WHY ACTUAL COSTS DIFFERED FROM ESTIMATES.

APPENDIX D

4. ACQUISITION STRATEGY FORMATS

MILESTONE I

1. POA&M ACQUISITION CHART
2. CONTRACTOR COST(S)
3. METHOD OF FUNDING
4. SYSTEMS LIFE
5. PROJECTED COMPLETION DATES
   a. SPECIFICATIONS
   b. DPA
   c. RFP
   d. CONTRACT AWARD
   e. INSTALLATION AND ACCEPTANCE
6. RELATIONSHIPS AND INTERDEPENDENCIES

MILESTONE II

1. POA&M ACQUISITION CHART
2. OBJECTIVES
3. RESOURCE SHARING
4. CONVERSION STUDY
5. ADP RESOURCES

MILESTONE III

1. INSTALLATION AND ACCEPTANCE
2. SCHEDULE OF INSTALLATION

MILESTONE IV

1. POA&M ACQUISITION UPDATE
   a. INSTALLATION SCHEDULE
   b. TECHNOLOGY UPDATES
   c. CONTRACT OPTIONS
   d. CONTRACT REPLACEMENT/RENEWAL DATE

APPENDIX E

5. SUPPORT PLANNING ANNEX

5.1 CONFIGURATION MANAGEMENT FORMATS

MILESTONE I

1. DEVELOPMENT OF CM DISCIPLINE
   a. CM PLAN
   b. CCB
   c. CONFIGURATION ITEMS

MILESTONE II

1. FUNCTIONAL BASELINE ESTABLISHED
2. FUNCTIONAL BASELINE UPDATE PROCEDURES
3. CONFIGURATION DISCIPLINE
4. ALLOCATED BASELINE
5. ALLOCATED BASELINE UPDATE PROCEDURES

MILESTONE III

1. CONFIGURATION AUDITS
2. PRODUCT REVIEW
3. PRODUCT BASELINE
4. OPERATIONAL BASELINE
5. UPDATE OF PRODUCT AND OPERATIONAL BASELINES

MILESTONE IV

1. SUMMARY OF CONTROL PROCEDURES

5.2 LOGISTICS FORMATS

MILESTONE I

1. MAINTENANCE AREAS
   a. SOFTWARE
   b. HARDWARE
   c. SPARE PARTS
   d. OTHER SUPPORT AREAS
2. PERSONNEL REQUIREMENTS
3. NEW FACILITY REQUIREMENTS
   a. EQUIPMENT SPACE
   b. ADMINISTRATIVE AND OFFICE SPACE
   c. STORAGE SPACE
   d. SUPPLY ITEMS
   e. POWER REQUIREMENTS
   f. AIR-CONDITIONING
   g. FIRE PREVENTION
   h. SAFETY CONSIDERATIONS
   i. SECURITY

MILESTONE II

1. MAINTENANCE AREAS
   a. SOFTWARE
   b. HARDWARE
   c. SPARE PARTS
   d. OTHER SUPPORT AREAS
2. MAINTENANCE STRATEGIES
3. PERSONNEL REQUIREMENTS
4. FACILITY REQUIREMENTS
   a. EQUIPMENT SPACE
   b. ADMINISTRATIVE AND OFFICE SPACE
   c. STORAGE SPACE
   d. SUPPLY ITEMS
   e. POWER REQUIREMENTS
   f. AIR-CONDITIONING
   g. FIRE PREVENTION
   h. SAFETY CONSIDERATIONS
   i. SECURITY

MILESTONE III

1. MAINTENANCE AREAS
   a. SOFTWARE
   b. HARDWARE
   c. SPARE PARTS
   d. OTHER SUPPORT AREAS
2. PERSONNEL REQUIREMENTS
3. FACILITY REQUIREMENTS
   a. EQUIPMENT SPACE
   b. ADMINISTRATIVE AND OFFICE SPACE
   c. STORAGE SPACE
   d. SUPPLY ITEMS
   e. POWER REQUIREMENTS
   f. AIR-CONDITIONING
   g. FIRE PREVENTION
   h. SAFETY CONSIDERATIONS
   i. SECURITY

MILESTONE IV

1. LOGISTICS AREAS
2. NEW LOGISTIC SUPPORT REQUIREMENTS

5.3 TRAINING FORMATS

MILESTONE I

1. CURRICULA
2. TRAINING AUDIENCE
   a. NUMBERS AND TYPES
   b. LEVELS
3. TRAINING SOURCE

MILESTONE II

1. CURRICULA
2. TRAINING AUDIENCE
   a. NUMBERS AND TYPES
   b. LEVELS
3. TRAINING SOURCE
4. METHOD
5. SCHEDULE
6. FUNDING

MILESTONE III

1. CURRICULA
2. TRAINING AUDIENCE
   a. NUMBERS AND TYPES
   b. LEVELS
3. TRAINING SOURCE
4. METHOD
5. SCHEDULE
6. FUNDING

MILESTONE IV

1. CURRICULA
2. TRAINING AUDIENCE
   a. NUMBERS AND TYPES
   b. LEVELS
3. TRAINING SOURCE
4. METHOD
5. SCHEDULE
6. FUNDING
7. EVALUATION

5.4 STANDARDIZATION AND INTEROPERABILITY FORMATS

MILESTONE I

1. EXISTING AISs
2. CONSTRAINTS
3. INTEROPERABILITY
4. IMPACTS

MILESTONE II

1. AISs
2. CONSTRAINTS
3. INTEROPERABILITY
4. IMPACTS

MILESTONE III

1. AISs
2. CONSTRAINTS
3. INTEROPERABILITY
4. IMPACTS

MILESTONE IV

1. AISs
2. CONSTRAINTS
3. INTEROPERABILITY
4. IMPACTS

5.5 TRANSITION STRATEGY FORMATS

MILESTONE I

1. DESCRIPTION OF GENERAL METHOD

MILESTONE II

1. GENERAL METHOD
2. ORGANIZATIONAL CHANGES
3. DATA BASE REQUIREMENTS
4. IMPLEMENTATION/CONVERSION STRATEGY
   a. SYSTEM IMPLEMENTATION
   b. MANUAL SUBSYSTEMS/AUTOMATED SYSTEMS
   c. INTERFACE REQUIREMENTS AND BACKUP PROCEDURES
   d. IMPLEMENTATION SCHEDULE

MILESTONE III

1. GENERAL METHOD
2. ORGANIZATIONAL CHANGES
3. DATA BASE REQUIREMENTS
4. IMPLEMENTATION/CONVERSION STRATEGY
   a. SYSTEM IMPLEMENTATION
   b. MANUAL SUBSYSTEMS/AUTOMATED SYSTEMS
   c. INTERFACE REQUIREMENTS AND BACKUP PROCEDURES
   d. IMPLEMENTATION SCHEDULE

MILESTONE IV

1. GENERAL METHOD
2. ORGANIZATIONAL CHANGES
3. DATA BASE REQUIREMENTS
4. IMPLEMENTATION/CONVERSION STRATEGY
   a. SYSTEM IMPLEMENTATION
   b. MANUAL SUBSYSTEMS/AUTOMATED SYSTEMS
   c. INTERFACE REQUIREMENTS AND BACKUP PROCEDURES
   d. IMPLEMENTATION SCHEDULE
5. EVALUATION

5.6 ALTERNATE OPERATIONS FORMATS

MILESTONE I

1. ALTERNATE COURSE OF ACTION IF SELECTED ALTERNATIVE FAILS

MILESTONE II

1. ALTERNATE COURSE OF ACTION IF SELECTED ALTERNATIVE FAILS

MILESTONE III

1. ALTERNATE COURSE OF ACTION IF SELECTED ALTERNATIVE FAILS

MILESTONE IV

1. CORRECTIVE ACTION TAKEN, IF ANY

5.7 SECURITY FORMATS

MILESTONE I

1. SYNOPSIS OF SECURITY PLAN
   a. SECURITY OFFICER
   b. DESIGNATED APPROVING AUTHORITY

MILESTONE II

1. SYNOPSIS OF SECURITY PLAN
   a. SECURITY OFFICER
   b. DESIGNATED APPROVING AUTHORITY
2. SYNOPSIS OF RISK ASSESSMENT

MILESTONE III

1. SYNOPSIS OF ST&E PLAN AND TEST
2. SYNOPSIS OF CONTINGENCY PLAN AND TEST

MILESTONE IV

1. SYNOPSIS OF SECURITY PLAN
   a. SECURITY OFFICER
   b. DESIGNATED APPROVING AUTHORITY
2. SYNOPSIS OF RISK ASSESSMENT
3. SYNOPSIS OF ST&E PLAN AND TEST
4. SYNOPSIS OF CONTINGENCY PLAN AND TEST

5.8 PRIVACY FORMATS

MILESTONE I

1. PRIVACY DATA
2. PRIVACY ACT PROCEDURES

MILESTONE II

1. PRIVACY DATA
2. PRIVACY ACT PROCEDURES
3. PRIVACY REQUIREMENTS
   a. RECORD REVIEW REQUESTS
   b. DISPUTES AND AMENDMENTS
   c. CONTROL OF DISCLOSURES
   d. DISCLOSURE ACCOUNTING
   e. DISSEMINATION OF AMENDMENTS AND DISPUTE STATEMENTS
   f. ACCURACY, RELEVANCY, AND TIMELINESS

MILESTONE III

1. PRIVACY DATA
2. PRIVACY ACT PROCEDURES
3. PRIVACY REQUIREMENTS
   a. RECORD REVIEW REQUESTS
   b. DISPUTES AND AMENDMENTS
   c. CONTROL OF DISCLOSURES
   d. DISCLOSURE ACCOUNTING
   e. DISSEMINATION OF AMENDMENTS AND DISPUTE STATEMENTS
   f. ACCURACY, RELEVANCY, AND TIMELINESS

MILESTONE IV

1. EVALUATION OF PRIVACY ACT COMPLIANCE

5.9 DATA COMMUNICATIONS FORMATS

MILESTONE I

1. CONCEPT
2. DATA MEDIA
3. SERVICE POINTS AND TIME REQUIREMENTS
4. CAPACITY REQUIREMENT
5. COMMUNICATIONS MEDIA
6. FREQUENCY OF TRANSMISSION
7. TOPOLOGICAL STRUCTURE
   a. OVERVIEW
   b. COST FACTORS
   c. ANALYSIS

MILESTONE II

1. DATA COMMUNICATIONS ALTERNATIVES
2. NETWORK CONFIGURATION
3. COSTS
4. NETWORK CONTROL
5. NETWORK ARCHITECTURE
6. NETWORK PROTOCOLS
7. TRAFFIC STATISTICS
8. UPDATE MILESTONE I DOCUMENTATION
9. DOLLAR OR TIME IMPACTS OF CHANGES

MILESTONE III

1. FEEDER REQUESTS/CONNECTION TO DDN
2. MILESTONE II DOCUMENTATION UPDATE
3. DOLLAR OR TIME IMPACTS OF CHANGES

MILESTONE IV

1. PROBLEMS INCURRED
2. CORRECTIVE ACTION TAKEN

5.10 SYSTEM DOCUMENTATION FORMATS

MILESTONE I

NO SYSTEMS DOCUMENTATION IS REQUIRED.

MILESTONE II

1. FUNCTIONAL DESCRIPTION
2. DATA REQUIREMENTS DOCUMENTATION
3. SYSTEM/SUBSYSTEM SPECIFICATIONS
4. DATA BASE SPECIFICATIONS
5. PROGRAM SPECIFICATIONS

MILESTONE III

1. FUNCTIONAL DESCRIPTION
2. DATA REQUIREMENTS DOCUMENTATION
3. SYSTEM/SUBSYSTEM SPECIFICATIONS
4. DATA BASE SPECIFICATIONS
5. PROGRAM SPECIFICATIONS
6. USER'S MANUAL
7. COMPUTER OPERATIONS MANUAL
8. PROGRAM MAINTENANCE
9. TEST PLAN
10. TEST ANALYSIS REPORT

MILESTONE IV

1. INDICATE IF SYSTEMS DOCUMENTATION IS CURRENT

APPENDIX F

6. TEST AND EVALUATION

MILESTONE I

NO DOCUMENTATION REQUIRED.

MILESTONE II

1. TEST NAME AND DATE
2. TEST PARTICIPANTS
3. TEST EVALUATION REPORT APPROVAL
4. TEST RESOURCES
5. TEST CRITERIA
6. CONSTRAINTS
7. FORMAT

MILESTONE III

1. TEST AND EVALUATION
2. SYSTEM EFFECTIVENESS REVIEW
3. METHODOLOGY

MILESTONE IV

1. SYSTEM EFFECTIVENESS
2. MODIFICATIONS
3. POA&M

APPENDIX G

LIFE CYCLE MANAGEMENT GUIDELINE GLOSSARY

ADP	Automatic Data Processing
ADPE	Automatic Data Processing Equipment
ADS	Automated Data System
AIS	Automated Information System
APR	Agency Procurement Request
CA	Commercial Activities
CCB	Configuration Control Board
CI	Configuration Item
CM	Configuration Management
DAA	Designated Approving Authority
DDN	Defense Data Network
DNA	Digital Equipment Corporation's Network Architecture
DOD	Department of Defense
DODCI	Department of Defense Computer Institute
DON	Department of the Navy
DPA	Delegation of Procurement Authority
DPI	Data Processing Installation
DRD	Data Requirements Document
DS	Data Base Specifications
EA	Economic Analysis
FCA	Functional Configuration Audit
FD	Functional Description
FIPS	Federal Information Processing Standards

LCM Guideline Glossary continued:

FPMR	Federal Property Management Regulations
FPR	Federal Procurement Regulation
GFR	General Functional Requirements
GSA	General Services Administration
IBM SNA	International Business Machines' Systems Network Architecture
JCS	Joint Chiefs of Staff
LCM	Life Cycle Management
MENS	Mission Element Need Statement
MM	Program Maintenance Manual
NAVDAC	Naval Data Automation Command
OASD(C)	Office of the Assistant Secretary of Defense (Comptroller)
OM	Computer Operations Manual
PCA	Physical Configuration Audit
PECI	Productivity Enhancement Capital Investment
PERT/CPM	Program Evaluation Review Technique/Critical Path Method
PMP	Project Management Plan
POA&M	Plan of Action and Milestones
POM	Program Objectives Memorandum

LCM Guideline Glossary continued:

PS	Program Specifications
PT	Test Plan
R&D	Research and Development
RFP	Request for Proposal
RT	Test Analysis Report
SDP	System Decision Paper
SS	System/Subsystem Specification
ST&E	Security, Test, and Evaluation
TSP	Teleprocessing Services Program
UM	User's Manual

SPECULATIONS ON THE SPECIAL LIBRARY OF 2010

by

H. Leonard Fisher*
Head, Research Information Group
Lawrence Livermore National Laboratory
Livermore, California
and Adjunct Professor
School of Telecommunications Management
Golden Gate University

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SPECULATIONS ON THE SPECIAL LIBRARY OF 2010

INTRODUCTION

George Santanyana has written, "Those who cannot remember the past are condemned to relive it." (1) In view of the rapidly accelerating changes in the general complexity of life, brought about by the melding together of computer and communications technologies, this might well be rephrased as "Those who do not plan for the future will have to live through it anyway."(2)

It is therefore appropriate for librarians in general and special librarians in particular to assess their futures,because the same forces that are changing the nature of society stand poised to forever change the nature of organizations and the libraries that serve them. In fact, John Sack has questioned "When, how, and by whose hand will libraries disappear?"(3)

In this presentation I will examine some of the major technological, cultural, and sociological trends and changes driving us toward the world of 2010, thus providing a framework for understanding the information needs of the organization of the future and the nature of the special library that will respond to these needs (4,5).

INFORMATION NEEDS IN THE EMERGING INFORMATION SOCIETY

In several writings, Daniel Bell (6,7) has put forth the thesis that, over the next 20 to 30 years, a new social framework will emerge based on advances in information communications and computer technologies. Furthermore, over time, the impact of the shift to such an information society will be both pervasive and decisive in determining how people work, live, and play, as well as how society transacts business.

Following Cetron and Coates (8), we postulate that the major trends driving us toward this new world (see Table I) are: world domination by global multinational conglomerates, expanding lifelong education, growth of research and development in the economy, growing demand for accountability in the expenditure of resources by corporations, the institutionalization of problems, and finally, the growing interdependence of nations, particularly on the Pacific Rim (9). A chronological scale for important events occurring in this geographical area in the time frame 1987 to 2011 is given in Table 2 (10).

Furthermore, following Fedida (11) and Tydeman (12), we predict that the vehicle for this final transformation to an information world will be the delivery of information and telecommunications-based services to the home and office via videotex. (A scenario for this development is given in Table 3.)

WHAT WILL 2010 BE LIKE

One appealing vision has been given by S.D. Neill (13)

> In 2010 the full-scale colonization of space between the earth and the moon will begin. The knowledge base for this will come from a society completely computerized with all factual information available in every home via two-way interactive television with computer modules activated by voiced natural language.

Other more complete descriptions of this time frame have been given by Clarke (14) and Stableford and Langford (15).

Whichever vision holds most true, it is certainly clear that to be functional and competitive or cooperative in this new world, organizations must be able to : quickly access and organize information relevant to continuously changing problems and conditions; rapidly comprehend and deal with unfamiliar concepts; and assess, draw conclusions, and make judgments on the basis of this information and understanding (8).

NATURE AND CHARACTERISTICS OF THE SPECIAL LIBRARY OF 2010

By the year 2010, much information will either have been converted to or be produced directly in electronic form, but not all information, factual or otherwise. Consequently, some special libraries will be totally electronic or paperless (16. 17), while others will continue to be a mix of print on paper and electronic resources.

No matter where any particular special library is on this spectrum, it will need to function as a transparent node in a dynamic, global information system providing users with immediate access to electronic information in usable, useful, malleable, linkable forms, 24 hours a day, seven days a week (18).

Furthermore, special libraries will be caught up in the ever-increasing trend to account for the expenditure of corporate (institutional) resources. Thus they will be charged with answering a variety of significant questions related to their value to the organization they serve. Among the most important will be: Are the systems and networks the library provides access to the right ones? Do they meet the organization's information needs? Do they allow the organization to anticipate and accommodate changes in research directions or economic or other social trends? Is there any other way to obtain this information that is simpler, easier, cheaper, more efficient, or more effective?

CONCLUSION

When all is said and done, the future of the special library circa 2010 is very clear--it can stand still, wither and die, and disappear--or it can adapt, change, and play an ever increasingly important organizational role as an effective, interactive, always available information resource (3,9,18).

Table 2.

News From The Future.*

Utilizing the on-line/computer retrieval systems of the Trans-Pacific Times (English data base) we have selected the headlines of the top news stories between January 1, 1987 and January 1, 2011.

April 27, 1987 Taiwan shipments embargoed in response to counterfeit products	November 12, 1989 PRC signs contract to produce Sony TVs	Novenber 24, 1991 First shipment of Antarctic oil next Monday
April 19, 1988 Satellite beamed Mexican soap operas banned in Philippines	January 1, 1990 Australia announces total self-sufficiency, ends immigration	May 12, 1992 Philippines restrict commercial tv transmission
March 15, 1989 Korean sports car is ROAD AND TRACK car of the year	July 3, 1990 Japanese now own 38% of Canadian fish processing business	April 8, 1993 Stealth bomber based in Cam Rahn Bay crashes off Singapore
February 15, 1996 Alaskan coal sought as alternative to disrupted Chinese shipments	October 28, 2000 Mexico opens Salina Cruz to shipping	March 12, 2004 Univ. Of Hawaii offers on-line service to Lansat 7
July 15, 1997 Japan places 5th generation computer complex in orbit	April 2003 International Video Learning Conference opens in Los Angeles	September 15, 2006 Russia will not join Pacific Minerals Consortium
May 16, 1999 PACRIM Health ID card available from Hawaii Health Central	February 1, 2004 62,400 Pacific Rim Muslim Pilgrams expected in Mecca	June 30, 2007 Antarctic offshore oil rig sunk by gunfire

*Reprinted with permission from PACRIM 2010 - A report by Dr. Roger B. Selbert and the Futures Staff of Security Pacific Bank (1987).

Table 3.

A Scenario for U.S. Videotex Market Penetration 1980 - 2010.

Year	Major Events	Domestic Market Penetration (Based on 100 million homes)
1980 - 1984	U. S. videotex experiments continue. Results very inconclusive and contradictory. First videotex capable TV sets introduced into market-place.	None
1986	The first videotex systems become operational.	0.01%
1988	First court battle over a videotex provider selling subscriber information. Subscriber wins. New York, San Francisco, Seattle, Denver offer videotex for the first time.	4%
1989	Subscribers to electronic yellow page services are required to sign information provider liability releases upon application for service. Intercity networks established. At this point in time virtually every manufacturer of TV is offering minicomputers, printers, stereo TV sound tuners, etc. It's a race to see who can come up with the most whistles and bells.	4%

Table 3 continued

A Scenario for U.S. Videotex Market Penetration 1980 - 2010.

Year	Major Events	Domestic Market Penetration (Based on 100 Million Homes)
1990	Videotex is now offered in every metropolitan area over 250,000 people.	10%
1991	Major TV networks merge to form new videotex network, universal videotex incorporated. Cost of postage stamp now 50 cents. First Amendment rights extended to electronic newspapers.	20%
1992	Len Fisher is announced as Chairman of the Board of UVI and the industry thrives. There is rejoicing throughout the land. Other than that, it is a pretty boring year.	35%
1993	The subdivision of the FCC responsible for videotex becomes a separate entity with its own director. The FCC Communications Act of 1992 is revised accordingly.	50%
1997	Voice recognition added to higher priced videotex sets. Major U.S. Videotex Network (UVI) accidentally hooked up to war game simulations in the Pentagon.	82.5%

Table 3 continued

A Scenario for U.S. Videotex Market Penetration 1980 - 2010.

Year	Major Events	Domestic Market Penetration (Based On 100 Million Homes)
1999	Stanford University announces the ability to transmit holograms via cable TV and new projection equipment. A new industry is born.	86%
2000	Videotex is old hat. No one thinks about it - It's just there - much the same way we regarded TV in 1980. The new thing is the projection of 3-dimensional images into the home.	88%
2010	Results of electronic transmission of three dimenstional objects into the home stagger the imagination.	98%

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MARKETING THE LIBRARY SERVICES

by

Bill Sannwald
Director
San Diego Public Library
San Diego, CA

MARKETING LIBRARY SERVICES

by
William W. Sannwald
San Diego City Librarian

Marketing Definitions for Libraries

Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives.

The **marketing concept** has a customer orientation where customer needs and wants are examined and satisfied; a goal orientation for the organization with the establishment of financial and/or non-financial goals to meet the mission of the organization; and an integrated effort by all members of the organization to carry out their activities to satisfy user needs and wants.

Marketing involves environmental analysis and marketing research, consumer analysis, product development and management, distribution or place decisions, promotion decisions, price strategies, and professional responsibilities.

Most libraries have a product oriented style--that is librarians believe that a "good product" like library service will sell itself. Librarians see their products and services as inherently desirable for prospective users, and they ascribe the lack of consumer interest to ignorance of services or lack of motivation. If libraries use marketing, they place too much emphasis on advertising and public relations. Research in most libraries is limited to confirming management beliefs rather than market wants, and generic competition is often ignored by librarians.

Nonprofit marketing is distinctive in a number of areas. The Scope of nonprofit marketing is concerned with organizations, people, places and ideas, as well as products and services. Profit oriented marketing is largely concerned with goods and services.

Forms of exchange in nonprofit organizations are usually three way and involve public support in exchange for provision of library service. Exchanges in the private sector are usually two way, and are usually dollars for products and services.

The complexity of objectives is greater in nonprofit marketing because success or failure cannot be measured strictly in financial terms. In the private sector objectives are usually stated in terms of sales, market share, and the bottom line of profits.

Benefits may also be unequal in nonprofit organizations, and at times economically unfeasible market segments must be served.

Librarians have criticized marketing over a number of issues. Some feel that marketing wastes the public's money. Services have been designed by professions who know what the public needs, and marketing is not needed to promote services because this is just a waste of money.

Some also feel that marketing is intrusive. Because marketing research often asks people about their likes and dislikes, their beliefs, their attitudes and other personal information, some people view marketing as an invasion of privacy. However, we must remember that this activity is being conducted to learn the wants and needs of the target market.

The final reason that marketing receives criticism is that some feel it is manipulative. It gets people to do thing, or acquire goods that they may not need, nor even want. Some image ads are also viewed as propaganda by skeptical audiences.

The Organization and its relationship with the Macroenvironment

The Library is part of a much larger three part system. The three parts of the system are the inner core, the publics that interact with the library, and the macroenvironment.

The Core System consists of:

- The Library staff which is all the the employees who work on a paid basis. Everyone from middle management, the professional staff, clerical employees and support staff is included.
- Library Management, who are responsible for running the library. Management consists of the library director and key administrative staff. They are responsible for carrying out the policy decisions of the governing authority, and for making suggestions on policy and services to the governing authority.
- Advisory, regulatory and financing authorities may be responsible for determining library funding levels and policy questions.
- Suppliers provide the equipment, books and materials needed for the library to serve its clientele.

- The Library may also belong to a network consisting of other libraries that have banded together by contract or administrative agreement to provide extended service to library users.

The Library's External publics consist of:

- Users are the reason that the library is in business. They are the people who use the services of the library on a regular or irregular basis.
- Non-users are of interest to the library as well. Perhaps marketing research and the proper market segmentation strategies will turn non-users into users.
- The general public may be interested in the library both as an institution as well as an information access point.
- The mass media may have an interest in the library as a source of news, and the library may want to obtain coverage of its activities through the media.
- Other libraries may be interested in the military library as a source of information for their patrons.

The **Macroenvironment** is the third part of the system, and that part that the library is not able to control at all. A major fact about the macroenvironment is that it does not stand still. The decade of the 1970's, for example, was marked in different periods by shortages, runaway inflation, and high unemployment. The 1980's in contrast has seen relatively prosperous times, deflation, and a concern about individual safety. Movements such as environmentalism, consumerism, the women's movement and gay rights are still making major changes in the way we live.

While the macroenvironment has a great impact on the organization, the organization has little influence on the macroenvironment. Elements of the macroenvironment are the "uncontrollables" to which the organizations adapt through setting the factors they can control--their mission, goals, objectives, plans, and marketing mix. The **organization, in responding to the environment** in which it operates:

- Studies the environment in which it operates and specifically the opportunities and threats in this environment.
- It then develops a set of objectives describing what it hopes to achieve in this environment.
- Then it formulates a corporate strategy that describes how it plans to achieve the organizational objectives.
- It then builds an organization structure that is capable of carrying out the organizational strategy.

- Finally, it designs various systems of analysis, planning and control to support the effective implementation of the strategy of the organization.

Organizations may face environmental threats which are challenges posed by an unfavorable trend or specific disturbance in th environment which would lead, in the absence of purposeful marketing action, to the stagnation or demise of an organization, or one of its products or services. A major threat is one that would cause substantial damage to the organization if it became a reality, and has a moderate to high probability of occurring. Gramm-Rudman was a major threat in military libraries.

An organizational marketing opportunity is an attractive arena for potential marketing action in which a particular organization is likely to have a differential advantage--in other words, it can take this opportunity and do a better job with it than almost anyone else. A potential opportunity for libraries is the use of on-line searching systems and the increased use it may bring in reaching non-users.

The **Demographic environment** is important because people are users of the library. Consumer demographics are statistics that are used to describe the population. They are easy to identify, collect, measure and analyze. Demographics consist of population size, gender and age, location, housing and mobility, income and expenditures, occupation and education, and marital status. Demographics are important in understanding the groups of people who are using the library.

The **Economic environment** is one of great interest to libraries because funding is often dependent on the general state of the economy as well as the economic vitality of the library's parent organization.

The **Natural environment** is one that is not usually of great concern to libraries--in fact libraries may enhance the environment through their contributions to the information society.

The **Technological** environment is one that is of vast importance to libraries. Technology is one of the most dramatic force shaping human destiny. Think about what the telephone, xerography and the computer have meant to library operations, and the way that we provide service.

There are unlimited innovational opportunities. There is no shortage of new product and service ideas, only an inability to bring them to technological or commercial success. As the United States leaves the manufacturing age and enters the information age, libraries have the opportunity to grow in importance if they can become hooked into the new technological networks.

The **Political Environment** is important because most libraries are part of some governmental organization, and thus are influenced by the rules and regulations of that organization.

Our **Cultural Environment** relates to the basic beliefs, values and norms of our society. People absorb, almost unconsciously, a view of life that defines their relationship to themselves, other institutions, society at large, nature and the universe. Even within a culture, different patterns of behavior and different value systems may be simultaneously present. Librarians need to understand the cultural diversities of their users.

Because the macroenvironment is uncontrollable, libraries must adapt to that environment through a clear definition of their mission, and through the execution of functional plans to carry out the mission.

The **mission of an organization** defines what business it is in, and is probably the most profound question that an organization can ask itself. Usually an organization should try to answer this question by determining: what consumer groups are to be served and satisfied, what consumer needs are to be satisfied, and how are these needs to be satisfied.

The mission statement should be distinctive and motivating,and it should be understandable by all people in the organization, as well as all the publics dealing with the organization. A well worked out mission statement provides everyone in the organization with a shared sense of purpose, significance, direction and achievement.

Goals may be viewed as broad statements of desired ends. They derive from the mission of the organization, and in libraries usually center on three areas. Services goals which are usually tied to access to service, awareness and use of services. For example, to increase the use of library collections. Resource management goals which are related to how resources are used. For example, to better match collections to the needs and demands of the local communities. Administrative or directional goals which are tied to carrying out the other goals as well a providing for the long range survival of the organization. For example, to maintain a strong and financially secure library system.

Objectives should be stated in operational and measurable form. For example, to provide a point of access to library services within 15 minutes traveling time of any base resident.

Operational plans may be viewed as the annual budget cycle. This is the plan of what the library hopes to accomplish with its resources during the next fiscal year.

Long range plans may have a planning horizon of from four to seven years, and should address those things that the library hopes to accomplish, and how it hopes to make it happen over an extended period of time. For example, the funding and construction of a new facility or the acquisition of a new computer system.

Organizational structure is the way that the library can best arrange itself to meet the needs of its environment.This often depends on the personalities involved as well.

Marketing Information System

To better understand its environment, and to assemble the plans and strategies needed to adapt to the environment, libraries must establish and employ a **marketing information system.** A system consists of internal records, marketing intelligence, marketing research and an analytical marketing system. Libraries also need to conduct marketing audits to understand their capabilities to meet organizational goals and objectives, and undertake consumer research to better interpret wants and needs of users and potential users.

The **Library's Internal Records System** is the information that the library collects about its activities and its users. The reasons for obtaining information, is that **good information enables marketers to**:

- Reduce risk.
- Determine consumer attitudes.
- Monitor the environment.
- Coordinate strategy.
- Measure performance.
- Improve credibility.
- Support decisions.
- Verify intuition.

Libraries collect data on users through circulation records including demographic and geographic information. Other information is available through financial records, planning data, prior surveys, and information from other sources. Internal record systems can be improved in speed, comprehensiveness and accuracy through surveying managers to see what are their marketing information needs are. **In designing internal record systems, the following questions should be asked:**

- What types of decisions are they regularly called upon to make?

- What types of information is needed to make these decisions?
- What types of information do they regularly get?
- What types of special studies do they periodically request?
- What types of information would they like to get, that they are not now receiving?
- What information do they want daily? Weekly? Monthly? Yearly?
- What magazines and reports would they like to see routed on a regular basis?
- What specific topics would they like to be informed bout?
- What specific types of data analysis programs should be made available?

Once all the information is gathered, an internal records system should be deigned to conform to what managers think they need., what managers really need, and what is economically feasible. Information is not cheap, and all relevant costs must be measured against potential benefits.

A Marketing Intelligence System is the set of sources and procedures by which marketing executives obtain their everyday information about developments in the external marketing environment. Most people carry on their own intelligence by reading their local papers and watching television news, reading professional publications, and attending seminars and trade shows. Talking to knowledgeable people in the organization also helps in determining what is happening in the organization that the library serves. **An organization can improve the quality of marketing intelligence available to it by:**

- Convincing its managers and staff of the importance of gathering information and passing it on. Formal procedures should be established to collect information, and forms should be designed to make collection uniform and easy.
- Encouraging outside parties to pass on information. Regular users, faculty, and other organizational departments are often a good source of information.
- Establishing an office responsible for collecting and disseminating marketing intelligence.

A Marketing Research System is a system designed for the systematic collection, analysis, and reporting of data and findings relevant to a specific marketing situation or problem facing the organization.

Problem Definition is a statement of the topic to be investigated in marketing research. Without a precise definition of the topic to be studied, a researcher may collect irrelevant and expensive data and confuse rather than clarify issues. A good problem definition directs the research process toward the collection and analysis of specific information for the purpose of decision making. When a researcher is uncertain about the precise topic to be investigated, exploratory research should be employed. If the problem definition has been clarified, conclusive research or formal research should be used.

Exploratory research is used when the researcher is uncertain about the precise topic to be investigated. This technique develops a clear definition of the research problems by utilizing informal analysis. The major procedures at this stage include collecting secondary data, doing observational research, and carrying out informal interviewing with individuals and groups.

In seeking information, a researcher should initially gather and review secondary data. **Secondary data** are relevant data that already exist some where, having been collected for another purpose. Secondary data are normally quicker and less expensive to obtain and will give the researcher a start on the problem. **Major sources of secondary data include:**

- Internal records, including information from the marketing intelligence system.
- Government records such as demographic and planning records.
- Trade, professional and business associations.
- Universities, research organizations, and foundations.

The **advantages of secondary data** are that it is relatively inexpensive, assembly of the data is relatively quick, there are usually several sources of the data, and checks may be made for accuracy. A secondary data source may contain information that the organization could not obtain. Secondary data may help develop a more precise definition of the research problem.

Disadvantages of secondary data are that the information may not suit the purposes of the current research because they were collected for another reason, the data may be obsolete or dated. The precision with which secondary data were collected, analyzed, and reported may be lacking. The organization must determine for itself whether the data were compiled in an unbiased, objective manner. Also, the source of secondary data may not present all of the findings in their report. The reliability of the data is not always known, because many research projects are not repeated.

Generation of **primary data** is data collected to solve the specific problem under investigation. **Advantages of primary data** are: primary data are collected to fit the precise purposes of the current research problem. Units of measure and level of detail are matched to the objectives of the organization. The data are current because dated information is not used or collected. Attitudes, consumer characteristics, and other factors are up to date. Data are collected by the organization itself or by an outside source carrying out a tailor-made research study for the firm. The source is known and controlled, and the methodology is constructed for the specific study. There are no conflicting of the research can be determined.

Disadvantages of primary data are that it is expensive and time consuming.

Observational research is just watching what is going on in a systematic way. If you want to know how people are using your libraries, observe their behavior.

Qualitative interviewing is open ended interviewing to collect further ideas on the factors that play a role in the marketing problem. You may have individual or group interviews, which are usually called focus groups. Focus groups may be used to get community reaction to new services of facilities.

Conclusive research is structured data collection and analysis for the solution of a specific problem or objective.

Research design answers a number of questions about the actual research project:

- Who collects the data? The organization can collect the data itself or hire an outside research firm for a specific project.
- What information should be collected? The kinds and amounts of information to be collected will be based on the problem definition formulated by the organization.
- Who or what should be studied? Users, donors, effectiveness of staff, products and services offered now or planned for introduction.

- What techniques of data collection should be used? There are four methods, which are surveys, observations, experiments, and simulation.
- How much will the study cost? The overall and specific costs of the study must be clearly outlined. These costs include executive time, researcher time, support staff time, computer usage, printing, pretesting, special equipment, and marketing costs such as advertising.
- How will the data be collected? The personnel necessary to collect the data outlined in the research design must be determined, along with their attributes and skills.
- How long will the data collection be? The researcher must stipulate the time frame within which data will be collected, or else a study can drag on, in which early responses may be significantly different from later responses.
- When and where should information be collected? The day and time of data collection must be specified.

A number of **alternatives** are open to a library undertaking **data collection.** Included may be:

- **Surveys**, which are the systematic gathering of information concerning attitudes, past purchases, and consumer characteristics from respondents by communicating with them in person, over the telephone, or by mail.
  * **Telephone interviews** are inexpensive and fast for obtaining small quantities of relatively impersonal information. Telephone interviews are limited to simple, clearly worded questions. It is also extremely difficult to obtain information on the respondent's personal characteristics, and the survey may be prejudiced by the omission of house holds without phones or with unlisted numbers. To get around the problem of unlisted numbers, telephone interviewers have been using computers to select random numbers.
  * **Mail interviews** allow interviewing a large sample of people at a nominal cost. There is a problem in that people may return only 40-50% of all questionnaires, and those that do return them tend to have very strong opinions. Personal interviews are typically the best means of obtaining detailed information, since the interviewer has the

opportunity to establish rapport with each respondent and can explain confusing or vague questions. Although mail questionnaires are carefully worded and often pretested to eliminate potential misunderstandings, misunderstandings can occur anyway.

* **Personal interviews** are slow and the most expensive method of collecting data. However, their flexibility coupled with the detailed information that can be collected often offset these limitations.

- **Focus group interviews** have been widely used in recent years as a means of gathering research information. In a focus group interview, eight to twelve individuals are brought together in one location to discuss a subject of interest. Although the moderator typically explains the purpose of the meeting and suggests an opening discussion topic, he or she is interested in stimulating interaction among group members in order to develop the discussion of numerous points. Focus group sessions, taped so the moderator can devote full attention to the discussion.
- **Observation studies** are conducted by actually viewing the overt actions of the person being studied. Observation studies in libraries may center on taking a traffic count at a potential location for a branch location, to the use of the library's computer circulation records to determine the reading interests of users of a particular library. Merits of the method include the fact that observation is often more accurate than questioning techniques like surveys and interviews. Limitations to this approach for getting primary data include observer subjectivity and errors in interpretation.
- **Experiments** are scientific investigations in which a researcher controls or manipulates a test group or groups and compares the results with that of a control group that did not receive the controls or manipulation. To date the most common form of experiments in marketing has been test marketing. The major problem with controlled experiments is controlling all variables in a real life situation.

- **Simulations** are the act of creating a complex model to resemble a real process or system, and running an experiment with the model in the hope of learning something about the real system. Simulation is a computer-based technique that manipulates marketing factors on paper rather than in a real setting. First a model of the controllable variables facing the organization is constructed. Then the factors are manipulated via the computer to determine their effects on the overall marketing strategy. Simulation requires no consumer cooperation and is able to handle many interrelated factors. However, it is expensive, and difficult to use. There may be great promise for adjusting library service policies through the use of simulation. It will enable libraries to ask those "What if" questions that are so important in structuring a public service policy.

After the data is captured, it must by analyzed. **Analysis of data** is a vast subject, often involving complex, sophisticated techniques. Data Analysis should not be rejected just because it is complex, and some of the techniques used require a fairly sophisticated knowledge of statistics. Data Analysis can make a valuable contribution to understanding the phenomena underlying a data set. Complete data forms are first coded and tabulated and then analyzed. **Coding** is the process by which each completed data form is numbered and response categories are labeled. **Tabulation** is the computation of summary data for each response category. **Analysis** is the evaluation of responses, usually by statistical techniques, as they pertain to the specific problem under investigation. In most cases, analysis of a single variable is concerned with measures of central tendency--the mean, median and mode--and measures of dispersion or variation of the range of observations. At times, data is tabulated only in terms of frequency of observance. When there are two or more variables to examine simultaneously, we usually try to see if there is a degree of association between them. Often a simple cross tabulation between two variables can provide useful insights into data.

Although data analysis is one of the last steps in the market research process, its impact appears much earlier. For example, the type of analysis to be done often influences the content and form of the questions. It is often a good idea to create dummy versions of the tables that are expected to appear in the final report and to make sure that the questions included (and their format) lend themselves to the sort of analysis required to complete these tables

Recommendations are suggestions for future action by the organization based on the data collected by the researcher They are generally presented in written, but in some cases oral, form to management There are two general cautions that should be observed in presenting reports: the interpretations of the data should be based on an analysis of what the survey actually discovered, and not what the manager and researcher hoped would be found, and the report should be written clearly and concisely so that the newly discovered information and insights are communicated to the relevant decision makers. Effective communications of the fundings to the users of the research is a vital component of the research process embracing both the written report and the oral presentation, if any.

The **written report** should include an executive summary that provides an overview of the key findings and conclusions and an introductory guide to the contents of each chapter or section. Graphs and charts are often an excellent way to communicate clearly a mass of data. Research design issues that could affect interpretation of results, and thereby the conclusions drawn, should be clearly identified. The presentation should also provide some feel for the reliability of the results, particularly if the sample size is small.

The research report represents feedback to management, who are responsible for utilizing the findings. If management ignores weaknesses or organizational problems, research has little value. If management bases decisions on research results, then marketing research has great value and the organization benefits in the short and long run.

An **Analytical Marketing System** consists of a set of advanced techniques for analyzing marketing data and marketing problems. Comprising the system are a:

- A **Statistical bank** is a collection of advanced statistical procedures for learning more about the relationships within a set of data and their statistical reliability. Included would be statistical techniques such as regression analysis and correlation analysis
- A **Model bank** is a collection of models that will help marketers make better marketing decisions. Each model consists of a set of interrelated variables that represent some real system, process, or outcome. These models can help answer "what if" and "which is best" type questions.

Consumer Analysis

Library users are consumers of library service and the scope of consumer analysis includes the study of who uses and who does not use the library, what they use, how they use the library, when they use it, and how often they use the library.

Both interpersonal and personal factors determine patterns of consumer behavior, but the consumer decision process itself can be divided into six steps: problem recognition, search, evaluation, purchase decision, purchase act, and post purchase behavior.

There are three interpersonal determinants of consumer behavior: cultural influences, social influences, and family influences.

The Marketing Audit

Knowing about the macroenvironment, publics and users is not enough to develop a good marketing program for the library. The library must also identify its strengths and weaknesses through a marketing audit.

A **Marketing Audit** is a systematic, critical, impartial review and appraisal of an organization's total marketing operation--of the basic objectives and policies of the operation and the assumptions that underlie them, as well as of the methods, procedures, personnel, and organization employed to implement the policies and achieve the objectives.

The **four characteristics of a marketing audit** are that it is:

- **Comprehensive.** The marketing audit covers all of the major issues facing an organization, and not only one or a few marketing trouble spots. If the audit is aimed at just one marketing function, it would be called a functional audit of that particular function.
- **Systematic.** The marketing audit involves an orderly sequence of diagnostic steps covering the organization's marketing environment, internal marketing system, and specific marketing activities. The diagnosis is followed by a corrective action plan involving both short-run and long-run proposals to improve the organization's overall marketing effort.

- **Independent.** The marketing audit is normally conducted by an inside or outside party who has sufficient independence from the marketing department to attain top management's confidence and the needed objectivity.
- **Periodic.** The marketing audit should normally be carried out periodically instead of only when there is a crisis. It also benefits organizations that are not in crisis.

The **marketing audit process consists of six steps:**

- Determination of who does the audit. As was indicated, an audit may be conducted by organization specialists, management, or outside specialists.
- Determination of when and how often the audit is conducted. An audit may be undertaken at the end of a calendar year, at the end of a fiscal year, or when undertaking a new program, or a change in mission or goals. An audit should be performed at least annually, although some organizations prefer more frequent analysis. The audit should be completed during the same time period each year to allow comparisons.
- Determination of areas to be audited.
  - A **horizontal audit** (often referred to as a marketing mix audit) studies the overall marketing performance of the organization, with particular emphasis on the interrelationship of variables and their relative importance.
  - A **vertical audit** is an in-depth analysis of one aspect of the organization's marketing strategy, such as product planning.
  - The two audits may be used in conjunction with one another because the horizontal audit often reveals areas that need further investigation.
- Developing audit forms. Audit forms list the areas to be examined and the exact information required to evaluate each area.
- Conducting the audit. The decisions at this stage involve the time duration of the audit, whether employees are to be aware of the audit, whether the audit is performed while the organization is open or closed, and how the final report is to be prepared.

- Presenting the results to management. The last step in the audit is to present the findings and recommendations to management. However, the auditing process is complete only after appropriate responses are taken by management. It is the responsibility of management, not the auditor, to determine these responses.

Target Marketing

Traditionally, organizations have gone through three stages in their thinking of how to operate in a market:

- **Mass marketing** is a style of marketing where the organization mass-produces and mass distribute some product, and attempts to attract every eligible person to its use. The library exists to serve everyone in the community it serves, and everyone is encouraged to use all its services. The argument for mass marketing is that it has the lowest costs, and can serve the largest potential market.
- **Product differentiated marketing** is a style of marketing where the organization prepares two or more market offerings for the market as a whole. The market offering may exhibit different features, styles, quality and so on. A University library may offer departmental service to go along with service out of their main library building. Users may select the service they want to use. The offerings are not designed for different groups as much as they offer alternatives to the entire market.
- **Target marketing** is a style of marketing where the organization distinguishes between different segments making up the market, chooses one or more of these segments to focus on, and develops market offerings and mixes tailored to meet the needs of each target market. Libraries do this with undergraduate libraries, childrens services, and outreach services. In order to be even more effective, libraries should increase target marketing.

There are a number of **benefits in using a segmentation strategy:**

- **Spotlighting relevant segments.** It is difficult for organizations to reach out to all the population they serve as a whole, and it is much easier to identify and understand the population as a whole, if it is broken into meaningful segments.

- **Development of responsive strategies.** This allows organizations to develop finely tuned marketing strategies designed to meet the needs of their chosen segments. Segmented marketing strategies can be designed with such objectives as;
  * Tailoring the product offering to appeal to the needs and preferences of one or more specific segments.
  * Providing a range of alternative times and locations for distribution of the product, so as to be responsive to people's different schedules and home or job locations.
  * Selecting alternative media to communicate with the target market about the product, reflecting he fact that people's media habits may vary sharply.
  * Preparing different messages tailored to the interests, education, and native languages of various groups.
- **Efficient allocation of resources.** Selecting target markets helps an organization to allocate its limited resources. Few libraries have the capabilities o offer an entire market the same level of service, nor is that likely to be necessary. One of the principal benefits of market segmentation is to identify those portions of the population that are not users at all, or that make only limited use of the product. In most libraries, the 20/80 rule probably applies.
- **Effectiveness in attracting funds.** Market segmentation enhances a library's ability to attract funds from donors and government agencies. A clear specification of market targets and institutional mission allows an organization to identify the donor segments that are most likely to be responsive to fund-raising appeals or the political interest groups who are most likely to support continued or increased funding of programs.

Developing criteria for effective segmentation centers on finding alternative segmentation schemes for dividing the entire market into meaningful segments. In almost any situation, there is an almost infinite number of potential ways of segmenting the market. The following criteria offer useful guidelines for evaluating alternative segmentation schemes:

- The market segment must be substantial enough, or of enough importance to warrant a segmentation strategy.
- Segmenting markets takes time and consumer resources, and a segment must have enough size to justify both expenditures. Measurement of most anticipated market segments is not difficult, once a decision is made on what segments will be served. This is especially true of demographic and geographic segmentation, and less true of the others.
- The market segment has a characteristic or characteristics which distinguish the segment from the overall market. In libraries a segment could be people with vision problems, or in academic libraries, people who are majoring in French literature.
- The skills and equipment required to serve a specific segment effectively must be compatible with the organization's mission and its resources.
- The market segment is accessible through distribution efforts or reachable through promotion efforts.
- The market segment's likelihood of favorably responding to a marketing mix tailored to a specialized need of the segment.

There are a number of steps that a Library should consider in **planning a segmentation strategy**

- Determine the characteristics and needs of consumers for the product or service of the organization. This is essentially a data-collection stage.
- Analyze consumer similarities and differences. What you are trying to do in this stage, is to see what real differences there are in potential consumer segments.
- Develop consumer group profiles. These profiles define market segments by aggregating consumers with similar characteristics and needs and separating them from consumers with different characteristics and needs. This is done by dividing consumers by geographic, demographic or psychographic variables.
- Select consumer segments. Here the question is what segments offer the greatest opportunity for the organization, and how many segments should the firm pursue. In deciding which segments contain the greatest potential, the organization must consider its objectives, strengths and weaknesses, the level and type of

competition, the size of the market, channel relations, and organizational image.

- Position the organization's offering. The organization must identify the image it wants to represent in the market place, and position its products and services to meet that image.
- Establish a marketing plan. The overall marketing plan should address the characteristics of product, distribution, price, and promotion.

Marketing Mix

The marketing Mix refers to the specific combination of marketing elements used to achieve objectives and satisfy the target market. The mix consists of four major factors: product or service, distribution, promotion and price.

Product or service decisions involve determining what a public services and library media to offer to library users, the level of quality of service, and additions or deletions from existing services.

Distribution decisions center on the location of public service activities, and the level of customer service. Will the library have branches or departmental libraries, or will all services be offered from one facility. Will the library extend service through loans from other libraries, and what are the regulations for library use.

Promotion decisions are concerned with how the library communicates with its public. Not only through press releases, publicity and posters, but also through the service extended by the library's staff acting as boundary personnel or sales representatives.

Pricing is the exchange value that the library's funding agency puts on library service, as well as the "cost" for library services such as copy machines and computer searches.

Marketing for libraries is a way at looking at the needs and desires of library users, and establishing program and service priorities to meet those needs.

HUMAN FACTORS FOR LIBRARY SYSTEMS

by

R. Bruce Miller
Asst. University Librarian for Technical Services
University of California, San Diego
San Diego, CA

R Bruce Miller

ERGONOMIC GUIDELINES

- Adjustable viewing distance to screen and keyboard
  typically 450 to 500 mm (18 to 20 inches)
- Adjustable viewing height for screen
  top of screen between eye level and 10° below
- Adjustable keyboard height
  to allow straight wrists and 90°+ bend at elbow
- Adjustable seating
  seat height, backrest height, backrest tension, casters
  seat height allows 90° angle at knees
  footrest for short operators
- Workstation design
  leg clearance, sufficient work surface, document holders,
  storage space, cable and wiring security
- VDT design
  keyboard: detached, thin, matté finish, palm rest
  keys: concave, feedback signal, neutral colors
  screen: 3 mm+ characters, brightness/contrast controls, no perceptible flicker, high resolution, antiglare
- Illumination between 500 and 700 lux
- Glare -- ELIMINATE IT!

VISION GUIDELINES

- Annual eye examination
- Optical prescription for screen viewing distance
- Decorated work areas

VDT USE

- Eliminate machine pacing and monitoring
- Rest breaks: 15 minutes per 2 hours for regular work
  15 minutes per hour for intense work
- Disperse VDTs
- Avoid confined spaces

R Bruce Miller

CHAIRS -- BID SPECIFICATIONS

- Ease of adjustment
  All adjustments must be quick and easy to make from a seated position. Seat height must be controlled by a pneumatic adjustment mechanism that is controlled by the seated operator through the use of a lever or push button; the pneumatic adjustment mechanism must work smoothly even for lightweight operators.

- Stability
  A five-point chair base as wide as the seat is required.

- Mobility
  The chair must swivel and must be on casters. Casters must be for a tile floor and must not mar a tile surface. (Change tile to carpet as appropriate.)

- Upholstery
  The upholsstery must be fireproof and must not give off toxic fumes if smoldering. Fabric must be non-slip and porous.

- Seat pan height
  Seat height must be adjustable in a range of 15" (38 cm) to 21" (53 cm)

- Seat pan tilt
  The seat pan must have a 0° to 8° adjustable tilt.

- Seat pan width
  The seat pan width must be at least 18" (46 cm).

- Seat pan depth
  Seat pan depth must be no greater than 16" (41 cm).

- Seat pan contour
  The seat pan must have a rounded (waterfall type) front edge.

- Seat padding
  Multidensity padding is required.

- Backrest height
  The backrest must be adjustable from 4.2" (11 cm) to 9.5" (24 cm) above the seat pan.

- Backrest width
  The width of the backrest must be between 12.5" (32 cm) and 19" (33 cm).

- Backrest recline angle
  The backrest recline angle must be adjustable in a range of 95° to 112°.

R Bruce Miller

ADJUSTABLE WORKSTATION -- BID SPECIFICATIONS

These specifications are for workstations that will be used for intense data entry activities, i.e., the goal is to meet the maximum ergonomic guidelines.

NOTE: All described features are required unless identified as desirable.

- Adjustable VDT stand -- Keyboard shelf
  at least 30 inches wide
  at least 15 inches deep
  height adjusts from 26 inches to at least 28 inches
  tilt adjustment -- desirable

- Adjustable VDT stand -- Monitor shelf
  same width as keyboard shelf
  at least 17 inches deep
  height adjusts from 26 inches to at least 30 inches
  tilt adjustment -- at least 15° forward and back from horizontal
  back stop to prevent monitor from falling off shelf

NOTE: All adjustment features must be offerable by a seated terminal operator with nominal strength; returns/tables described below must not interfere with operation of adjustment features. Keyboard shelf and monitor shelf must be very stable. The legs of a seated terminal operator smaller than the 95 percentile male must not touch the back or any structural crossbracing of the stand or any of the adjustment mechanism.

- Work surface extension
  30 inches deep, 24 to 30 inches wide, 29 to 30 inches tall

- Return or table -- to be placed at a right angle to the seated terminal operator
  24 to 30 inches wide, 66 to 78 inches long, 29 to 30 inches tall

All top surfaces must have low glare, light colored, satin finish.

- Footrest
  12 to 16 inches wide, approximately 13 inches deep, slanting up to 5 or 6 inches high; sturdy construction; slip resistant surface

- Document holder
  Flexible arm that can be securely attached to the above described workstation; can be swung out of the way when not in use; for letter size documents

R Bruce Miller

EYE EXERCISES HELP MINIMIZE VISION STRAIN*

- Place elbows on a flat surface with one finger on the outside orbit of each eye and practice blinking by just letting the eyelids close. When this is done properly, movement is not felt by the fingers.

- Start slowly, and gradually increase the speed of blinking. Fingers placed at the corners of the eyes should not feel any motion as this is done. If the blinks are tight, practice by blinking gently six times. Next close the eyes and rest for the count of six.

- This exercise should be practiced for about thirty seconds every hour or until the lashes can be fluttered without feeling any pulling on fingers.

Blink about once per line when reading and always when a change of focus is needed, such as when looking up from the terminal or if a momentary blur is experienced.

An example of a recuperative technique that can relieve eye fatigue is palming. Palming should be done whenever eyes feel tired, including once before going to sleep. Here is the recommended technique: close the eyes and cover them with the palms of the hands, making sure the palms do not touch the eyes. Elbows must be supported. Next, relax the body, attempting to observe breathing patterns, counting breaths in cycles of ten or trying to visualize as clearly as possible some pleasant thought.

These activities should be repeated at regular intervals until they become routine.

These exercises were provided by vision specialist Rosemary G. Gordon.

*Computerworld, October 28, 1985, p. 99

R Bruce Miller

VDT HEALTH/ERGONOMICS

"Ergonomics, thoughtfully designed user interfaces, and humane management practices are required not only to arrive at exemplary workplaces, but also to achieve personally fulfilling work design and organization."*

Miller, R Bruce
"Radiation, Ergonomics, Ion Depletion, and VDTs: Healthful Use of Visual Display Terminals" in Information Technology and Libraries. 2:151-158 (June 1983)
Chicago: American Library Association
text attached

Video Displays, Work, and Vision.
Washington: National Academy Press, 1983. 273 p.
ISBN 0309033888
review attached

VDT News: The VDT Health and Safety Report.
New York: Microwave News, 1984- (bimonthly)
ISSN 0742-938X
review attached

Health Hazards of VDTs? edited by Brian Pearce.
New York: Wiley, 1984. 244 p.
ISBN 0471900656
review attached

Tijerina, Louis
Video Display Terminal Workstation Ergonomics.
Dublin, OH: OCLC, 1984. 28 p.
review attached

Pulgram, William L. and Richard E. Stonis
Designing the Automated Office: A Guide for Architects, Interior Designers, Space Planners, and Facility Managers.
New York: Whitney Library of Design, 1984. 224 p.
ISBN 0823071367
This book is an excellent resource for the design of new office. It provides information about space planning, specification of furnishings, lighting, wiring, environmental needs, and other often overlooked details. There are many illustrations and plans. It provides good background information and is also a good "idea" book.

*Grandjean, Etienne.
Ergonomics in Computerized Offices.
London: Taylor & Francis, 1987. 227 p.
ISBN 0850663490
This is the most current and comprehensive text concerning the topic. If you have this book, you do not need any of the other items listed in the bibliography.

Radiation, Ergonomics, Ion Depletion, and VDTs: Healthful Use of Visual Display Terminals

by R. Bruce Miller

Health hazards associated with the use of visual display terminals (VDTs) are discussed. Guidelines for the safe use of VDTs are given in the following areas: radiation, design of work stations, design of VDTs, illumination, glare, work/rest periods, visual testing, and ion depletion. There is a brief annotated bibliography of recommended reading and bibliographies for those who need more technical information.

The use of CRTs (cathode ray tubes) has been widespread for years, e.g., television picture tubes, scientific and technical instruments, etc. However, the expanding use of VDTs (visual or video display terminals—computer devices that incorporate CRTs and keyboards) has initiated significant concern about the safety of CRTs. The popular media and labor unions have documented a broad range of ailments that can occur to individuals who spend long hours in close proximity of VDTs.

Since it is apparent that automation is here to stay, it seemed necessary to learn about the unseen danger in order to protect myself and my fellow workers. The Technical Standards for Library Automation Committee of the Library and Information Technology Association was also interested in this topic. Their goal was to compile an exhaustive, annotated bibliography about the health hazards of CRTs and to make that bibliography available to the library community. As a member of that committee, I was especially happy to undertake that assignment because it concurred with my own research, which was already under way.

As is often the case, the simple assignment of compiling a bibliography became practically unmanageable. This occurred for several reasons. The first was that, in spite of the relative lack of coverage in library literature, the topic is a hot item in many other fields (especially journalism and data processing). Another reason was that an exhaustive bibliography could be misleading and could direct users to erroneous conclusions unless all of the citations were pursued, e.g., one issue of a journal would cite a radiation hazard and the following issue would discount the previous article; reading only one article would not provide complete information. The final reason surfaced after several hundred articles had been read. It became clear that many of the articles were based upon hearsay and upon secondhand information that had originally come from a limited number of empirical studies.

Although a massive bibliography would provide access to valuable information and would place all responsibility for interpretation and application of that information upon the reader, that approach also would probably not be very useful to the average reader. It took many months to locate and read hundreds of articles and monographs that were associated with the topic of health hazards and VDTs; this is not a reasonable burden to place upon every user of a VDT. Therefore, I have chosen to reach some conclusions and to recommend some guidelines for the library community. I have made every effort to prepare an unbiased presentation that is based on clearly discernible facts. Unfortunately, the facts are not always clearly discernible. For this reason, even though TESLA should receive credit for initiation of the project, I must be held responsible for the content of the paper.

The goal of this paper is to succinctly present a summary of the health hazards that do and do not exist for users of VDTs, and to provide basic guidelines for the healthful use of VDTs. The purpose of this approach is to provide all readers with the basic facts necessary to evaluate a particular work environment. For those responsible for installing or upgrading any VDT work station, the paper concludes with a brief annotated list of items that are recommended reading (perhaps they should be mandatory). These items provide the com-

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plete technical detail that has purposely been omitted from the general guidelines that are presented in the paper. For those who wish to obtain an even broader perspective on the subject, there is also an annotated bibliography that contains citations to several extensive bibliographies about health hazards and VDTs.

RADIATION

Radiation is the most controversial aspect of the topic of health hazards and VDTs. The controversy is centered upon how much radiation is or might be harmful. The formal studies have concluded that there is no radiation danger from VDTs. The following quotes rather eloquently summarize the results of those studies.

> Field surveys and laboratory studies of emissions have been made on hundreds of terminals, covering a wide variety of models. Measurements of emissions from older and newer VDT models have not different significantly. Measurements have been made both under normal operating conditions and under conditions designed to maximize potential emissions, including overvoltage fault conditions, maximum contrast and screen brightness levels and with the screen filled completely with characters. These radiation studies have all concluded that, even under conditions designed to maximize potential emissions, the levels of all types of electromagnetic radiation emitted are far below accepted occupational and environmental health and safety standard limits of exposure. In many cases the levels of radiation emitted were below the detection capability of existing measurement instrumentation. Most field surveys have been unable to distinguish emissions of X-radiation from the VDT from normal background levels. Laboratory studies have consistently found X-radiation emissions to be below existing U.S. and European safety standards or guidelines. Levels of both ultraviolet and infrared radiation have also been difficult to distinguish from background levels. Emissions of ultraviolet radiation are approximately an order of magnitude less than the levels emitted by fluorescent lighting and are far below existing U.S. and European exposure standards. Radiofrequency emissions have also been found to be far below (generally less than 1 per cent of) permitted exposure levels.1
>
> In all cases, the sweep frequencies and their first fifty or so harmonies, and the digital clock frequencies and their harmonies were detected but in no case did the individual levels or the sum of all levels even remotely approach any exposure standards or guidelines used in the United States or by any other nation. No levels of electromagnetic energy at frequencies normally considered microwave (greater than 1GHz) were detected that could be directly associated with any terminal.
>
> Based on current medical knowledge, there is no evidence to indicate, nor is it even a subject of speculation, that the emission levels associated with VDT's will have any deleterious effects on the health of those persons using such devices.2

It would seem unreasonable to quarrel with such unequivocal statements as those that are quoted above. Yet there are numerous articles that do just that. Many of those articles can be dismissed as yellow journalism (or perhaps simply poor journalism) because they clearly misquote or ignore the findings of the formal studies. However, there are two questions that are repeatedly raised that have not yet been adequately answered:

- What are the long-term cumulative effects of continual, albeit minimal, emissions in some ranges of the electromagnetic spectrum?
- What is the impact upon normal background radiation of a large number of VDTs in a confined space?

The answers to these questions may not be known for many years. It is unlikely that any organization can afford to not use VDTs until these questions are answered. What is known about VDTs does indicate that they are safe. Under these circumstances, any formal recommendations regarding radiation to users of VDTs would be inappropriate. However, I offer two suggestions that might provide some benefits and that should require minimal expense or effort:

- Allow any woman who is pregnant to have the option to work away from VDTs during the period of pregnancy.
- Avoid installing large quantities of VDTs in a confined space. (Psychological benefits alone can justify this action.)

ERGONOMICS

The previous section of this paper provided the good news: it is unlikely that the minimal radiation from a VDT will adversely affect your health. The bad news is that operating a VDT can still be hazardous to your health. Extensive reading reveals that virtually any physical complaint can be found in association with the use of VDTs. The most common complaints have to do with vision or the musculoskeletal system. What is responsible for these problems? The answer is superficially simple. Visual and/or postural discomfort are present due to poor ergonomic planning, i.e., illumination around the VDT is inappropriate and the work station is poorly designed. These complaints are not trivial. They can lead to significant loss of productivity and absenteeism. The user's health can be seriously harmed. At the very least, quality of life is not at its best.

A thoughtful individual might observe, "Isn't a VDT work station essentially the same as a typewriter

work station? Why do we suddenly have a rash of health problems when we replace typewriters with VDTs?" It is true that a VDT work station is similar to a typewriter work station. However, there are some critical differences. The VDT is often larger and can intrude on a needed work surface. The keyboard and CRT are typically separated by a greater distance than the keyboard and platen of a typewriter. Lighting, glare, character resolution, contrast, etc., are critical features that affect users of CRTs much more than users of typewriters. These and other factors have aggravated an existing situation to such an extent that more people are affected and that they have more serious afflictions.

A survey of these health complaints will not be pursued here. The reader who is interested can use the reading list and bibliographies at the end of this paper to locate that type of information. However, guidelines for good work station design will be presented here. They are designed to help the user with the greatest VDT interaction. When studying these guidelines, it should be kept in mind that a sophisticated work station with state-of-the-art ergonomic design may not be readily justifiable for the casual user. However, it should also be kept in mind that many of these guidelines are government-enforced standards in some European countries and that legislation is already pending in some states of the United States that would require their use. Also, "doubts about whether all this is necessary are, in practice, quickly countered by increases in productivity and declines in complaints, absenteeism and other symptoms of long-term discomfort and stress."[3] Users of an online public access catalog are likely to be more successful and to complain less if comfortable facilities are available. It does seem that a responsibility exists to provide the best possible environment for users of VDTs.

When evaluating the guidelines, keep the type of user in mind in order to determine compliance for a particular situation, i.e., consider the following library users:

- Patron—typically uses the online public access catalog for brief periods.
- Circulation clerk—may spend long hours using a terminal but with constant interruption and with a continual array of physical tasks (stamping date-due slips, using scanning devices for machine-readable identifiers, desensitizing security devices, retrieving items on hold, etc.).
- Records maintenance staff, systems analyst, etc.—at times spends several hours at a VDT, but tasks are creative and nonrepetitive.
- Data entry operator—usually spends long hours doing repetitive work that requires a narrow mental and physical focus on the task at hand.

The desirable environment for any user of a VDT is one that perfectly fulfills the guidelines. When this level of attainment cannot be met, efforts at improvement should focus where the impact is greatest, e.g., an orthopedically sound chair is much more important to a data entry operator than to the casual or infrequent user of a VDT.

ERGONOMIC GUIDELINES

Design of Work Station

- The viewing distance of the CRT should be adjustable. In most cases a range of 450 to 500 mm between the CRT and the operator is sufficient. (See figure 1.)

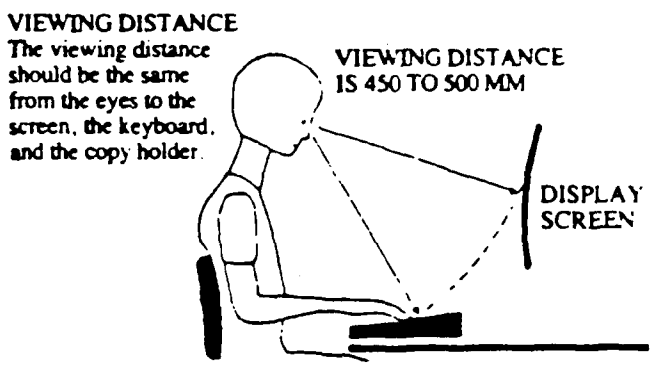


Fig. 1 Viewing Distance

- The height of the CRT should ideally be adjustable for each operator so that the top of the screen is no higher than the eye level of the operator. (See figure 2.) If a multilevel terminal table is too exotic for your budget, use a few boards under the CRT portion of the terminal to raise the screen height so that it satisfies most of your users. A specific height is not given here because this dimension is a function of the VDT design and the height of the operator. Most of the work stations that I have personally observed have CRTs that are located too low for the user. This applies to both seated and stand-up work stations.

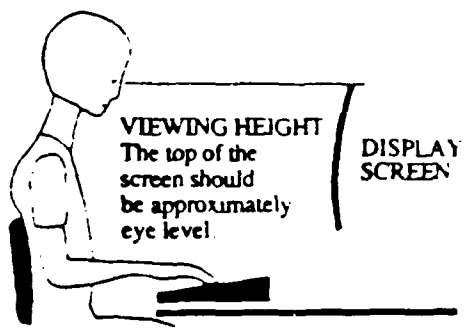


Fig. 2. Viewing Height

- The keyboard height should be such that the operator's arms form an angle equal to or greater than 90° at the elbow. (See figure 3.) This can usually be accomplished when the home row on the keyboard is between 740 and 790 mm above the floor for sit-down work stations. This is equivalent to a terminal table that is between 650 and 700 mm tall.

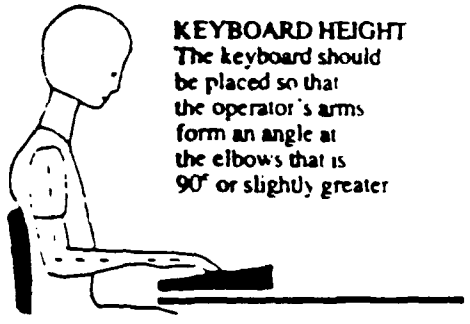


Fig. 3. Keyboard Height.

- Seating should have adjustable seat height, adjustable backrest height, and adjustable tension on the backrest. Casters are important to provide flexibility. The seat height should be such that the operator's legs form an angle equal to or greater than 90° at the knee with feet on the floor. Short users should be provided with a footrest in order to maintain the proper relationship with the work station. Above all each operator should be encouraged to make any adjustments that will enhance comfort.
- There are a wide variety of other considerations for a work-station design that are based on common sense. These include leg clearance, work surfaces, document holders, storage space, cable, and wirings security, and climate control.

Figure 4 graphically summarizes some of these guidelines.

Design of the VDT

Obviously the control of the ergonomic considerations in the design of a VDT is beyond the purview of the average user. However, when the user is purchasing a terminal and can choose among the myriad brands, there are several important considerations.

- A detached keyboard is very important to provide the necessary flexibility in the work station.
- A thin keyboard (less than 60 mm) is desirable.
- The surface of the keyboard should have a matte finish.
- The keyboard should have a palm rest or be thin enough for the table to serve as palm rest
- The key-top surfaces should be concave in order to improve accuracy.
- The keys should provide a feedback signal (tactile or audible click) upon activation.
- The keys should be neutral colors.
- Character height on the screen should be greater than or equal to 3 mm.
- The user should be able to adjust both contrast and brightness in order to provide a clear, sharp image.
- There should be no perceptible flicker of the image on the screen.

Illumination and Glare

Illumination around the work station should be in the range of 500 and 700 lux. This is a compromise level that lessens the strain on eyes that have to shift from source document to keyboard to VDT screen, etc. (Use of a VDT for reading only is enhanced by low light levels in the range from 300 to 500 lux. Other visual tasks may require 1,000 to 1,600 lux.)

Glare is a critical problem for users of VDTs and every effort should be made to eliminate any glare or

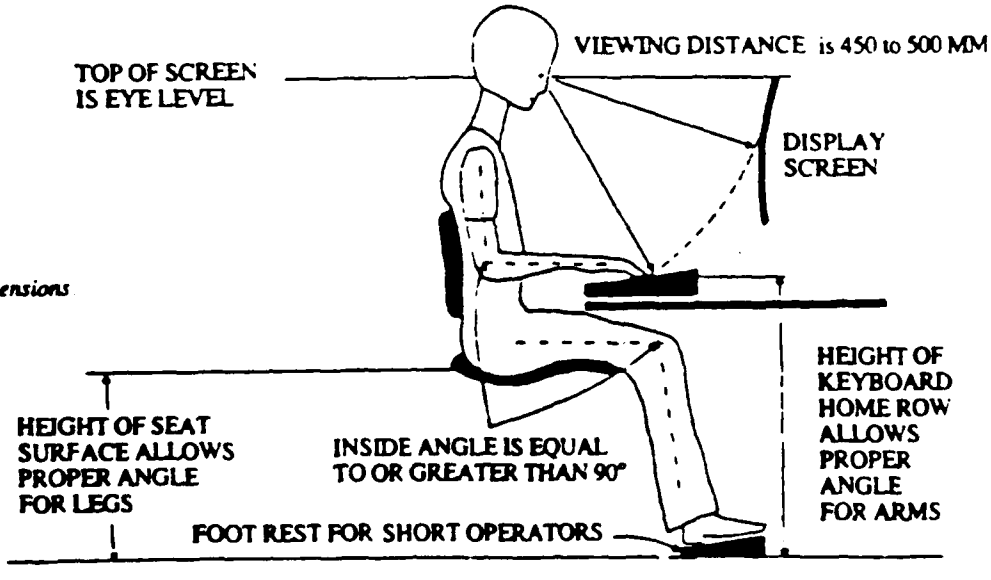


Fig. 4. Critical Dimensions

reflections. Following are some hints for overcoming glare:

- Purchase terminals with antiglare screens.
- Add antiglare filters to screens.
- Install screen hoods to shield against extraneous light. (Improperly designed screen hoods can adversely affect the user's posture.)
- Use indirect lighting.
- Avoid direct sunlight. (Close drapes, window shades, and blinds.)
- Use light-colored and textured work surfaces.

Work versus Rest Periods

Postural fatigue, a variety of eye stresses, and psychological strain can generate significant chronic problems over a period of time. To combat these problems, the National Institute for Occupational Safety and Health (NIOSH) recommends:

- "A 15-minute work-rest break should be taken after two hours of continuous VDT work for operators under moderate visual demands and/or moderate work load."[4]
- "A 15-minute work-rest break should be taken after one hour of continuous VDT work for operators under high visual demands, high work load, and/or those engaged in repetitive work tasks."[5]

VISUAL DAMAGE

Very few people have "perfect" vision. The effort of trying to see can result in burning sensations in the eyes, twitching eye muscles, headaches, etc. VDTs exist in an environment with exacting visual demands. When these factors are added together, the result is a high incidence of these symptoms of visual fatigue (all of which are reversible with a short period of rest). There is, to date, no evidence of irreversible visual problems from the use of VDTs. However, to allay anxiety and to identify problems if they should occur, there are recommendations concerning visual examination and corrective lenses.

- Users should have an annual visual examination. NIOSH recommends that those examinations be based upon the standards of the American Optometric Association or upon criteria established by the National Society for the Prevention of Blindness.[6] There has been lobbying for state legislation to mandate that employers pay for these examinations to the extent that the expense is not covered by personal insurance policies, and that the examinations should be during paid work hours.
- If appropriate, optical prescriptions should be used that are specifically for the focal length for the normal CRT viewing distance (450 to 500 mm).
- Work areas should be decorated with posters, photographs, etc., in order to provide a variety of visual stimuli so that eye fatigue will be reduced.

ION DEPLETION

There is some indication that radiation and ergonomics are not the only factors to be considered in association with the healthful use of VDTs. CRTs generate a high positive electrostatic voltage charge that attracts negatively charged ions and that repels positively charged ions. The result is a shortage of negatively charged particles in the air around a VDT operator. Additionally, the positively charged particles are repelled vigorously enough from the CRT that they are effectively "fired" into the face of the VDT operator. Some sources believe that either a surfeit of positive ions or a shortage of negative ions can result in biochemical changes that affect hormone production. The positive particles that are "fired" at the operator's face can cause skin irritation on some individuals.

It is not yet clear whether or not CRTs constitute a health hazard due to atmospheric ion imbalance. It is clear that the subject area is controversial. Pending additional information, it is again suggested that pregnant women be given the option to avoid VDT work during the period of pregnancy and it is suggested that VDTs should not be installed in large numbers in a confined space (good ventilation helps to maintain a favorable ion balance). Some writers have suggested use of negative ion generators.

CONCLUSION

There are unanswered questions about VDTs and their impact on the health of people who are around them. However, there is some probability that VDT technology (especially display technology) will change radically within the relatively near future. Those changes may eliminate the need to answer many questions. Since it is also probable that the use of VDTs will continue to be ubiquitous, we should pragmatically enhance the situation as much as possible and we should attempt to diminish as many known hazards as we can. Thoughtful use of VDTs and computer technology can bring benefits that far outweigh any drawbacks.

REFERENCES

1. Barbara S. Brown, Key Dismukes, and Edward J Rinalducci, "Video Display Terminals and Vision of Workers Summary and Overview of a Symposium." *Behavior and Information Technology* 1:133 (April-June 1982).

2. R. C. Petersen, M. M. Weiss, G. Munneci, "Nonionizing Electromagnetic Radiation Associated with Video-display Terminals," in Myron L. Wolbarsht, David H. Sliney, eds., *Ocular Effects of Non-ionizing Radiation* (Washington: Society of Photo-Optical Instrumentation Engineers, 1980), p. 179.

3. John Pile, "The New Workstation," *Interiors* 142:127 (Nov. 1982).

4. *Potential Health Hazards of Video Display Terminals* (Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1981), p. 70.

5. Ibid.

6. Ibid. p. 71.

BIBLIOGRAPHY

Recommended Reading

Bergman, Tobi. *Health Protection for Operators of VDTs/CRTs*. New York: New York Committee for Occupational Safety and Health, 1980. 16p.

This pamphlet is often cited in other sources. It is straightforward and very readable. It is written from the viewpoint of protecting the interests of the operators. I recommend it as required reading for the education of all VDT operators.

Brown, Barbara S.; Dismukes, Key; and Rinalducci, Edward J. "Video Display Terminals and Vision of Workers: Summary and Overview of a Symposium," *Behaviour and Information Technology* 1:121–40 (April-June 1982).

From the abstract: "This summary discusses issues raised at a National Research Council symposium on vision and VDT work, held at the request of the National Institute for Occupational Safety and Health. Symposium participants critically reviewed laboratory studies of visual complaints of VDT operators to determine what conclusion can be drawn about the prevalence, severity, causes of, and possible remedies for reported difficulties. Although speakers' perspectives differed, a number of points appeared to gain consensus."

The summary itself contains useful facts and conclusions. The forthcoming publication of the proceedings promises to be a noteworthy text. (Many of the citations in related bibliographies are for papers from this symposium.)

Cakir, A.; Hart, D. J.; and Stewart, T. F. M. *Visual Display Terminals: A Manual Covering Ergonomics, Workplace Design, Health and Safety, Task Organization*. Chichester, New York: Wiley, 1980. 253p.

If you need a comprehensive education about VDTs, this is the book to use. It is complete, understandable, and full of good illustrations. It is highly recommended as a primary source for anyone who is responsible for VDT work stations.

Grandjean, E., and Vigliani, E., eds. *Ergonomic Aspects of Visual Display Terminals*. London: Taylor & Francis, 1980. 300p.

This text is too technical for the average reader. However, it does supply detailed documentation that supports the conclusions and guidelines that are presented in the body of this paper.

Makower, Joel. *Office Hazards: How Your Job Can Make You Sick*. Washington: Tilden Press, 1981. 233p.

Caution surrounds the recommendation for this book. It provides good information that is easy to read, but, in the effort to support the thesis that is obvious from the title, the text is inflammatory at times. This sensationalism tends to obscure some of the very good observations that the author has made.

Potential Health Hazards of Video Display Terminals. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1981. 75p.

Although this is basically the report of some NIOSH studies in California, it is useful for its explanation of the type of data that were gathered. The resultant NIOSH recommendations synthesize the prevailing attitudes for the healthful use of VDTs.

Wallach, Charles. "A Conversation with Charles Wallach," *Technicalines* 2:3–5 (Nov. 1982).

This article is an interview with an individual who heads ion research for a consulting corporation. It covers the available information on the subject of ion depletion and provides technical details about negative ion generators. It also suggests sources for additional data.

Wolbarsht, Myron L., and Sliney, David H., eds. *Ocular Effects of Nonionizing Radiation*. Bellingham, Wash.: Society of Photo-Optical Instrumentation Engineers, 1980. 202p.

Many of the reports in this book are specifically related to the use of VDTs. Even those reports that are not directly related to the use of VDTs provide good background information for someone who is studying the subject. The content is highly technical but it does supply good documentation.

Bibliographies

Byerly, Greg, and Lindell, Signe. "Terminals in Libraries: Help or Hazard?" *Library Journal* 107:2146–49 (Nov. 15, 1982).

The annotations in this bibliography (forty-eight citations) are incisive and useful. The best description of the bibliography is given by the authors themselves (p.2147): "The purpose of this brief, annotated bibliography is not only to alert librarians to the potential problems of VDT use, but also to provide them with the means to continue their own investigations. As was noted earlier, much that has been written on this issue has appeared outside the library science literature. An attempt was made to select only significant references which are readily accessible. Brief news items were typically not included, but it should be noted that two sources, *Computerworld* and *Editor & Publisher*, as well as columns in various library journals, frequently report ongoing investigations and studies."

Health Hazards of CRT's. Chico, Calif.: Ryan Research International, 1982. 44p.

This bibliography contains nearly 200 citations. It is exhaustive but, due to that thoroughness, it is also nondiscriminating. As a result, there are references to sources that are highly informative and readable, to technical reports that are difficult to decipher, and to news articles that are misleading. If you have the time to pursue these references (some of the source documents are difficult to obtain), this bibliography can provide the broad foundation that is necessary in order to develop a clear perspective of the topic.

Philbin, Paul P. *CRT's and Occupational Safety*. Dublin, Ohio: OCLC Library, 1982. 9p.

This bibliography cites 111 journal articles and twenty-three books, reports, legislative documents, and unpublished reports. Although it contains many of the citations that are found in *Health Hazards of CRT's* (inevitable for lengthy bibliographies), it is slightly more current and the chronological arrangement of the journal articles provides an education if the reader simply reads the titles in sequence.

Search of Information Retrieval Databases

I was able to retrieve citations to about fifty sources not listed in any of the above bibliographies through an online search of some DIALOG Information Services databases (NTIS, COMPENDEX, PSYCINFO, MEDLINE, etc). The search combined terms such as VDT, CRT, VDU *AND* ergonomics, human engineering *AND* radiation, health, safety, stress, etc. Most of the resultant citations were items that are very technical. I recommend to anyone interested in this level of knowledge that they should initiate their own online search into any sources that are available.

Panel on Impact of Video Viewing on Vision of Workers. *Video displays, work, and vision.* Washington, D.C.: National Academy Press; 1983. 273p. ISBN: 0-309-03388-8, softcover, $14.50.

***VDT news: the VDT health and safety report.* New York, N.Y.: Microwave News; 1984– . ISSN: 0742-938X, $18 per year for individuals and $35 per year for institutions. Bimonthly.**

In June 1983, *ITAL* presented "Radiation, Ergonomics, Ion Depletion, and VDTs: Healthful Use of Visual Display Terminals." This article provided background related to health effects known to be or suspected of being associated with the use of VDTs and gave guidelines for the safest use of those devices based upon available knowledge. Even though that available knowledge has continued to grow (still supporting the guidelines published in *ITAL*) and associated documentation has significantly improved, the controversial nature of the subject has led to a spate of publication that obfuscates the issues and that hides the good information. In the midst of this proliferation of words, two publications—one a monograph and one a newsletter—have appeared to provide us with sufficient data so that we can make informed decisions for issues related to the use of VDTs.

The monograph *Video Displays, Work, and Vision* is the report of the Panel on Impact of Video Viewing on Vision of Workers, which was established by the National Research Council's Committee on Vision. Although the charge to the panel was focused on visual issues, it was not possible to isolate visual aspects of VDT use from other, interrelated considerations. As a result, the report covers all aspects of health effects associated with VDTs. Topics covered include radiation emissions and their effects; display characteristics; lighting and reflections; anthropometry and biomechanics in VDT applications; visual tasks, functions, and symptoms; job design and organization variables; and design, practice, and standards for VDT equipment and work. This is a scholarly report but the charts, references, technical language, etc., do not interfere with the readable, easy-to-understand text. For those needing or wanting more in-depth information than that provided by the above-mentioned *ITAL* article, this book is probably the most efficient method to gain that information along with confidence in its accuracy. There are still many myths and unanswered questions about this subject, but a reader of the report should be equipped to separate fact from fiction.

Once a person has this foundation knowledge, then there is the onerous task of sorting through the morass of daily publications on the subject. The popular media are full of comments that are out of context, the unions are supporting restrictive legislation, big business is fighting that legislation, legislators can't decide what to do, scientists argue about what standards are needed, and so forth. It would take a full-time job to try to stay informed about new developments or . . . one can subscribe to *VDT News: The VDT Health and Safety Report*. This bimonthly newsletter (twenty pages in each of the first two issues) reports international perspectives on any health problems associated with VDTs and on any associated remedies. It covers both sides of legislative and union activities. It reports on standards and new technological developments. Sources of information are clearly stated and access to original data is made available when possible. *VDT News* is nicely printed in a visually pleasing format on sturdy paper. Based upon my review of the first two issues, *VDT News* appears to be the best single source for continuing information. More than any other source, the reporting appears to be balanced and straightforward. I hope that the standard for quality that has been set in the first issues will continue in the future.—*R. Bruce Miller, Indiana University, Bloomington.* ■■

Pearce, B. G., ed. *Health Hazards of VDTs?* Wiley Series in Information Processing. New York: Wiley, 1984. 244p. ISBN: 0-471-90065-6, hardcover, $29.95.

Tijerina, Louis. *Video Display Terminal Workstation Ergonomics.* Dublin, Ohio: OCLC, 1984. 28p. Softcover, $1.50.

The VDT health-and-safety issue marches on. When I prepared the reviews of new publications about this topic for the past issue of *ITAL*, I had no idea that the two excellent publications that are described above were about to arrive on my desk. I do not want to get into the business of creating a serial bibliography, but the value of these two books is so great that I feel an obligation to call them to your attention.

Health Hazards of VDTs? is the proceedings of three one-day meetings. The first section gives an overview that underscores the pragmatic, nonhysterical attitude of many of the contributors. There are indeed problems with the use of VDTs, but those problems can be controlled with proper precautions. This section goes on to discuss evidence of hazards associated with radiation emissions and ergonomics and presents reports of face rashes and cataracts. The second section presents some solutions for common problems, discussing vision, lighting, VDT design, workstation design, working environment, postural loads, and occupational stress. The presentation on the impact of unions is very enlightening. The third section looks to the future with a wide range of topics: optimal presentation mode, colors of symbols, negative ion generators, union demands, humanized computers, measures of user acceptability, and job design. The experience and knowledge of many of the participants are revealed in the discussions of these papers. Those discussions reject some of the reported research because it does not withstand conventional scientific scrutiny. Without the discussions, the inexperienced reader could be led to inappropriate conclusions by conjectures in a few of the papers.

This book presents current knowledge from many of the foremost researchers of VDT health-and-safety issues. It is well written and, as evidenced by the discussions mentioned above, balanced in its presentation of all aspects of the topic. Although the meetings were held in 1980 and 1981, the conclusions from the information that is given here are as current as any other source (with the exception of recent research findings related to low-frequency pulsed emissions). For anyone with more than a passing interest in the subject, this book is highly recommended. It belongs in any collection that includes the subjects of computers, health and safety, labor unions, ergonomics, or optometry.

Video Display Terminal Workstation Ergonomics by Louis Tijerina from OCLC is the best manual I have found for setting up VDT workstations. Somehow he has assembled a tremendous amount of technical detail into a very accessible format. The book uses very clear and precise language to describe the proper qualities for the video display (including glare control), the keyboard, seating, work surfaces, and the work environment. Each guideline is supported by a succinct background explanation with solid references to supporting documentation. The quantity, quality, and currency of the references indicate that very thorough research has been done and provides credibility to the guidelines. (By the way, the reference format does not interfere with the straightforward reading of the text.)

The purpose of this text is clearly to present information for the proper application of known ergonomic data about VDT workstations. It does not delve into legal or radiation issues, but what it does do, it does very well. It presents understandable information that can be easily used to properly enhance existing workstations or to establish new ones. This book gives the best value for the money of anything like it on the market. If you have a personal computer, buy a copy. If your library uses VDTs, buy a staff copy. If any of your library's clientele use VDTs, buy a copy for the collection.—*R. Bruce Miller, Indiana University Libraries, Bloomington.* ■■

ONLINE CATALOG INSTRUCTION: HANDOUTS OR HANDS-ON?

by

Jean Smith
Instructional Coordinator
Undergraduate Library
University of California, San Diego
San Diego, CA

ONLINE CATALOG INSTRUCTION:

Handouts or Hands-on?

Consider, for a moment, the following scenario: you are to participate in a company tennis tournament but you know nothing about playing tennis. You have ten hours to learn. Using the following list of strategies, design your own "curriculum" for learning to play tennis. Decide how much time, if any, you will devote to each of the available activities.

1. LISTENING to lectures on the history of tennis and on the techniques used by experts.
2. LISTENING to lectures on "how to play tennis".
3. READING about tennis.
4. OBSERVING an expert play tennis.
5. OBSERVING an expert tennis player/teacher who demonstrates and explains what s/he is doing.
6. PRACTICING tennis on your own.
7. PRACTICING with a friend, then discussing with a tennis teacher (who has not observed you) how the practice went.
8. PRACTICING with another beginner who is more advanced.
9. PRACTICING tennis, while being observed by a tennis teacher who critiques your performance and gives you suggestions.
10. "PROCESSING" your learning of tennis (i.e. reflecting on your tennis playing, perhaps with the help of a video recording; "mentally rehearsing" what you will do next time).

This model, adapted from a Medical Library Association workshop on adult learners, clearly points out that learning is not a uniform process. I've subtitled my talk today "Handouts or Hands-on?" which would seem to imply that one method of

instruction works better than another. However, different people learn in different ways and these differences must be accommodated in an effective online catalog instructional program. I wish I could say to you that there is one handout, one tutorial, one workbook, or one lecture which results in universal understanding of an online system but... that's not the case. I would like to share with you examples of learning strategies which I have used (with mixed success) and which you may find adaptable to your particular situation.

Even among the diverse user groups that you represent today, I'm sure that there are certain commonalities. Our users may know computers but they don't understand information retrieval. Things like keyword searching and controlled vocabulary are foreign to them. In many cases, users overestimate the capabilities of an online catalog assuming that it includes everything in the library--books, journals, articles, technical reports, etc.--when often it may not. There is also an element of underestimation or, more accurately, ignorance of powerful limiting and boolean capabilities. Online instruction must include not only the teaching of the system per se, but also the teaching of the underlying concepts of information retrieval.

Flexibility is an essential part of an online instructional program. Plan on multiple revisions of instructional materials. Those of you who are designing or purchasing an online catalog would be well-advised to build in or look for maximum flexibility in screen design, terminology, and the wording of help screens and tutorials. Many vendors of turnkey systems will accommodate

revisions; be wary of those that won't. Be wary also of those who claim that instruction won't be necessary because their system is so "user-friendly". While evaluating one such system, I asked the vendor about the seemingly random sort of my search results and was asked why anyone would need an alphabetically sorted list. I would also recommend devoting a minimal amount of time to preparing instructional materials until after the system is up and running and you have had opportunities to observe your users. In other words, try it out first, aggressively seek feedback from your clientele and then prepare and revise as necessary. Our MELVYL System has been operational for over seven years and we still revise instructional materials. Don't assume that by looking at a prototype or the vendor's literature that you can be fully prepared the day the system goes up. This is usually neither possible nor desirable.

Let me now turn to some specific examples of instructional aids beginning with written materials.

WRITTEN INSTRUCTION

The most common mistake that we make in preparing written instructions (and indeed, any type of instruction) is to try to include too much information with the result that users read one paragraph and give up or become hopelessly confused and go away frustrated. The best and most heavily used handouts are the simplest. As seductive as they are, don't promote the bells and whistles of the system at the expense of the basics.

The brochure that you have in front of you entitled "Melvyl Catalog Command Mode Basics" was our fourth or fifth attempt to convey the basics of a search to the novice. Our first attempts were much wordier, less visually appealing, and tended to be less sequential. That is, one needed to read the entire text before beginning a search. Very few presevered so we decided to try this more pragmatic approach. Tradeoffs were made for the sake of brevity but the end result is heavily used and satisfies the novice as well as those who need a refresher or simply a quick catalog check. Each panel can be used independent of the others and simple search refinements are included for those who are interested. Frustration level can also be lowered if one includes in online catalog instruction a section on troubleshooting similar to the "common problems" portion of this brochure.

I brought along another point-of-use suggestion which one of my colleagues discovered in the Demco library supply catalog. Described as the "single-sided acrylic display frame", it costs under $10, holds an 8 1/2 X 11 sheet of paper, and, with two-sided tape, can be easily attached to the top of a catalog terminal. Users can't miss it and you can include whatever searching tips you wish with changes as needed.

Another approach to printed instruction is the flip chart. Strategically placed near the terminals, it can be as simple or sophisticated as you wish. By breaking searching up into its component parts you can prepare a separate page for each. For example, one page on what is and is not in the catalog, one page

on each type of search (author, title, subject, report number, etc.), one page on combined searching, etc. with tab labels on the side or bottom. There are several advantages to this approach. While initial preparation may be time-consuming, it can be broken up into fairly neat chunks and delegated. Pages can be revised without having to alter or redo the entire product, and new features or instructions can be added as needed. Users may also wish to photocopy all or portions of the instructions for their own use.

Another print option is the workbook. While this option does not usually satisfy those seeking the "quick fix" it is useful for those who want to learn the system at their own pace and can be used as a reference manual for those with remote access at home or in their office. This particular workbook was designed to start with the basics and become progressively more difficult, building onto each previous chapter. Learning is reinforced with exercises at the end of each unit; answers provided at the end. Updating is not quite as easy as with the flip chart but can be made a little less painful if prepared online.

GROUP INSTRUCTION

For those who learn tennis through a combination of "observing an expert tennis player who demonstrates and explains what s/he is doing" and "practicing while a teacher observes, critiques and offers suggestions", in-person, group instruction is made-to-order. There are different ways to approach this type of instruction depending on teaching philosophy and availability of equipment. Assuming that you have appropriate equipment available (and I'll return to that in a moment), the first decision you'll have to make is whether to use a "live" online search or a downloaded "canned" search for demonstration purposes. There seems to be a split among online catalog instructors as to which is the best method. Those who prefer the canned search rightly argue that they have more control over the situation and fewer things can go wrong such as unexpected search results or equipment failure. As a member of the opposing camp, I prefer live online searching for various reasons. Let me return for a moment to my tennis analogy. If you would like to learn, or are having problems with a particular backhand shot, you would like that tennis instructor to explain and demonstrate how it is done properly. You would probably not appreciate a canned presentation on the forehand shot, the serve and the volley. Relevance is an important pedagogical tool. The best instruction is often prompted by spontaneous questions and examples. Also, with a little advance planning and research, you can wow your audience with examples relevant to their particular research interests. To do online demonstrations you must be

thoroughly familiar with the system and prepared for a few false starts and technical difficulties. A good "hedge" might be to have a canned search available as a backup.

If the situation allows, hands-on practice following the demonstration is an ideal way to reinforce learning. Prepare a practice exercise which people can work on at their own pace and make yourself available for questions. I prefer this approach over that of having students or users keying commands themselves while you provide explanations. Having tried that approach I found how uneven comprehension and typing skills could be.

EQUIPMENT

Video projection technology took a big step forward 2-3 years ago with the introduction of projection panels which fit on top of an overhead projector and project text from a pc to a large movie screen. They are the size of a coffee table book and cost as low as $800 (vs. $3500-20,000 for sophisticated video projectors). With a projection panel, overhead projector and portable pc you can also "take your show on the road" offering online instruction off-site. (If using dial-up access, you will also need a modem, phone line, and communications software such as Crosstalk.) A word about pc's--when I researched the technology approximately two years ago, the only pc which provided simultaneous display on both screens was the Compaq. Others may have followed suit since.

INDIVIDUAL INSTRUCTION

In the end, some of our most effective instruction takes place one-on-one at the terminals in the reference area. Well-placed terminals in clear view of the reference desk can simply be an extension of reference service. Without being too obtrusive one can observe use patterns (useful when revising those handouts I mentioned) and, in my library, we often subtly intervene if we see an unsophisticated search. Most of the time, our intervention is appreciated because we can speed up a search, offer more specific strategies or suggest alternate access points.

My final piece of advice is to start saving search examples. Keep track of actual searches which demonstrate particular features of the online system. Write down examples of unsuccesful searches which you turned into successes. You will need this "bag of tricks" when demonstrating the system. Nine times out of ten, if you go into an instruction session and ask the group what they want to know about the system or what problem searches they've had, they'll answer "anything you want to show us" and will immediately forget any questions they may have had. Good examples may help to jog their memories.

I hope that I've offered some usable strategies for teaching your online system. The answer to the question "handouts or hands-on?" is a resounding "both"...but keep it simple. By offering a variety of teaching aids to accommodate a variety of learning styles, your users may be playing at Wimbledon in no time.

DEVELOPING A PC-BASED TUTORIAL

by

Linda Loughnane
Operations Manager
Defense Technical Information Center/MATRIS
San Diego, CA

Good Afternoon, my name is Linda Loughnane and I work for Defense Technical Information Center, MATRIS Office, San Diego. The theme for this afternoon's workshop is People Interfaces; and we are here to specifically talk about training users.

People Interfaces

DEVELOPING A PC-BASED TUTORIAL

Linda Loughnane
Defense Technical Information Center
MATRIS Office, San Diego

MILITARY LIBRARIANS' WORKSHOP - OCTOBER 1988

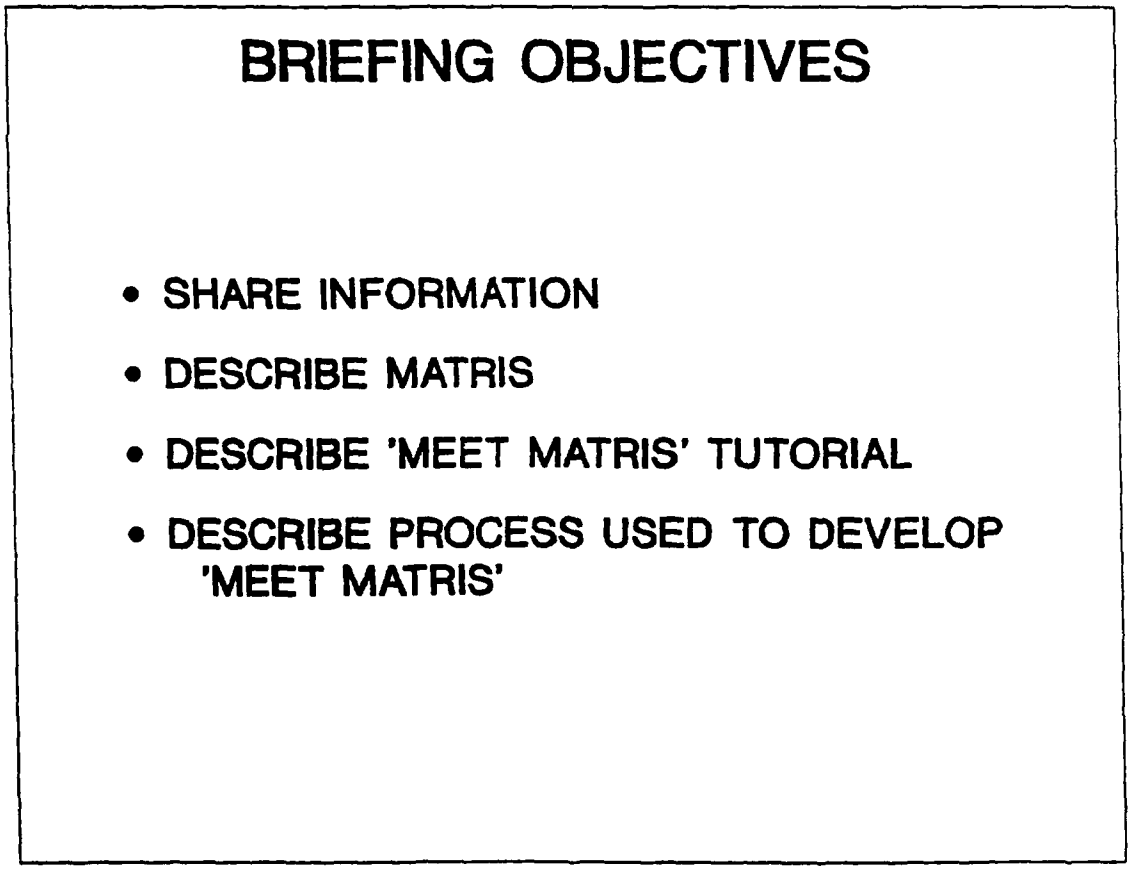
My briefing objectives are to...

Share information with you about how we at MATRIS are training our users.

Describe a little bit about MATRIS.

Describe one of the training tools we have developed and...

Describe the process we used to develop that tool.



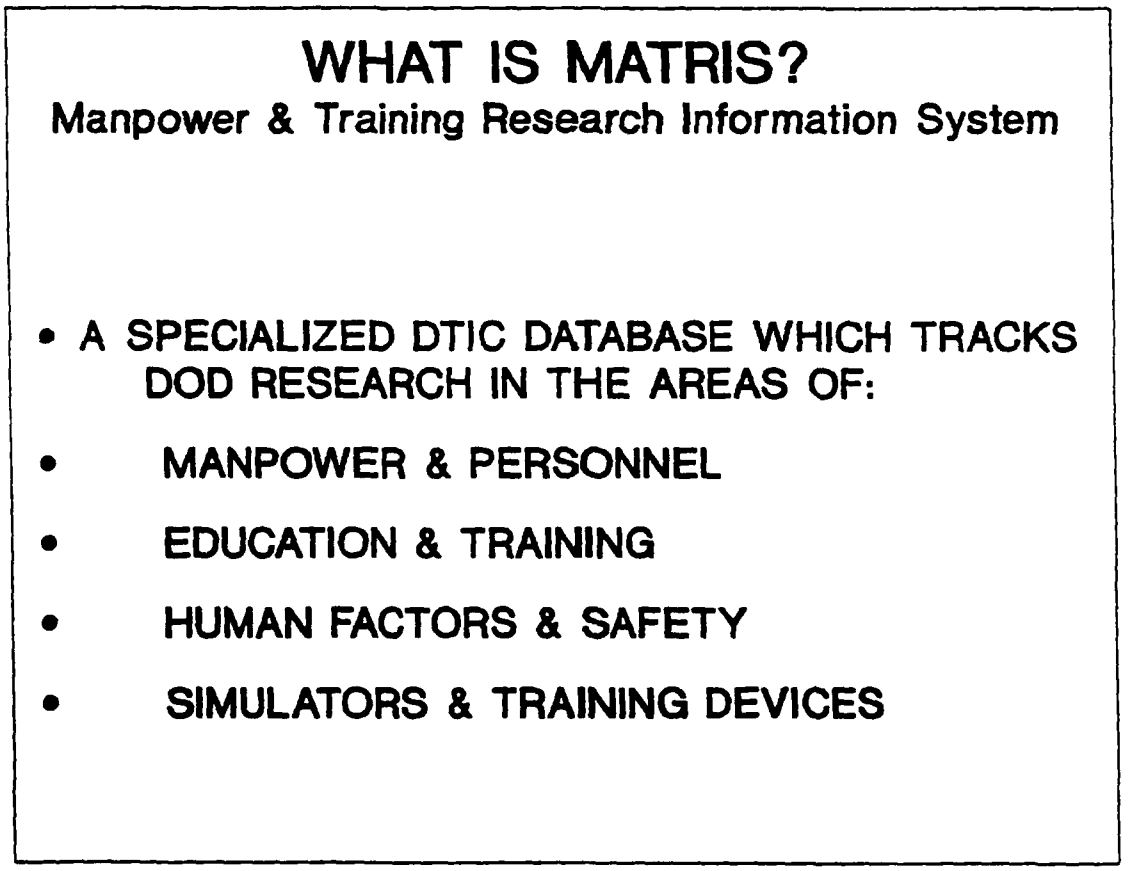
MATRIS is a remote field office of DTIC

We have approximately 18 people working here in San Diego on developing and maintaining the Manpower and Training Research Information System (MATRIS) database.

MATRIS is a specialized DTIC database designed and developed to serve the information needs of the Manpower, Personnel, Training and Safety (MPTS) community.

MATRIS tracks DoD research in the area of:

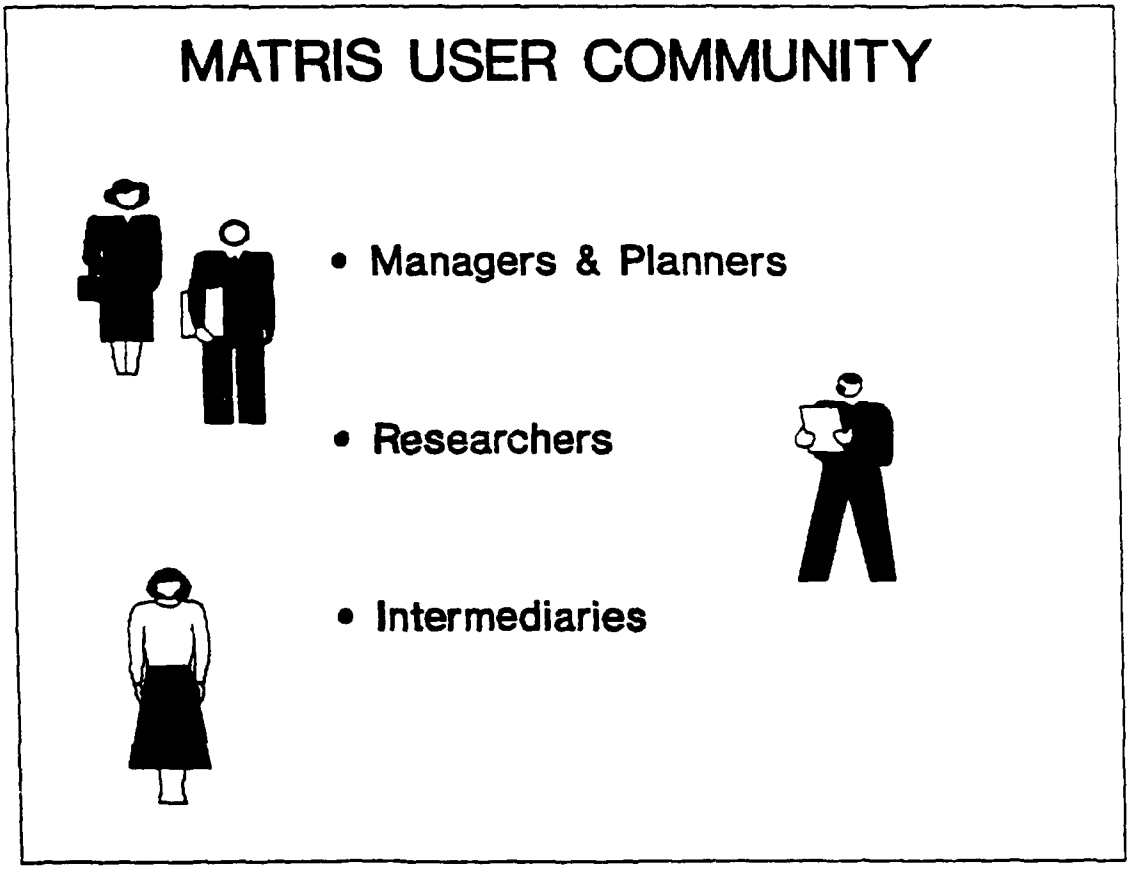
Manpower & Personnel
Education & Training
Human Factors & Safety
Simulation & Training Device



The MATRIS user community is diversified; users include Managers & Planners at the R&D Laboratory level; OSD/Pentagon levels, and the Service-level.

MATRIS also responds to requests for information from the researchers and contractors performing research for the DoD and...

MATRIS works closely with librarians and intermediaries to provide information to library patrons and end users.



MATRIS offers demand searches performed by a staff of 7 Technical Information Specialists with subject matter expertise in the area of Manpower, Personnel, Training, Safety and Human Factors.

In addition, MATRIS provides annual products such as a Directory of Researcher who perform DoD research in the MPTS field.

MATRIS also provides special subject matter reports on topics of current interest in the MPTS community; and as recently as last year, MATRIS began offering ONLINE access to our database.

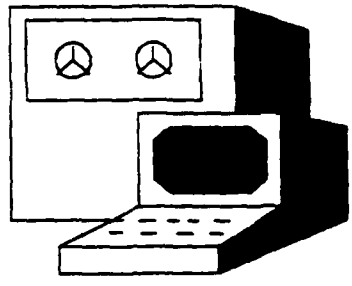
MATRIS PRODUCTS & SERVICES

DEMAND SEARCHES PERFORMED BY MATRIS STAFF

ANNUAL PRODUCTS & SPECIAL REPORTS

AND ...

ONLINE SERVICES



Prior to offering these new ONLINE services, we realized there were several major issues we needed to address. We established an in-house planning team and with the involvement of the entire MATRIS staff, we began to identify the issues that would befall us in this new ONLINE environment. As Dr. Hunsaker mentioned yesterday, change is a powerful force. Each MATRIS staff member had ideas and contributions to make that were vital to understanding the issues we needed to address. We identified over 200 unique items, we discovered we could group these issues into 4 major categories...

Marketing & Promotion
Hardware & Software
Database Content & Structure
User Support & Training

ONLINE SERVICES PLANNING
MAJOR ISSUES

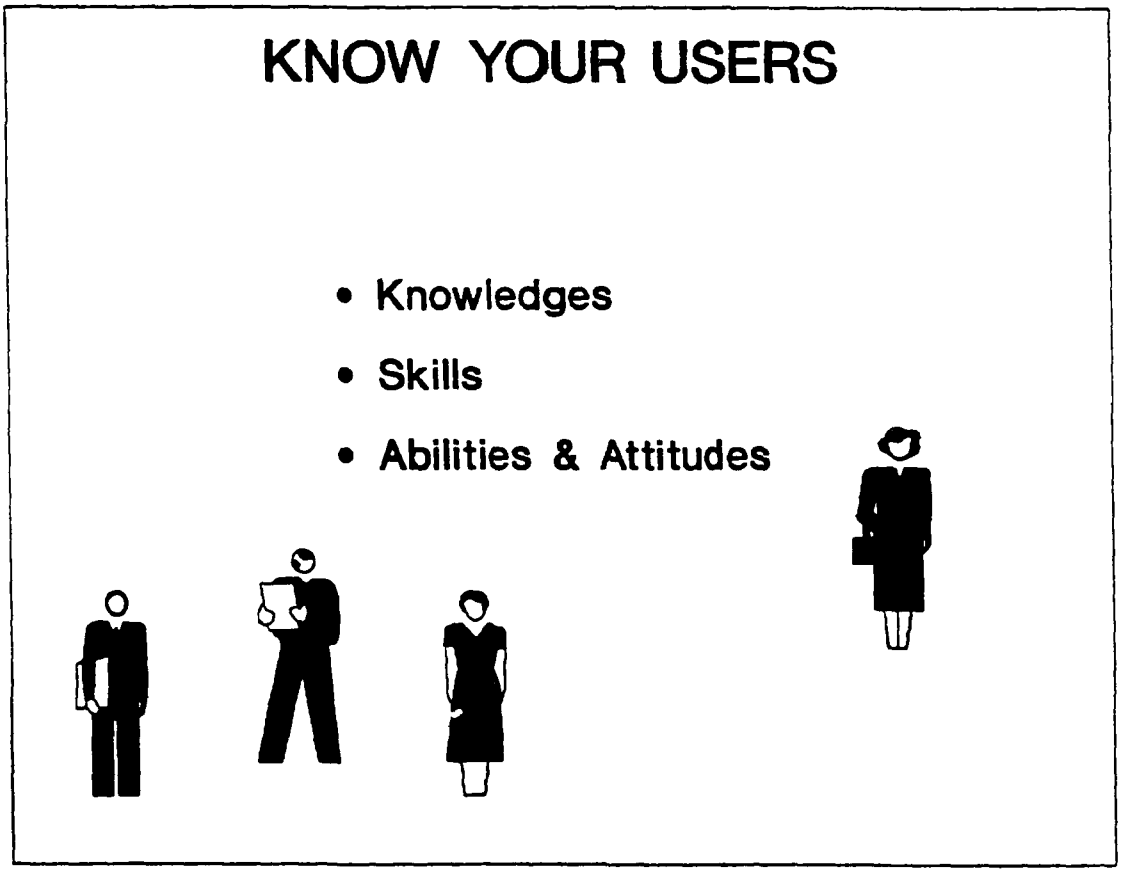
MARKETING & PROMOTION

HARDWARE & SOFTWARE

DATABASE CONTENT & STRUCTURE

USER SUPPORT & TRAINING

To no ones surprise, User Support and Training issues quickly emerged as a priority for action. In her keynote address yesterday, Pat Molholt talked about the library staff interfacing with the library users, getting to know your users. This was a vital step in our erforts. We needed to know and understand our users knowledge, skills, abilities and attitudes. We already knew our user community was diversified, what we also realized was our users were extremely diversified in their knowledge of computer systems. Some were highly skilled computer users, others were computer novices.



In our Planning Process, Phase I, we asked ourselves the question "What did we need?" to training our users.

We profiled the MATRIS User Community and gained an understanding of their KSA's.

We defined our users training needs and...

Finally we determined our training objectives.

We knew we wanted a multi-facetted & multi-media approach.

We decided upon a self-paced training manual and...

A PC-based tutorial.

TUTORIAL PLANNING PROCESS
PHASE I -- WHAT DID WE NEED?

PROFILED MATRIS USER COMMUNITY

ATTEMPTED TO UNDERSTAND USER KSAs

DEFINED THE USER TRAINING NEEDS

DETERMINED OUR TRAINING OBJECTIVES

WE NEEDED A ...

PC-BASED TUTORIAL

How did we go about developing the tutorial?

Reviewed & Evaluated other PC-based tutorials.

Identified & Obtained authoring software.

Defined structure & format.

Flow charted content.

Performed continual in-house evaluation & review.

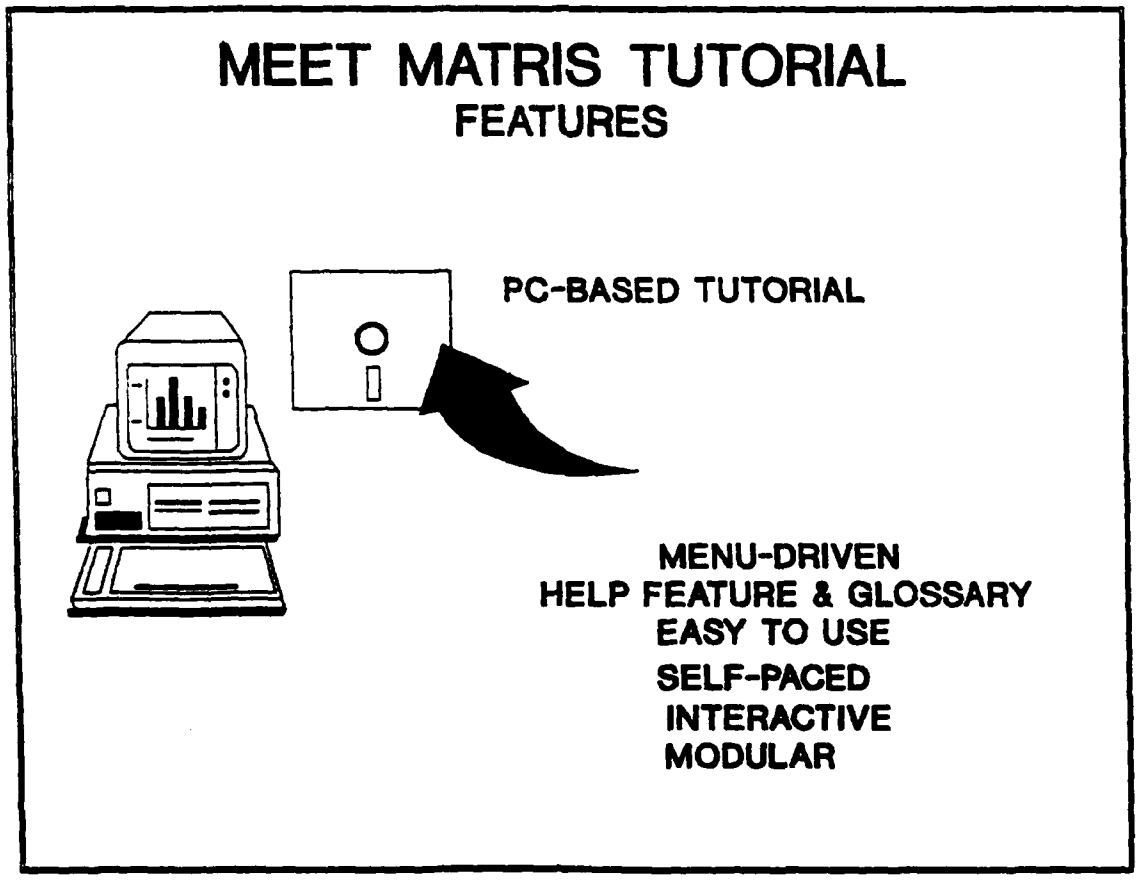
Sought feedback from users.

What we ended up with is our Meet MATRIS Tutorial.

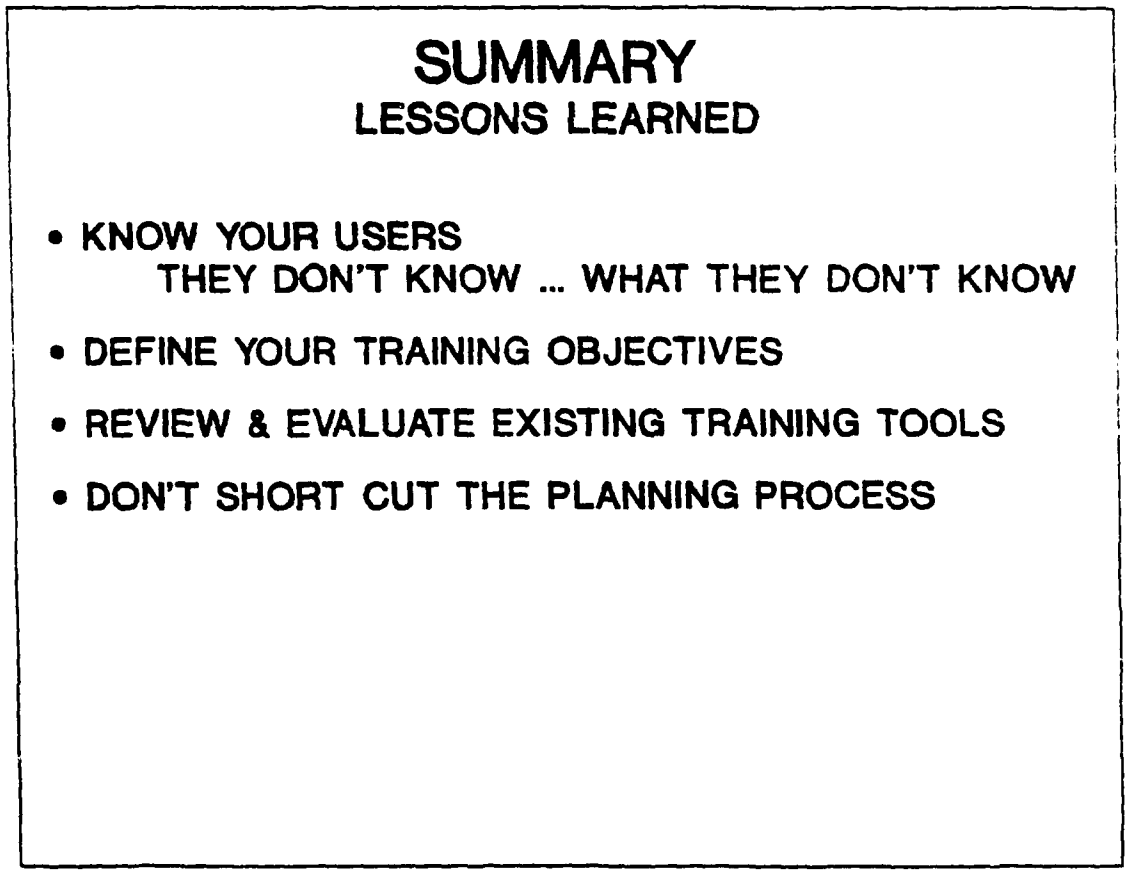
TUTORIAL DEVELOPMENT PROCESS
PHASE II -- HOW DID WE DO IT?

- REVIEWED & EVALUATED OTHER PC-BASED TUTORIALS
- IDENTIFIED & OBTAINED AUTHORING SOFTWARE
- DEFINED STRUCTURE & FORMAT
- FLOW CHARTED CONTENT
- PERFORMED CONTINUAL IN-HOUSE EVALUATION & REVIEW
- SOUGHT FEEDBACK FROM USERS

Our Meet MATRIS tutorial incorporated the following features...



In summary, I would emphasize the following points...



THE NAVY'S MARINE MAMMAL PROGRAM
(ABSTRACT ONLY)
by

Dr. Samuel H. Ridgway
Veterinary Medical Officer
Naval Ocean Systems Center

THE NAVY'S MARINE MAMMAL PROGRAM

Abstract of Remarks

After entering the Air Force Veterinary Corps in late 1960, Dr. Ridgway served a two year tour of duty as Chief of veterinary services, Oxnard Air Force Base, California, during which time he was also attending veterinarian at the Naval Missile Center, Point Mugu. After separation from the Air Force, he joined Naval Missile Center Staff, and then became a staff member of the Naval Undersea Center when the functions were transferred to that facility. As the first veterinarian to work full time with dolphins, he had to develop many of the techniques he used himself. He formed a partnership with a pugnacious bottlenose dolphin, Tuffy, and made major advances in the understanding of dolphin physiology. Tuffy was trained and used in the Navy's SEALAB II project. In the first demonstration of the ability of marine mammals to serve useful functions and to assist men in scientific investigations of the sea, Tuffy carried tools, messages and rescue lines to aquanauts on the ocean bottom. When Tuffy died in 1970 his death meant something more to Dr. Ridgway than the death of a valuable research animal. "Far more important was that I had lost a beloved friend, who had helped me to learn more about both my world and his."

Dr. Ridgway has continued to work with the marine mammal research program, and is currently senior veterinary medical officer attached to the Biosciences Department of Naval Ocean Systems Center.

DEMONSTRATION PROJECT UPDATE

by

Susan Rainville
Deputy Civilian Personnel Officer
Naval Ocean Systems Center
San Diego, CA

DEPARTMENT OF NAVY
PERSONNEL DEMONSTRATION PROJECT

INTRODUCTION

Title VI of the Civil Service Reform Act (CSRA) authorized the Office of Personnel Management (OPM) to permit federal agencies to conduct demonstration projects to determine if changes in personnel management policies or procedures would result in improved federal personnel management. By law, such experiments are limited to a total of 10 active projects, may last for a maximum of five years, and are limited to a maximum of 5,000 employees each.

The first project approved and implemented is the Navy's joint Naval Ocean Systems Center (NOSC) Naval Weapons Center (NWC) Demonstration Project, initiated in July 1980. It is a revised personnel management system which provides simplified position classification and performance appraisal, performance linked pay and performance based retention.

The following background information provides a basic description of the Project as implemented at the two Centers. Its purpose, description, and operational policies are covered.

BACKGROUND

The Civil Service General Schedule system, as it existed at the beginning of the project, presented a number of problems. Key examples are:

- Classification: The system required lengthy, narrative, individual position descriptions which had to be classified by the use of complex and often outdated position classification standards. The system caused delays in recruiting, reassigning, and promoting employees. Line managers had only limited flexibility to administer personnel resources; often personnel staffs were in an adversarial role with line management.

- Performance appraisal: There were insufficient means to reward good and penalize poor performance, and a lack of a system to establish performance expectations for an employee prospectively, assess achievements, and grant or withhold financial rewards. Rewarding or penalizing performance required inordinate paperwork, often discouraging managers from taking warranted action.

- Pay: Few incentives and little flexibility existed in dealing with all levels of the work force. Pay was not always commensurate with performance. Inflexibility in pay setting limited the Centers' success in recruiting high caliber recent graduates and retaining the most valuable employees.

- Reduction-in-Force: There was an inability to recognize performance as a major criterion in RIF situations which sometimes resulted in adverse effects upon good performers.

The Navy Demonstration Project was established to address the above problem areas within the existing personnel system and to prove federal organizations can be more effective when there is greater line management control over personnel functions.

PURPOSE

The goal of this Project is to simplify and increase line management involvement in major personnel management areas, such as classification, compensation, and performance appraisal. The line manager is the primary decision maker on personnel issues of pay, classification, and job assignments; these decisions have important effects upon motivation, performance, and organizational effectiveness. To accomplish these changes, the Demo Project includes the following:

- A more flexible, manageable, and understandable classification system which aggregates several GS grade levels into broad pay bands

- A performance appraisal system that links compensation to performance

- An expanded application of the CSRA merit pay concept for both supervisory and non-supervisory employees at all grade levels

- An emphasis on performance as a primary criterion for retention in reduction in force, while retaining tenure, veterans preference, and length-of-service factors.

TYPES AND NUMBERS OF PARTICIPATING EMPLOYEES

In keeping with the 5,000 employee limit in the Project, the two Centers included the following full-time personnel in the Demo Project:

	NOSC	NWC
Scientists, Engineers, and Senior Professional Staff	1,284	1,444
Technicians	332	568
Administrative Specialists	223	395
Technical Specialists	171	183
Clerical	360	-
		4,980

Scientists, engineers, and all other GS-13-15 personnel entered the Project when it began in July 1980. The GS-12 Administrative and Technical Specialists entered the Project in January 1981; the Technicians followed in August 1981. The GS-11 and below Administrative and Technical Specialists were included in August 1982. Since the clerical population of both Centers could not be added to the Project without exceeding the 5,000 person limitation, only NOSC's clerical personnel were included in August 1982, in order to ensure an opportunity to fully evaluate the Project's concepts for all of the above career paths.

With the February 1984 passage of H.R. 4336, which extended this Project until 30 September 1990 and lifted the numerical limit for employee coverage, additional career paths could be added to the Project. The remaining non-covered clerical population at NWC was included in 1987. The Federal Register notice of December 10, 1987, which covered the NWC General Career path included the authority for both Centers to give recruitment bonuses for expecially difficult-to-fill positions.

BASIC FEATURES

Implementation procedures for the Project vary somewhat between the two Centers in response to the management needs and styles of each Center and are described in separate columns below as applicable. However, both Centers have a similar basic approach to pay, performance appraisal, and position classification. Both Centers have grouped 18 pay and classification grades (GS-1 through GS-18) into separate occupational career paths, with broad pay bands, or levels of difficulty, as shown below.

CAREER PATHS AND PAY LEVELS AS RELATED TO CURRENT GS GRADE LEVELS

SCIENTISTS, ENGINEERS, AND SENIOR STAFF	GS	1-4	5-8	9-11	12-13	14-15	16-18, PL
	DP	A	I	II	III	IV	V

TECHNICIANS*	GS	1-4	5-7	8-10	11-12
	DT	A	I	II	III

TECHNICAL SPECIALIST	GS	1-4	5-8	9-10	11-12
	DS	A	I	II	III

ADMINISTRATIVE SPECIALIST	GS	1-4	5-8	9-10	11-12
	DA	A	I	II	III

GENERAL CLERICAL/ ASSISTANT	GS	1-3	4-5	6-7	8-9	10-11	
	DG	A	I	II	III	IV	NOSC
	GS	1-3	4-5	5-6	6-7	8-9	10-11
	DG	A	I	II	III	IV	V NWC

* At NOSC, GS-8 Technicians are included in Level I; at NWC, GS-8 Technicians are included in Level II.

Each broad pay band, or Level, includes at least two GS grades. Performance appraisal serves as the basis for determining incentive pay adjustments. Each career path is a competitive area for reduction-in-force purposes, and retention is determined primarily on the basis of performance.

CLASSIFICATION SYSTEM

Each class of positions covered by the Demo Project (scientist and engineer, technician, technical specialist, administrative specialist, and clerical/assistance) reflects career progression of those having similar qualification requirements and lines of work. Pay bands, or levels, in each career path reflect entry, trainee, journeyman and at DP IV, senior levels of work for that occupational group. Occupational series are retained in all career paths.

The classification system recognizes the rank-in-person concept, where an individual moving from one position to another in the same pay band retains his or her "rank" or pay. It also preserves the rank-in-position distinctions through classification in broad classification levels, or levels of difficulty.

NOSC

Individual position descriptions are not used. A generic descriptor, called a Level/Specialty Designator, was written for each level in each career path. The L/SD describes in general terms what duties and responsibilities are assigned at that level. A separate descriptor covers supervisors and managers. The L/SD serves as classification standard and position description in one. For technical positions, a specialty code is cited; this is a one-paragraph description of the product area or line of work. Functional codes, such as Research, Design, Management, etc., are used as they are in the GS system.

Although the GS occupational series is used, only the following titles exist at NOSC:

Engineer
Scientist
Technical Specialist
Administrative Specialist
Technician
Assistant
Manager
Supervisor

A first line supervisor at Level III is titled "Supervisor." A second line supervisor at Level III or IV is titled "Manager."

Higher level line managers have classification authority at NOSC, with advice from the Personnel staff. To classify a position, the manager simply selects the appropriate L/SD, specialty code, and functional code, completes the cover sheet and signs it.

NWC

The first level supervisor uses simplified standards for each pay level. Typical duties, responsibilities, and levels of difficulty of work at each classification level are listed in a "menu" format. Supervisors select from the appropriate classification standard for a given level. To acknowledge personal contributions and capabilities of individual employees as well as duties and responsibilities of positions, the traditional position description or PD has been retitled "Personal Activities and Capabilities" or PAC. The classification standards are computerized to allow for automatic listing of menu items, and the resulting PAC is identified by special code and stored for record purposes.

Classified PACs are quickly prepared and approved with maximum line supervision involvement and provide clear distinctions between functions, specialties, and classification levels.

Factors included in the PAC system are duties and responsibilities; impact of judgments, decisions, and originality; persons contacted and reasons for contacts; controls over the position; qualifications; and EEO responsibilities for supervisors. The menu selection results in specific choices from among alternatives offered under each factor in the classification standards.

Final classification action is taken by the Personnel Office based on line management menu selections.

PERFORMANCE LINKED PAY

NOSC

Employees entered the Project at their then-current salaries. Each October incentive pay increases are paid, depending on the number of "incentive pay points" awarded based on performance rating. Annual salaries may be any whole dollar amount within the pay band.

The incentive pay pool, established as 2.3% of salaries in the pool, consists of funds formerly used for quality salary increases, within-grade increases, sustained superior performance awards, and promotions from and to GS grades now within a single level or pay band.

Performance ratings are approved considering achievement of objectives and total job performance.

Incentive pay points and comparability increase are awarded based on the approved performance rating and consideration of the employees current salary and organizational equity (i.e., achievements and salary of others).

NWC

Employees must be paid at least the minimum pay rate established for the pay band to which assigned. The broad band has been divided into increments between the highest and lowest salary of the level (i.e., GS-12/1-13/10 for DP level III has 24 increments, each equalling approximately 1.5% of the highest salary level). Increases in pay are based on performance within available resources, and the Center's annual merit payout has been approximately 2.4% of Demo Project payroll. This figure was derived from monies that formerly would have been paid to employees in the form of WGI's, QSIs, SSPs, and within-level promotions.

Employee performance is evaluated on the basis of five incentive pay groupings from performance that is demonstrably exceptional, to that which is substantially below fully successful. The following identifies performance rating definitions and payout choices in terms of whether or not comparability pay (federally determined) and increments are awarded for the various levels of performance indicated on the next page.

PERFORMANCE RATINGS/PAYOUT

NOSC

- Continuing Pay Pool = 2.3% of salaries on 30 June.
- Bonus Pool = 0.7% of salaries on 30 June
- Pre-established point values
- Funds allocated to organizations

NWC

Pay Pool = 2.4% of salaries of those on board at the end of the rating period and eligible for a performance rating.

RATING	POINTS	COMPARABILITY	DEFINITION	PAYOUT FORMULA*
Outstanding	3 or 4	Full	Performance that is demonstrably exceptional - clearly deserving of recognition equivalent to a within-level promotion	c + 4i or c + 3i
Superior	2 or 3	Full	Quality performance that exceeds the fully successful standards	c + 2i
Successful*	0,1 or 2	Full	Fully successful performance meets the expected results of the performance plan; growth and progression normal for NWC	c + i or c
Marginal	0	0 or 1/2	Below fully successful; corrective action needed	c/2
Unacceptable**	0	0	Substantially below fully successful; serious performance deficiencies; needs significant improvement for work to meet established standards	0

"Midpoint Principle" - An employee who receives a "successful" rating and whose salary is at or above the midpoint of the pay band may receive zero or two continuing pay points, but may not receive one continuing pay point.

A "Midpoint Review" for all Level III and IV employees is required. This is a review at the midpoint threshold of the Level III and IV pay bands, requiring a performance rating above fully successful to move into the upper portion of the pay band.

* c = Comparability
i = Increment

Employees who exceed performance expectations receive incentive pay increases substantially exceeding government-wide comparability increases. Employees who fully meet performance expectations receive at least comparability, while those who do not fully meet performance expectations receive either one-half or none of the comparability increase.

Employees' salaries advance to the upper limit of a pay band only through performance, not time in level (time in grade). A lump sum bonus payout, corresponding to the payout shown above, is given to those employees whose salaries are at the top of the level or the pay cap. If, on the other hand, an employee receives no or limited pay increases due to marginal performance, and the minimum salary of the current pay band exceeds the present salary, the employee "migrates downward" to the next lower level. This occurs without specific adverse or performance based action. In this manner, higher performing employees are rewarded more in consonance with their contributions and adequate performers have their salaries held constant, and marginal performers in essence move backwards on the pay scale. Employees whose performance is unacceptable may be removed or changed to a lower level as a performance-based or adverse action, as in the GS system.

In order to provide managers an additional tool to recognize singular superior performance, a cash award pool has been established at both Centers. These end-of-performance year bonus awards are designed to financially reward those employees exhibiting one-time superior performance without awarding them a permanent increase in pay.

REDUCTION IN FORCE

The Demonstration Project's major change in RIF procedures is the ranking of employees within each competitive level, based primarily on performance rating groupings and secondarily on the elements of tenure, veteran's preference, and length of service. The intent is to increase the probability of retaining the highest performing employees in their positions and displacing the lowest performers. "Bumping" is limited to the career path to which the employee is currently assigned. Thus, if engineering or scientific positions are abolished, clerical, technician, specialist and administrative personnel would not be bumped.

Retention standing within a competitive level is determined by performance rating groups, and the high retention groups are placed at the top of the register in standard tenure, veteran's preference, and length of service order. Employees in lower retention groups are placed at the bottom of the retention register, using the same standard order and are the first to be released from the competitive level. Individuals in higher retention groups always displace those in the lower groups.

NOSC	NWC
Employees compete for retention within their current career path. Career path is defined by and limited to pay plan: DP, DA, DS, DT, or DG.	Employees compete for retention within their current career path. Career path is defined by and limited to lines of work: Scientist and Engineer, Technician, Technical Specialist, or Administrative Specialist.

PLANNING AND IMPLEMENTATION

NOSC

Directors and Major Staff Office Heads comprised the Demonstration Advisory Group (DAG). Their designees served as working committees to develop local systems for classification, performance appraisal, pay, and training. They continue to function on an as needed basis. They propose and evaluate changes recommended by employees or managers.

The Demonstration Steering Group, comprised of the Associate Technical Director, Chief Staff Officer and the Director, Central Staff, is the primary policy recommending body. It considers proposals and makes recommendations on a continuing basis to the Commander and Technical Director.

As each career path prepared for entry, employees from that path served on committees to assist in developing L/SDs, titling, etc. These groups serve on an ad hoc basis to resolve system problems which may arise.

The supervisory chain is the primary mechanism to effect changes to the system, as all Directors are members of the DAG. The DAG Chairman, however, also serves as a primary contact point, as does the Personnel Office.

NWC

An employee task team and management steering committee approach have been used to develop implementation ideas and create "ownership" of these important changes to the federal personnel system. This has involved representatives of all career paths and various skills who are affected by the Project.

Task teams involving pay, classification, performance evaluation and communication are examples of representative groups from both managers and employees affected by the Project. They have made significant contributions to Center policies affecting all implementation aspects of the Demo Project.

Special employee groups, such as technicians have been used to review provisions affecting specific career paths. These groups have influenced changes made to pay bands, performance appraisal, and the new position classification approach. Initial task team policies were developed in conjunction with NOSC task team counterparts.

Training sessions on performance planning and assessment, compensation, classification, and general system operation have been conducted by employees trained by the Personnel Office. Training for both supervisors and employees has included goal setting, communication, performance monitoring, and the Performance Review Board (PRB) process for decentralized employee performance rating decisions.

EVALUATION

To assess Project results and the feasibility of applications to other Federal organizations, evaluation is being conducted both internally within each Center and externally. The Graduate School of Public Administration, University of Southern California, developed the original evaluation methodology. Coopers and Lybrand was awarded the first OPM evaluation contract and submitted their report in September 1982. The Office of Personnel Management subsequently assumed the role of external evaluator. The external evaluation effort monitors the implementation of the Project and assesses whether these changes in personnel management policies and procedures will result in improved Federal personnel management. To help isolate effects of the Project, changes at the two participating Centers are being compared with data from two other Navy research and development centers, the Naval Air Development Center (NADC) and the Naval Surface Weapons Center (NSWC).

Recruitment and retention success are being evaluated, along with management issues of equity, motivation, satisfaction, mobility, line management flexibility/accountability, and changes in the number of adverse actions. Attitude surveys are being conducted by both the internal and external evaluators, plus management audits, exit interviews, and other analyses involving recruitment, mobility and sponsor satisfaction. Records are being analyzed to ensure that this Project has no negative impact on minorities or the handicapped. OPM's major objectives for measuring the success of the Project include recruitment success, increased high performer retention, improved personnel function performance, expanded performance-based pay systemization, managerial accountability and responsibility, and cost.

BENEFITS OF PROJECT

The Project is expected to demonstrate that a simplified, management-centered personnel administration process will lead to more efficient and effective use of the resources of the participating laboratories. In addition, by providing a means of real-world testing for models of improved and simplified classification and performance evaluation systems, the Project will have results that can be applied throughout the federal service.

For more information, please contact:

NOSC

Susan Rainville
Code 1401
Naval Ocean Systems Center
San Diego, CA 92152-5166

NWC

Nancy Crawford
Code 0901
Naval Weapons Center
China Lake, CA 93555-6001

THE DEMONSTRATION PROJECT IN THE LIBRARY

by

Alice Pastorius
Reference Librarian
Naval Weapons Center
China Lake, CA

THE NAVY DEMONSTRATION PROJECT IN A LIBRARY

by Alice A. Pastorius

Technical Library
Naval Weapons Center
China Lake, California
14 October 1988

INTRODUCTION

You may have seen the Demo Project publicized as the "China Lake Project" in the Washington Post, "Federal Times" and other publications read by government employees. When people see my China Lake badge at conferences they frequently ask me what effect the Demo Project has had on the library. The purpose of my presentation is to discuss that--the practical implications of the Demo Project in a library setting, specifically, the Library Division of the Naval Weapons Center (NWC), China Lake, California.

MAIN POINTS

The main points I will make are that the advantages of the Demo Project outweigh the disadvantages. The wide pay bands, simpler classification system and standards, and "performance-linked pay" are working to the advantage of both library personnel and management.

However, no system is perfect; the Demo Project does have some disadvantages. One disadvantage is that it does not include all aspects of hiring personnel. Another concern of employees and managers is that there might not be enough money available to adequately reward good performers. I think that is a disadvantage of any personnel system, and not inherent in the Demo Project, since people tend to feel they are highly successful performers even when their performance is only average. However, the Library Division employees are a highly motivated group in which there are few average or poor performers. Since a limited amount of money is available for awards, some high performers are likely to feel undercompensated each year.

INFORMATION GATHERING

Supervisory Questionnaire

To prepare for this talk, I sent a brief questionnaire to the five Library Division supervisors and managers at NWC. Four of the questionnaires were returned for a response rate of 80%. A copy of the questionnaire is included as Appendix A.

Management Interviews

I interviewed four of the five managers as well as other TID managers who are familiar with the Library Division. The interview questionnaire is included as Appendix B.

Personnel Statistics

I reconstructed statistical data on classification actions, promotions, salary incentives and bonuses from personnel records.

Employee Attitude Survey

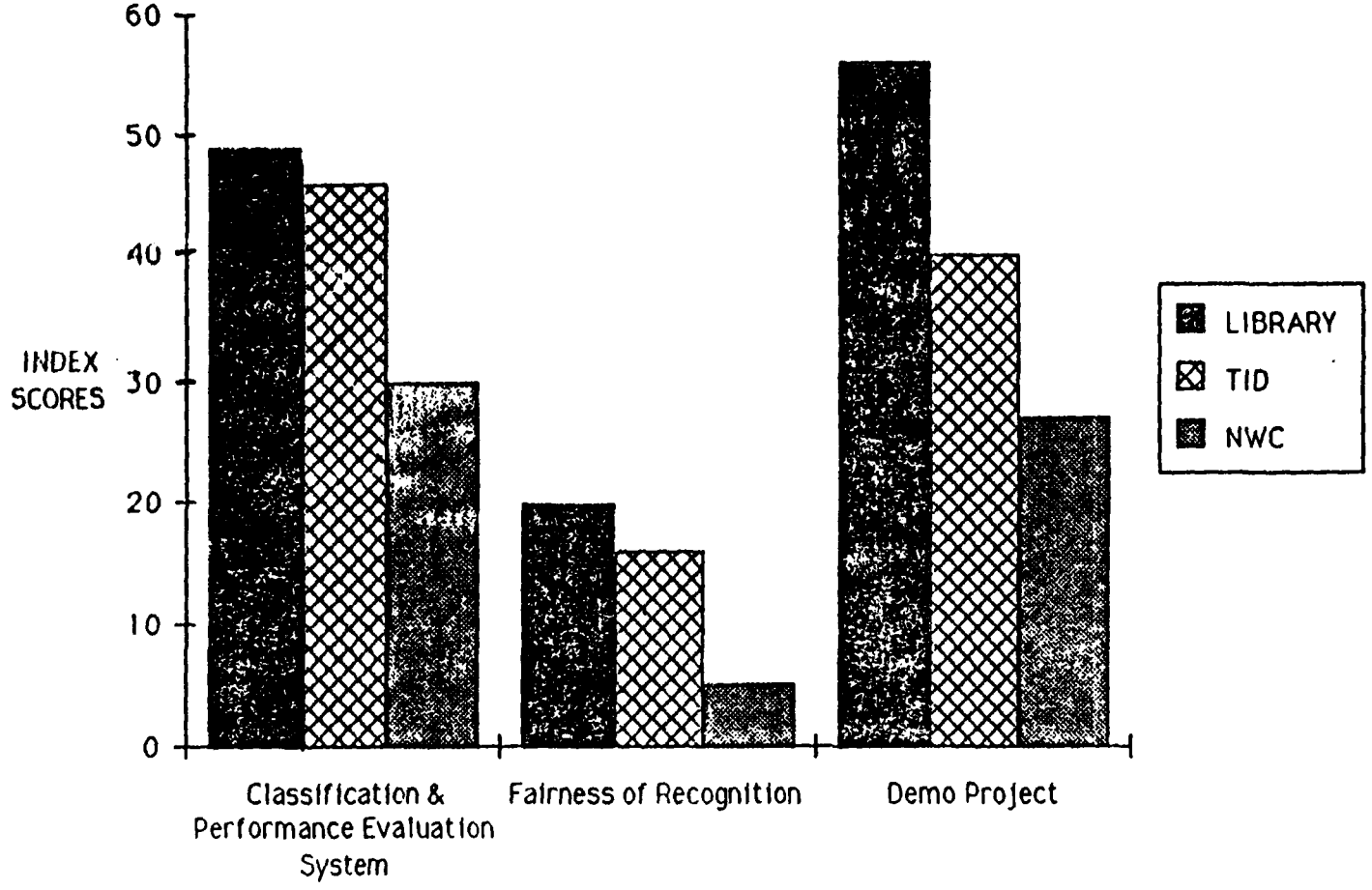
In July 1988 I distributed an attitude survey on the Demo Project to the 24 Library Division employees, including supervisors and managers. The questions were from the Naval Weapons Center Mini-Attitude Survey which was sent to a sample of NWC employees in March 1988. Sixteen of the questionnaires I sent to the library personnel were returned for a response rate of 66%. A description of the survey methodology and summaries of the responses are included in Appendix C.

Similar questions on the survey were grouped to provide index scores in a total of three categories. The categories are position classification and performance evaluation, overall opinion of the Demo Project, and fairness. Scores for these categories represent the average of the question scores. I then compared the Library Division index scores to the scores for NWC and TID from the same survey conducted in March 1988.

The purpose of the survey was to solicit the opinions of employees on the Demo Project. The index scores are indicators only. They are best used to compare data between years and organizations in order to spot trends.

The library employees' opinions about the Demonstration Project are more positive than negative, and the employees feel more positive about the Demo Project than the sample of TID and NWC employees who answered the survey in March 1988.

DEMO SURVEY RESULTS



BACKGROUND

The Personnel Demonstration project guidelines were tailored to the particular geographic, service, and skill needs of each participating laboratory; therefore, in discussing the Demo Project implementation it is important to know the primary mission and location of the Naval Weapons Center.

The Naval Weapons Center is a research and development laboratory. Therefore, the Center must compete with private industry, universities, and other government agencies to hire and retain a large number of engineers and scientists.

The Center is also a weapons test facility and, as such, requires a lot of space. NWC is located in the Mojave Desert on a piece of land about the size of Delaware. The remoteness of the location--approximately 150 miles northeaSt of L.A.--requires the Center to provide interesting, challenging work and innovative personnel management in order to recruit and keep good employees.

Technical Information Department

The Library Division is organizationally located in the Technical Information Department (TID) of NWC.

The Technical Information Department provides the Center with a comprehensive technical information program as an integral part of the Center's research, development, test and evaluation activities.

Library Division

The Library Division operates the Technical Library, the Center Library and separately housed collections of specifications and standards, technical manuals, and a small computer library.

The Technical Library contains a sizable collection of scientific, technical, and managerial books, reports, and periodicals. Services consist of reference, literature searches, current awareness, circulation, and interlibrary loan. The Technical Library is in the process of converting to an integrated online library system, which will provide remote access to the unclassified portions of the online catalog.

The Technical Library primarily serves 1,800 scientists and engineers who are part of a work force of approximately 4,800 civilian and 800 military personnel.

DEMO PROJECT IN THE LIBRARY

Position Classification
Personal Activities & Capabilities (PAC) Sheets
Classification Standards

The library managers agree that under the Demo Project classification is a lot easier than it was under the old system. They simply select items from a menu of job characteristics to describe and classify positions. The position descriptions are called Personal Activities and Capabilities (PACs). Assigning duties is also easier since managers only have to change performance objectives and not PACs.

Career Paths

The Library Division is staffed with 23.5 appropriated fund positions. Twenty of the positions are in the Technical Library and 3.5 positions are in the Center Library.

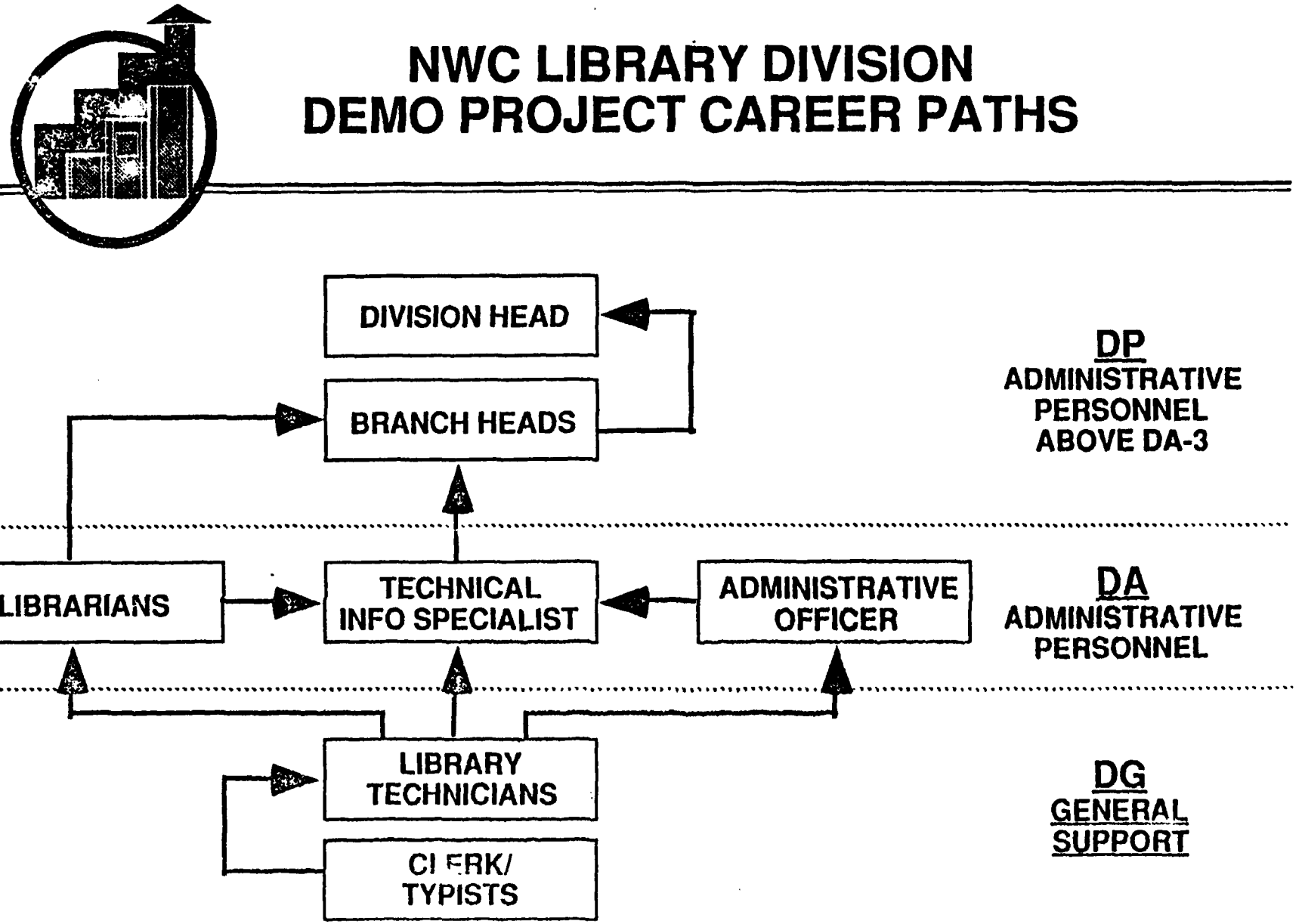
There are currently two vacancies because of a hiring moratorium as a result of the Navy Managing To Payroll (MTP) system.

Five contract employees work in the Technical Library and three contract personnel also staff the technical manuals and computer library facility.

The library personnel are included in three Demo career paths depending on their positions. The career paths are Professional Administrators who are the Division and Branch Heads, Administrative Specialists who are Librarians, Technical Information Specialists and one Administrative Officer, and General Support personnel who are Clerk-Typists and Library Technicians.

Managers entered the Demo Project in June 1980. The GS-11 and below Administrative personnel entered in September 1982. The General Support personnel entered the Demo in November 1987 at NWC.

NWC LIBRARY DIVISION
DEMO PROJECT CAREER PATHS



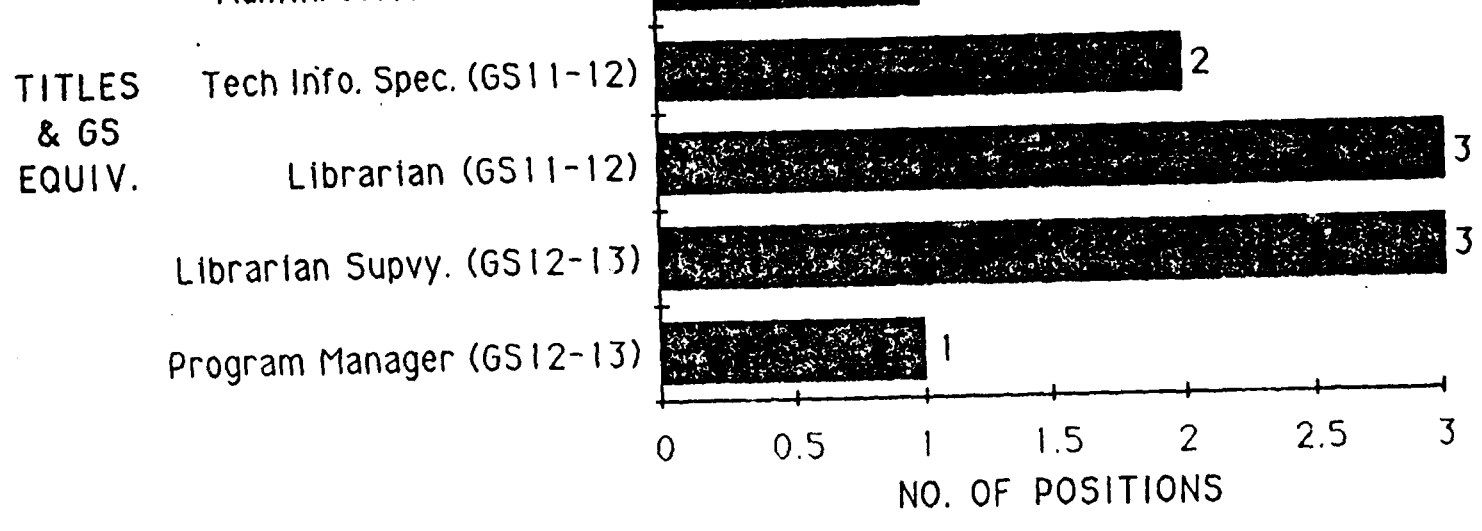
Pay Bands

The Demo classification system was simplified by reducing the number of GS pay levels, so we ended up with broad pay bands (which include at least two GS grades) for entry level, trainee and full performance level positions. Unlike the former system the Demo provides incentives for increased productivity and efficiency by progression through the pay bands based on an annual opportunity for a salary increase, not time-in-grade.

For example, under the GS system the full-performance (journeyman) level of non-supervisory librarians is GS-11. Under the Demo Project the journeymen level librarian positions are DA-3s (GS-11/1 to GS-12/10). Excellently performing librarians can, therefore, earn GS-12 pay by means of progression through their pay band based on performance.

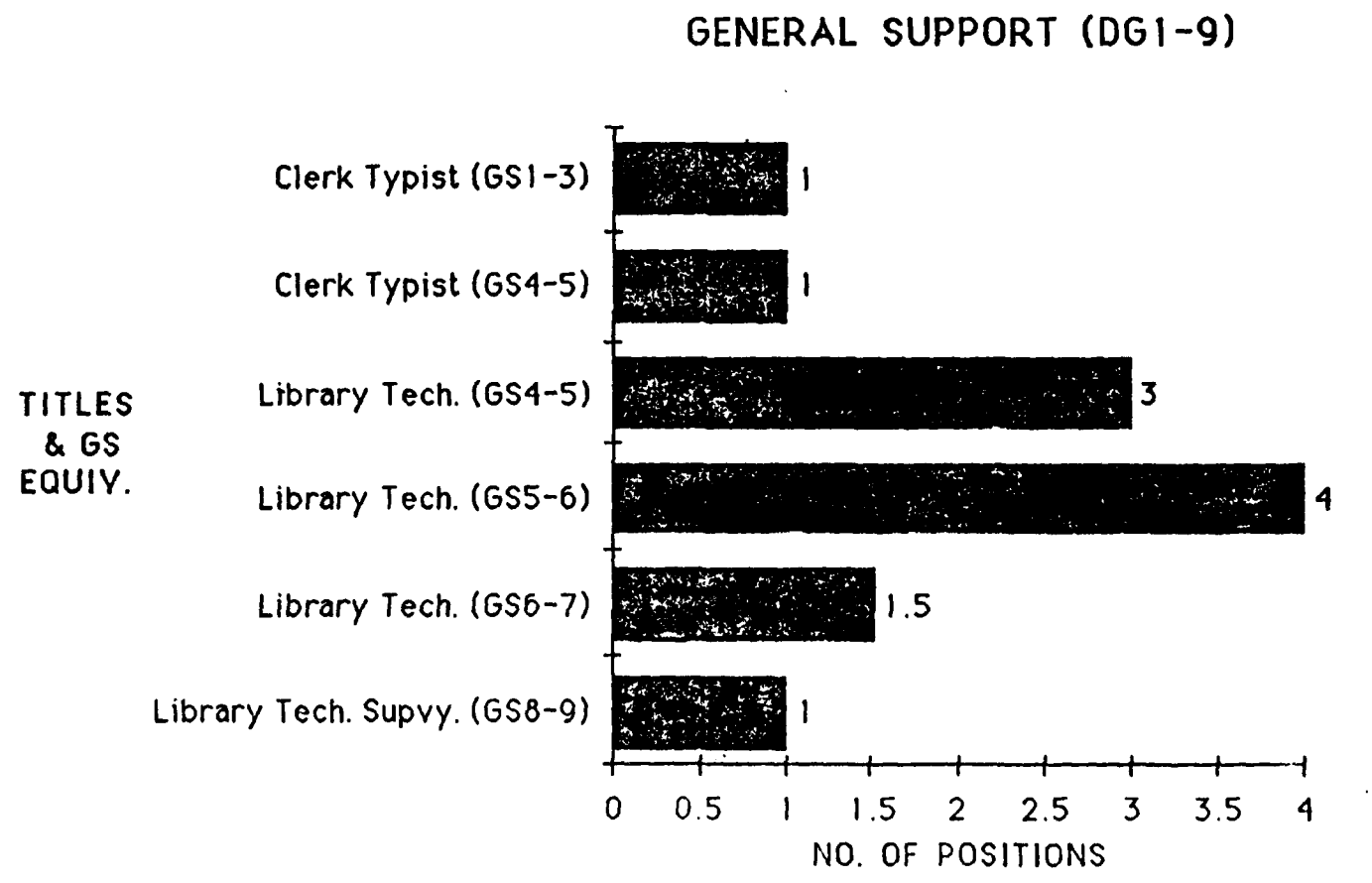
Promotions from one band to another, e.g. DA-2 (GS 9-10) to DA-3 (GS 11-12) occur as in the GS system.

NWC LIBRARY DIVISION
DEMO PROJECT
SEPTEMBER 1988



NWC LIBRARY DIVISION DEMO PROJECT

SEPTEMBER 1988



Management Authority to Classify Positions
Managers at NWC had the authority to classify positions under the original Demo guidelines well before the authority was granted to other Navy installations under the Navy Managing To Payroll (MTP) system. When managers at NWC were given classification authority, the adversarial relationship with personnel specialists over classification actions was alleviated. Personnel Specialists still advise management, upon request, on classification actions.

Demo Promotions
Although the library technicians (as a group) are not as satisfied with their pay as the professional employees are, three technician positions have been reclassified to the librarian and technical information specialist series. The actions were possible because of the duties and responsibilities added to the positions, and the more flexible classification system.

Managers also have the flexibility to promote exceptionally productive, valuable employees under the Demo. This "rank in person" concept is primarily used to promote scientists and engineers. However, the Center Library manager was promoted based on her ability to provide--with limited funds and personnel--outstanding library services for the NWC military and civilian community. As you all know, the Office of Personnel Management (OPM) classification standards put more emphasis on the size of staff, budget, collections, etc., to classify positions than on what a manager does with available resources.

Performance Assessment
Salary Increments
Employees can be rewarded under the Demo Project by adjusting salaries commensurate with their performance . Fully successful employees, who are eligible for payout at the end of the performance year, may be rated fullly successful and given comparability pay or comparability pay (C) and one salary increment (i). The dollar amount of an increment equals about 1/2 step under the GS system. Employees' rated "highly successful" are awarded comparability pay and two i's. Outstanding employees are awarded comparability pay and three or four is.
Midpoint of the Pay Band
It is possible for good performers to cross the "midpoint "of their pay band (which encompasses two GS levels). The midpoint is a one-time check point at NWC. To pass it an employee has to earn at least a highly successful performance rating and be awarded at least two i's. Once past the midpoint an employee continues to earn salary increments based on performance. To date one Librarian and one Technical Information Specialist have crossed the midpoint of their pay bands. NOSC uses the same criteria for passing the midpoint; but once past, an employee's progress beyond the midpoint salary requires a fully successful performance rating.

Cash Bonuses
The Demo also has the flexibility to award cash bonuses in lieu of salary increments to employees who are at the top of their pay scale or at the midpoint. Bonuses can also be given for one-time achievements.

Less Than Fully Successful Performance
Under the GS system a step in the career ladder equals time in grade. At NWC we found that serious effort on the part of the supervisor was required to prevent a marginal employee from migrating on up the pay scale. Under the Demo Project poor performers can have comparability pay withheld and can be held at the same salary with no automatic step increases. A problem-solving team is then assigned to assist the employee with improving his or her performance. To date there have been four such actions in the library. There is also a process by which an employee can appeal a rating. Only one library employee used this process to date. The employee lost the appeal but other employees in the have appealed their ratings and won.

How The "i"s and "b"s Are Distributed

The Library Division is included in the TID Demo "payout" pool. The pool is 2.4% of the salaries of employees eligible for performance ratings and 0.8% for cash bonuses. Supervisors make the initial assessment determinations for the employees they supervise. Candidates assessed as highly successful are referred to the department Performance Review Board (PRB). The PRB then recommends which employees will be rated as highly successful and which will be rated as outstanding. The Department Head makes a rating decision based on the PRB recommendations. The TID PRB also sometimes recommends candidates for promotion in lieu of extra increments. And some candidates may not be seen as high performers by the PRB and are, therefore, given only a fully successful rating. Although some library managers express reservations about this process, they all agree that the TID Performance Review Board is probably the best on Center and that the evaluation procedures are as fair as any system can be. One reason why our PRB is seen as fair is that participation rotates among the managers and supervisors so that all of them get a chance to sit on the PRB. There are also five volunteer reporters who observe and report on the PRB proceedings to the rest of the department .

Managers agree that the performance evaluation process, although more effective than that for the GS system, is not easier. Time saved on other personnel actions has shifted to time required to write plans and monitor performance. It is still difficult to write performance plans for functional (i.e., customer-oriented) positions, but this difficulty is not an inherent defect of the Demo. The managers think the pay-for-performance system has increased the productivity of their work groups, as do the professional employees.

Fairness in the distribution of salary increases is a concern of some employees. The following charts show the average number of salary increments and bonus awards, by career path, for the Library Division, TID, and NWC in 1986 and 1987 and for the Library Division and TID in 1988. What the statistics don't show is the number of employees who were not eligible for increments because they were new hires or had recentlly been promoted. Five out of the 11 Demo employees were not eligible in 1986, two out of 10 in 1987, and five out of 24 in 1988.

Although I haven't shown the comparison of Demo payouts by divisions in TID, an analysis of the data shows that the Library Division received a fair share of the department pay out pool dollars for the last three years.

As I mentioned at the beginning of my talk, some employees and managers are concerned that there might not be enough money available to adequately reward all of the good library performers every year since in the interest of sound salary management the dollar amount of the Demo payout pool is limited .

SUMMARY

The effectiveness of any personnel system depends in large part on how well it is used by management. The NWC Library Division and department managers use the Demo flexibility to promote and reward good performers and to penalize poor performers. They see this ability to reward and penalize as having resulted in increased productivity.

In addition to increased authority to classify positions and promote the incumbents, the managers approve of the ease of preparing PACS (position description replacements) and the flexibility they have to assign duties. The simpler classification system and management authority to classify positions has alleviated the adversarial relationship with personnel specialists which sometimes arose over classification actions.

The Demo Project has not significantly decreased paperwork for the Library Division managers, but the emphasis has shifted from classification to performance evaluation which has a more significant payoff. Some aspects of performance evaluation are seen as not quantifiable, but this complaint would be true with any evaluation system.

One disadvantage of the Demo Project is that it does not encompass all aspects of hiring. It is still necessary to hire from registers and to qualify applicants in accordance with the X-118 qualification standards. This drawback might be more significant at China Lake than elsewhere because of our remote location and small population from which to hire.

I mentioned several times the concern of both employees and managers that there might not always be enough money available to reward good performers. However, as my statistics have shown, the Demo Project has given the Library Division unusual flexibility to compensate high performers at higher pay levels than would have otherwise been possible.

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CONCLUDING REMARKS
by

Paul Klinefelter, Chair MLW Executive board
IAC Program Manager
Defense Technical Information Center
Alexandria, VA

Fri. 14 Oct 88 (1030)

This has been a superb workshop--one of the best I've encountered during my long association with them. This is a beautiful site, the weather didn't dare not to cooperate with Joan and Kathy, and the program was both innovative and very informative.

I want first and foremost to express our sincere appreciation for the tremendous organizing job Joan accomplished with Kathy's help. Please join me in a huge round of applause in their honor.

I also want to recognize the careful attention to detail, the excellent planning and execution of their respective responsibilities, and the warm and cheerful assistance given us by Kitty Pitts of the NOSC Public Affairs staff, Helen Cook who worked so efficiently with Yolanda Kerr to provide a smooth and trouble-free registration process, and Diane Soblick who organized photo opportunities for the permanent record in the proceedings. Please, let's let them know how much we appreciate their efforts.

Now for the future. I have turned over to next year's host, Fred Todd, head of the technical library of the School of Aerospace Medicine in San Antonio, the traditional town crier's bell which has been used to convene all of these workshops since the one held in Alexandria, Virginia in 1979. The dates of that conference will be 17-20 October, 1989. This will be the first workshop ever to explore medical librarianship, in addition to the technical and operational developments that we always bring you up to date on. So much medical research and educational capability is concentrated in the San Antonio area that I predict that this will be another very fine workshop.

Again speaking to the future, I would like for Normand Varieur to stand up here with me in light of his selection by MLD President Kay Marshall to take over the chairmanship of the Military Librarians Workshops' Executive Board. I've thoroughly enjoyed working with all of you for all these years, and I'm delighted that my successor is to be Normand, who has done so much as Army representative on the Council to develop the possibilities for each workshop and to plan for the future ahead.

More futuristic stuff--I leave the MLW in good hands and in good health. I've maintained a planning schedule five years into the future. You have to, given the difficulties involved in reserving appropriate hotels in appropriate sites, selling potential hosts on agreeing to commit to the major endeavor involved, etc. I'm happy to announce that the 34th Workshop will be held in 1990 at Fort Monroe, Virginia--that beautiful star-shaped fortress with its own moat, right on the Chesapeake Bay. Jim Byrn and his TRADOC staff will come up with another fine conference. In 1991 the Defense Language Institute in Monterey, California will be host, and Gary Walter has told me of some ambitious plans to make that one exceptional. In 1992 the Naval Underwater Systems Center will do the honors in New London, Connecticut, and in 1993 the host will be the Air Force Weapons Laboratory in Albuquerque, New Mexico. By the way AFWL thus will become our second three-time host, the other being the Air Force Academy in Colorado Springs.

I take my leave by expressing my own very sincere appreciation for the wonderful workshop Joan, Kathy and their fine group have put together. Normand, I turn the group over to you, even if all you do this time is to tell them to go home. Hang in there, all of you.

Meeting and greeting each other are important parts of any conference.

Appendix A

List of Speakers

Paul Klinefelter
Joan Buntzen
Robert M. Hillyer
Joan Buntzen
Dr. Philip L. Hunsaker
Pat Moholt
Capt. Merrill H. Dorman, USN
Tony Dakan
Mary Bonnet
Stanley Kalkus
Bob Pasqueretta
Mary-Deirdre Coraggio
Mary T. Chrysler
H. Leonard Fisher
Bill Sannwald
R. Bruce Miller
Jean Smith
Linda Loughnane
Dr. Sam Ridgway
Susan Rainville
Alice Pastorius
Paul Klinefelter

Appendix B

LIST OF ATTENDEES

Aldous, Mary
Naval Health Research Center
Wilkins Biomedical Library
P.O. Box 85122
San Diego, CA 92138-9174
(619) 553-8425, AV 553-8425

Alfoldi, Laszlo M.
3245ABG/SSL
Hanscom AFB, MA 01731
(617) 377-2177, AV 478-2177

Alger, Beatrice
Base Library
Mather AFB, CA 95655-5000

Allen, Delores R.
Chief Librarian
Headquarters, 10th Mountain Division
(Light Infantry) and Fort Drum
Attn: AFZS-PA-CRD
Fort Drum, NY 13602-5018
(315) 772-5129/4502, AV 341-4502

Ashe, Dorothy
Chief Librarian
U.S. Army Signal Center and
Fort Gordon
Attn: Woodworth Library, Bldg. 33500
Fort Gordon, GA 30905-5020
(404) 791-3086, AV 780-3086/2449

Bangsberg, Nadine
Naval Amphibious Base, Coronado
San Diego, CA
437-3026

Barravecchia, Mary
Naval Underwater Systems Center
Technical Library, Code 02152
Newport, RI 02841-5047
(401) 841-4338, AV 948-4338

Blake, Martha
U.S. Army Construction Engineering
Research Laboratory
Attn: Library
P.O. Box 4005
Champaign, IL 61820-1305
(217) 373-7217

Blanc, Bill
Naval Weapons Center
Library Division, Code 343
China Lake, CA 93555-6001
(619) 939-2507, AV 437-2507

Bonnett, Mary
Army Library Management Office
Attn: HQDA (SFIS-FAL)
Alexandria, VA 22331-0303

Buelna, Joseph
Base Library
Vandenberg AFB, CA 93437-5000
(805) 866-6050, AV 276-6050

Bullock, Sybil
U.S. Army Missile Command
Redstone Scientific Information Ctr.
ATTN: AMSMI-RD-CS-R
Redstone Arsenal, AL 35898-5241
(205) 876-5195, AV 746-3251

Buntzen, Joan
Naval Ocean Systems Center
Technical Library, Code 964
San Diego, CA 92152-5000
(619) 553-4879, AV 553-4879

Burns, Dean
USAITAC
Attn: AIAIT-HI
Bldg. 203, Stop 314
Washington Navy Yard
Washington, DC 20374-2136
(202) 863-3547, AV 335-2606

Busch, Barbara
Navy Personnel Research and
Development Center
Technical Library, Code 231
San Diego, CA 92152-6800
(619) 553-7846, AV 553-7846

Byers, Bertina
U.S. Army Command and General Staff
College
ATZL-SWS-L
Combined Arms Research Library
Fort Leavenworth, KS 66027-6900
AV 552-4035

Byrn, James H.
Director, TRALINET
CDR. TRADOC
Attn: ATLS
Fort Monroe, VA 23651-5117
(804) 727-4491, AV 680-4491

Carney, Patrick J.
United States Marine Corps
Camp Pendleton Library, Bldg. 1122
Camp Pendleton, CA 92055-5000
(619) 725-5104, AV 365-5104

Cheung, Anthony
Defence and Civil Institute of
Environmental Medicine
P.O. Box 2000
Downsview, Ontario
Canada M3M 3B9
(416) 635-2070

Christine, Barbara
USACFSC
Attn: DACF-ZR-L
Alexandria, VA 22331-0510
(703) 325-9701, AV 221-9701

Civan, Arpi
National Defence Library Services
3 South Tower
NDHQ, 101 Colonel By Drive
Ottawa, Ontario
Canada K1A 0K2
(613) 995-8838, AV 845-8838

Cohen, Harriet
Naval Hospital
Medical Library
8750 Mountain Blvd.
Oakland, CA 94627-5000
(415) 633-5607, AV 855-5607

Coleman, Barbara N.
Base Library/Stop 60
Peterson AFB, CO 80914-5000
(719) 554-7462, AV 692-7462

Cook, Helen
Naval Ocean Systems Center
Technical Library, Code 9642F
San Diego, CA 92152-5000
(619) 553-4902, AV 553-4902

Coraggio, Mary-Deirdre
Naval Weapons Center
Technical Library, Code 3433
China Lake, CA 93555
(619) 939-2639, AV 437-2639

Corbin, Brenda
U.S. Naval Observatory
34th & Massachusetts Ave., NW
Washington, DC 20392-5100
(202) 653-1499, AV 294-1499

Cranor, Alice
Defense Intelligence Agency
Attn: DT-3A
Washington, DC 20340-6173
(202) 373-4688, AV 243-4688

Cundiff, David H.
CDR, TRADOC
Attn: ATLS-C
Bldg. 117
Fort Monroe, VA 23651-5117
(804) 727-4291, AV 680-4291

Dakan, Tony
U.S. Air Force Library & Info. Sys.
HQ, AFMPC/DPMSPL
Randolph AFB, TX 78150-6001
(512) 652-4589/3037, AV487-4589/3037

Davis, Bonnie
Navy Experimental Diving Unit
Naval Coastal Systems Center
Bldg. 321
Panama City, FL 32407-5001
(904) 234-4331, AV 436-4351

Dickason, Anne
Defence Research Establishment,
Suffield
Ralston, Alberta
Canada TOJ 2NO
(403) 554-3701,ext.4662, AV 620-2662

Dinger, Char-Lou
Naval Weapons Center
China Lake, CA

Doidge, Alice
Pacific Missile Test Center
Technical Library, Code 1018
Point Mugu, CA 93042-5000
(805) 989-7401, AV 351-7401

Doran, Jennifer
Science Applications International
Corporation
Foreign Systems Research Center
6021 S. Syracuse Way, Suite 300
Greenwood Village, CO 80111
(303) 773-6900

Eidson, Alreeta
AFAFC Library/FL7040, Bldg. 444
Denver, CO 80279-5000
(303) 370-7566, AV 926-7566

Everidge, Barbara
Defense Applied Information Technology Center
1800 N. Beauregard
Alexandria, VA 22311
(703) 998-4693

Farwell, Barbara
Wilford Hall USAF Medical Center
(SGEL)
Lackland AFB, TX 78236-5300
(512)670-5770, AV 554-5770

Ferguson, Kathy
Yuma Proving Ground
General Library
Attn: STEYP-IM-LC
Yuma Proving Ground, AZ 85365-9102
(602) 328-2558,AV 899-2558

Finlay, Mary
Mobile Command Headquarters
Main Library
Building 63
St-Hubert, Quebec
Canada J3Y 5T5
(514) 443-7083, AV 621-7083

Fisher, Leonard
Head, Research Information Group
Lawrence Livermore National
Laboratory
P.O. Box 5500-L53
Livermore, CA 94550
(415) 423-0192

Fox, Barbara
U.S. Army Corps of Engineers
District Library
P.O. Box 60267
New Orleans, LA 70160
(504) 862-2558

Fox, Victoria
C, I&D
Armed Forces Medical Intelligence
Center
Bldg. 1607
Fort Detrick, MD 21701-5004
(301) 663-7214

Franco, Tanny
USMC Warfighting Center
Library, Code WF 15E, MCCDC
Quantico, VA 22554-5001
(703) 640-3607, AV 278-3607

Fryar, Linda
Base Library
Sheppard AFB, TX 76311-5000
AV 736-2687

Gallant, Thomas
U.S. Army South, Drawer 940
Attn: SOPR
APO Miami 34004-5000
AV 287-3361

Galloway, Hoyt
Medical Librarian
Walter Reed Army Medical Center
Washington, DC 20307-5001
(202) 576-1238, AV 291-1238

Gera, V. Lynn
Information Resources Center
Walter Reed Army Institute of
Research
Washington, DC 20307-5100
(202) 576-3314, AV 291-3314

Gibson, Julie A.
USA TRADOC Analysis Command,WSMR,NM
Technical Library
Attn: ATRC-WSL
White Sands Missile Range
NM 88002-5502
(505) 678-3135. AV 258-3135

Gipe, Patricia H.
Defense Systems Management College
Fort Belvoir, VA 22060-5429
(703) 664-2900, AV 354-2900

Gleason, William
Chief, Technical Services Division
USAF School of Aerospace Medicine
Brooks AFB, TX 78235-5301
(512) 536-3575, AV 240-3575

Gregg, Daniel H.
Attn: AIFMIC
U.S. Army Foreign Science and
Technology Center
220 7th Street, NE
Charlottesville, VA 22901-5396
(804) 980-7514, AV 274-7514

Griner, Marina
Post Library
Building 31
Ft. Benjamin Harrison, IN 46216-5100
(317) 542-4958, AV 699-4958

Hall, Sue
Space and Naval Warfare Systems
Command
Technical Library, Code 7051
Washington, DC 20363-5100
(202) 692-8771, AV 222-8771

Haltzel, Helen
Defense Systems Management College
Attn: Library
Fort Belvoir, VA 22060-5426
(703) 780-2348, AV 354-2348

Hanna, David
Naval Underwater Systems Center
New London Laboratory
Technical Library, Code 0215
New London, CT 06320-5594
(203) 440-4276, AV 636-4276

Hansen, Joanna
FL 4448/Base Library
Norton AFB, CA 92409-5985
(714) 382-7119, AV 876-7119

Harned, Marilynn
Center for Naval Analyses
Document Center
4401 Ford Avenue
P.O. Box 11280
Alexandria, VA 22302-0268
(703) 824-2131, AV 289-2638

Harper, Marie
Nimitz Library
U.S. Naval Academy
Annapolis, MD 21402-5029
(301) 267-2194, AV 281-2194

Haznedari, I.
U.S. Army Armament Research,
Development, and Engineering Ctr.
Attn: SMCAR-MSI, Bldg. 59
Picatinny Arsenal, NJ 07806-5000
(201) 724-3316, AV 880-3316

Headley, Ava
Technical Library/OTEA
5600 Columbia Pike
Falls Church , VA 22041
(202) 756-2234; AV 289-2234

Helton, Helen L.
Air Force Institute of Technology
Academic Library
AFAT/LDC Area B, Bldg. 640
Wright-Patterson AFB, OH 45433-6583
(513) 255-4191, AV 785-4191

Henderson, Gail
Attn: JDHQ-PL-R
The Pentagon Library
Washington, DC 20310-6050
(202) 695-9501, AV 225-9501

Hennessy, Ruth
Naval Ocean Systems Center
Technical Library, Code 9641
San Diego, CA 92152-5000
(619) 553-4890, AV 553-4890

Herrick, Lynn
Chamberlin Library
Bldg. 4275, North-South Road
Fort Ord, CA 93941-5605
(408) 242-3789, AV 929-4789

Hopkins, Major Jim
U.S. Air Force Academy
6650 Brook Park Drive
Colorado Springs, CO 80918
AV259-2590

Imhof, Peter
Naval Research Laboratory
Code 2620
Washington, DC 20375
(202) 767-2187/3388, AV 297-2187

Javaher, Patricia
Chief Librarian
Headquarters, XVIII Airborne Corps
and Fort Bragg
Attn: AFZA-PA-R
Fort Bragg, NC 28307-5000
(919) 396-6919, AV 236-6919

Johnson, Duane
HQ, ATC/DPSOL
Randolph AFB, TX 78150-5000

Johnson, Ida
USA Ballistic Research Laboratory
Attn: SLCBR-DD-T
Aberdeen Proving Ground,
MD 21005-5066
AV 298-3715

Jupin, George
Defense Intelligence Agency
Attn: RTS-2A
Washington, DC 20340-3231
(202) 373-3777, AV 243-3777

Kalkus, Stanley
Coordinator of Navy Libraries
Navy Department Library
Washington Navy Yard, Bldg. 44
Washington, DC 20374-0571
(202) 433-2386/4131, AV 288-2386

Keeter, Nettie
Navy Environmental Health Center
Library, Code 44, Bldg. X-353
Naval Station
Norfolk, VA 23511-6695
(804) 444-4657, AV 564-4657

Kessler, Katheryn
Base Library
Patrick AFB, FL 32925-6625
AV 854-6881

Kirk, Tom
Base Library
Vance AFB, OK 73705-5000
(405) 249-7368, AV 962-7368

Klinefelter, Paul
Defense Technical Information Center
DTIC-DF
Cameron Station
Alexandria, VA 22304-6145
(202) 274-6260, AV 284-6260

Laughlin, Carolyn
Marine Corps Recruit Depot
San Diego, CA

Loughnane, Linda
Operations Manager
MATRIS Office
Defense Technical Information Center
San Diego, CA 92152-6800
(619) 553-7035, AV 553-7035

Lundquist, Ronald
AFWAL/ISL, Area B, Bldg. 22
Wright-Patterson AFB, OH 45433-6523
(513) 255-8403/3630, AV 785-3630

Lupp, Denise M.
Medical Library
USAMRIID
Fort Detrick, MD 21701-5012
(301) 663-2720, AV 343-2720

Maddox, Bennie
Chief, Library Division
Defense Nuclear Agency
Washington, DC 20305
(202) 325-1043, AV 221-7042

Mangus, Nancy
HQ, SAC/NRI
Offutt AFB, NE 68113-5001
AV 271-2927

Marshall, Kathryn
AWS Technical Library
Scott AFB, IL 62225-5458
(618) 256-2625, AV 576-2625

Mayo, Julia
National Defense University
Attn: NDU-LD
Washington, DC 20319-6000
(202) 475-1950, AV 335-1950

McCall, Jean
Yuma Proving Ground
Technical Library
Attn: STEYP-IM-TL
Yuma Proving Ground, AZ 85365-9103
(602) 328-2549, AV 899-2549

McClaughry, Helen
Base Library, 3415 ABG/SSL
Lowry AFB, CO 80230-5000
(303) 370-3093/3836,AV 926-3093/3836

McLaughlin, Barbara
U.S. Army Harry Diamond Laboratories
Attn: SLCHD-TL (Library)
2800 Powder Mill Road
Adelphi, MD 20783-1197
AV 290-2536

Miller, Bonnie R.
USA-MSIC
Redstone Arsenal, AL 35898-5500
ATTN: AIAMS-DBL
(205) 876-5305, AV 746-5305

Miller, Clara
Marine Corps Research, Development,
and Acquisition Command
Marine Corps Technical Library
Code PSI-D
Washington, DC 20380-0001
(703) 694-1997/2047, AV 224-1997

Miller, Kay
Naval Oceanographic Office
Maury Oceanographic Library
Stennis Space Center, MS 39522-5001
(601) 688-4017, AV 485-4017

Miner, Irene S.
Chief, Periodicals Division
The Army Library, Pentagon
Washington, DC 20310-6000
(202) 697-4591, 227-4591

Moisey, Judith
AFAFC/DAL
Denver, CO 80279-5000
(303) 370-7566, AV 926-7566

Molholt, Pat
Associate Director of Libraries
Rensselaer Polytechnic Institute
Troy, NY 12181
(518) 266-8300

Moorhouse, Rose
FL4664 Base Library
March AFB, CA 92518-5000
(714) 655-2203, AV 947-2203

Morgan, Pat
Marine Corps Historical Center
Library, Code HDS-4
Bldg. 58, Washington Navy Yard
Washington, DC 20374-0580
(202) 433-4253/3447, AV 288-425?

Murdoch, Sandra
Howard Air Force Base Library
APO Miami 34001-5000

Newton, Barbara
AFWL/SUL
Kirtland AFB, NM 87117-6008
(505) 844-7449, AV 244-7449

Nicholas, Margaret
USAITAC
Attn: AIAIT-HI
Bldg. 203, Stop 314
Washington Navy Yard
Washington, DC 20374-2136
(202) 863-3561, AV 335-2606

Norton, Frank
Medical Librarian
Darnall Army Community Hospital
Fort Hood, TX 76544-5063
(817) 288-8368, AV 738-8368

Nyce, Louise
HQ, U.S. Army Materiel Command
Attn: AMCIM-RF
5001 Eisenhower Avenue
Alexandria, VA 22333-0001
(703) 274-8087, AV 284-8087

O'Drobinak, Margaret
6520 Test Grp/ENXL
Edwards AFB, CA 93523-5000
(805) 277-3606, AV 527-3606

Ono, Margaret
Base Library, Bldg. 765
McChord AFB, WA 98438-5000
(206) 984-3454, AV 976-3454

Oswitt, Jane E.
Mare Island Naval Shipyard
Science and Technology Library
Code 202.13, Stop T-4
Vallejo, CA 94592-5100
(707) 646-2532, AV 253-2532

Parks, Bernice
USA MP School
Ramsey Library
Building 3181, Room 10
Fort McClellan, AL 36205-5030
AV 865-3737

Pastorius, Alice
Naval Weapons Center
Technical Library, Code 3431
China Lake, CA 93555
(619) 939-2313/3380, AV 437-2313

Patel, Patricia C.
Armed Forces Institute of Pathology
Ash Library
Washington, DC 20306-6000
(202) 576-2983

Perry, Pat
U.S. Army Corps of Engineers
Seattle District Library
P.O. Box #-3755
Seattle, WA 98124-2255
(206)764-3728

Pettiford, Aaron
Naval Weapons Support Center
Technical Library, Code 016
Crane, IN 47522
(812) 854-1589, AV 482-1589

Power, Lee
Federal Library and Information
Center Committee
Library of Congress
Washington, DC 20540
(202) 287-6454

Price, Ralph E.
DMA Aerospace Center
Attn: DSMC
3200 South 2nd
St. Louis, MO 63118-3399
(314) 263-4841, AV 693-4841

Ralston, Charles A.
Director, Library Program
Headquarters, U.S. Forces Command
Attn: FCJ1-CFA
Fort McPherson, GA 30330-6000
(404) 669-6885, AV 367-6885

Razumny, Aja Markel
HQ, PACAF/Library Service Center
Hickam AFB, HI 96853-5001
(808) 449-2209

Rettenmaier, Jr., W.F. (Fred)
Office of the Chief of Naval
Research
Attn: Librarian,Code 01232L
800 N. Quincy Street
Arlington, VA 22217-5000
(703) 696-4415, AV 226-4415

Rhodes, Myrtle
Naval Coastal Systems Center
Code 06112, Highway 98 West
Panama City, FL 32407-5000
(904) 234-4321, AV 436-4321

Richards-Means, Lois
Defense Technical Information Center
MATRIS Office
San Diego, CA 92152-6800
(619) 553-7037, AV 553 7037

Rodgers, Ann
Naval Weapons Center
China Lake, CA

Rose, Sandra
Naval Surface Warfare Center
Technical Library, Code E231
Dahlgren, VA 22448-5000
(703) 663-8351, AV 249-8351

Ryder, Suzanne
Naval Air Station
Central Library, Bldg. 407
Code 62
Patuxent River, MD 20670-5407
(301) 863-1927, AV 356-1927

Sadoski, Michael
Naval Weapons Station
Command Library, Code 012L, B-112
Seal Beach, CA 90740-5000
(213) 594-7142/7619, AV 594-7619

Sauer, Mary L.
HQ, SAC/DPSDL
Offutt AFB, NE 68113-5000
AV 271-2367/2223

Schaeffer, LTC Reiner H.
HQ, USAFA/DFSEL
USAF Academy
Colorado Springs, CO 80840-5701
(719) 472-2590; AV 259-2590

Schnare, Robert
Library Director
Naval War College
Code E
Newport, RI 02841-5010
(401) 841-2641, AV 948-2641

Schwartz, Marilyn W.
Libraries, Bldg. 5-2
Naval Hospital
San Diego, CA 92134
(619) 532-7950, AV 522-7950

Scott, Terri
Directorate of Scientific
Information Services
Department of National Defence
Ottawa, Ontario
Canada K1A 0K2
(613) 992-0105, AV 842-2294

Smith, Beth
Naval Station Library
P.O. Box 224, Code 01L
San Diego, CA 92136-5224
(619) 235-2420

Soblick, Diane
Naval Ocean Systems Center
Technical Library, Code 9642B
San Diego, CA 92152-5000
(619) 553-4903, AV 553-4903

Spinks, Paul
Naval Postgraduate School
Dudley Knox Library
Monterey, CA 93943-5002
(408) 646-2341, AV 878-2341

Stackpole, Laurie
Naval Research Laboratory
Ruth H. Hooker Technical Library
Code 2620
4555 Overlook Avenue, S.W.
Washington, DC 20375-5000
(202) 767-2357, AV 297-2357

Teal, Erika
Office of the Judge Advocate General
200 Stovall Street
Mail Code 64.3 - Library
Alexandria, VA 22332-2400
(202) 325-9567, AV 221-9567

Thompson, Bryan
Naval Civil Engineering Laboratory
Library, Code L06C
Port Hueneme, CA 93043-5003
(805) 982-4252, AV 360-4252

Todd, Fred
USAFSAM/TSK
Brooks AFB, TX 78235-5301
(512) 536-3725, AV 240-3725

Toomey, Sarah
Massey Library
Royal Military College of Canada
Kingston, Ontario
Canada K7K 5LO
(613) 541-6005, AV 270-6005

Tremblay, Paul
Bibliotheque du College militaire
royal de St-Jean
St-Jean sur Richelieu, Quebec
Canada JOJ 1RO
(514) 346-2131, x 3608, AV 621-3011

Turner, Glenyss
Fort Frontenac Library
CLFCSC
Kingston, Ontario
Canada K7K 5LO
(613) 541-5815, AV 270-5815

Varieur, Normand L.
Chief, STINFO Division, IMD
U.S. Army Armament Research,
Development, and Engineering Ctr.
Attn: SMCAR-IMI-1, Bldg. 59
Picatinny Arsenal, NJ 07806-5000
(201) 724-2914, AV 880-2914

Venator, Nancy
Logistics Management Institute
6400 Goldsboro Road
Bethesda, MD 20817-5886
(301) 320-2000, AV 287-2779

Viti, Jane
Trident Command and Control Systems
Maintenance Activity, Bldg. 1258
Naval Underwater Systems Center
Newport, RI 02841-5047
(401) 841-1776, AV 948-1776

Wallace, Katharine
Naval Surface Warfare Center
Code E-232-Library
10901 New Hampshire Avenue
Silver Spring, MD 20903-5000
(202) 394-1922, AV 290-1922

Walter, Gary D.
Defense Language Institute
Foreign Language Center
ATFL-SSR
Presidio of Monterey, CA 93944-5007
(408) 647-5572, AV 878-5572

Watlington, Joyce C.
U.S. Army Laboratory Command
Human Engineering Laboratory
Attn: Library, Bldg. 459
Aberdeen Proving Ground,
MD 21005-5001
(301) 278-5899, AV 298-5899

Weston, Janice
U.S. Army Ordnance Center and
School Library
Bldg. 3071, Simpson Hall
Aberdeen Proving Ground,
MD 21005-5201
(301) 278-5615, AV 298-5615

Whipple, Marcia
Naval Ocean Systems Center
Technical Library, Code 9641
San Diego, CA 92152-5000
(619) 553-4889, AV 553-4889

Wilbur, Sharon Faye
CDR, HQ TEXCOM (Prov.)
Attn: Technical Library
Bldg. 91025
Fort Hood, TX 76544-5065
(817) 288-1213; AV 738-1213

Wiley, Connie J.
AFGL Research Library
Hanscom AFB, MA 01731-5000
(617) 377-4619; AV 478-4619

Williams, Stephanie
Naval Technical Intelligence Center
NTIC-DS30
4301 Suitland Rd.
Washington, DC 20395-5020
(301) 763-3480, AV 293-3480

Woinowsk, Orrine
AFHRL/TSRL
Brooks AFB, TX 78235-5601
(512) 536-2651, AV 240-2651

Woodruff, Camille
Chief Librarian
DPCA, CRD, Library Branch
Bldg. 1802
Fort Polk, LA 71459-5000
(318) 535-4212/2527, AV 863-4212

Wright, Kathy
Naval Ocean Systems Center
Technical Library, Code 9642
San Diego, CA 92152-5000
(619) 553-4900/4901, AV 553-4900

Wrinkle, Barbara
HQ, USAFE/DPSL
APO New York 09012-5426
AV 480-6895/6724

Young, Sandra
Assistant Director for Technical Information
Defense Nuclear Agency
Washington, DC 20305
(703) 325-7042, AV 221-7042

Zehnpfennig, Diane
DASG-AAFJML
Room 670, Skyline 6
5109 Leesburg Pike
Falls Church, VA 22041-3258
(703)756-8028,

Zeman, Nora
USAOMMCS
Attn: Technical Library, ATSK-AB
Building 3323
Redstone Arsenal, AL 35897-6280
(205) 876-4524, AV 746-4524

Thirty-Second Annual Military Librarians' Workshop

DOD LIBRARIAN INTERFACES

Naval Ocean Systems Center
San Diego, CA
12-14 October 1988

San Diego Princess Hotel

Tuesday, 11 October 1988

1700-2100 **Registration**

Dinner (on your own)

2000-2200 **MLW Executive Board Meeting**

Wednesday, 12 October 1988

0730-0830 **Registration (continued)**
Continental breakfast

PLENARY SESSION

0830-0845 **Welcoming Remarks**

Joan Buntzen
Head, Technical Libraries Branch
Naval Ocean Systems Center

Paul Klinefelter
IAC Program Manager
Defense Technical Information Center

0845-0915 **Welcome Address**

The Librarian's Interface with DOD Management
Robert M. Hillyer
Technical Director
Naval Ocean Systems Center

0915-1145 **Keynote Addresses**

Theme: Interface with Change

0915-1015 Challenge for the Manager
Dr. Philip L. Hunsaker, Professor
University of San Diego

1015-1045 **Coffee Break**

1045-1145 Challenge for the Library
Pat Molholt, Associate Director of Libraries
Rensselaer Polytechnic Institute

1145-1330 **Lunch**

Navy Research in the Arctic
Captain Merrill H. Dorman, USN
Naval Ocean Systems Center

1330-1445 **FEDLINK Update**

Lee Power
Federal Library and Information Center Committee

1445-1515 **Coffee Break**

1515-1630 **Service Updates**

DOD, Air Force, Army, Navy, Canada

1730-1900 **MEXICAN FIESTA**

Thursday, 13 October 1988

0730-0830 **Continental Breakfast**

PLENARY SESSION

0830-0910 The Special Library in the Year 2010
H. Leonard Fisher
Head, Research Information Group
Lawrence Livermore National Laboratory

0910-0915 **Announcements**

0915-0925 **Break**

CONCURRENT SESSIONS

0925-1025 **Workshops: Technology Interfaces**

Connecting Up the Equipment
Bob Pasqueretta
Computer Sciences Corporation

Automation of Acquisitions and Serials
Mary-Dierdre Corragio
Naval Weapons Center

Life Cycles of Automated Systems
Jeannine Wolf
Computer Consultant

1025-1050 **Coffee Break**

1050-1150 **Workshops:** Above sessions repeat

1200-1345 **Lunch** (Speaker to be announced)

CONCURRENT SESSIONS

1345 -1445 **Workshops: People Interfaces**

Human Factors Considerations for Library Systems
Bruce Miller
University of California, San Diego

Marketing Library Services
Bill Sannwald
San Diego Public Library

Training Online Users:

Training Users of Online Catalogs
Jean Smith
University of California, San Diego

Developing an Online Tutorial
Linda Loughnane
Defense Technical Information Center/MATRIS

1445-1515 **Coffee Break**

1515-1615 **Workshops:** Above sessions repeat

Friday, 14 October 1988

0730-0815 **Continental breakfast**

PLENARY SESSION

0815-0845 The Navy's Marine Mammal Program
Dr. Samuel H. Ridgway
Naval Ocean Systems Center

0845-0945 The Navy's Demonstration Project:

Demonstration Project Update
Susan Rainville
Deputy Personnel Director
Naval Ocean Systems Center

The Demonstration Project in the Library
Alice Pastorius
Librarian
Naval Weapons Center

0945-1000 **Break**

1000-1100 **SLA/MLD Business Meeting**
Closing Remarks

Paul Klinefelter

HOSTS OF THE MILITARY LIBRARIANS' WORKSHOP

1st - 1957	Air University
2nd - 1958	Army Artillery and Missile Center
3rd - 1959	Naval Postgraduate School
4th - 1960	Armed Services Technical Information Agency
5th - 1961	U.S. Air Force Academy
6th - 1962	White Sands Missile Range
7th - 1963	Naval Ordnance Laboratory
8th - 1964	Air Force Weapons Laboratory
9th - 1965	U.S. Military Academy
10th - 1966	Naval Electronics Laboratory
11th - 1967	Air Force Institute of Technology
12th - 1968	U.S. Army War College
13th - 1969	U.S. Naval War College
14th - 1970	Industrial College of the Armed Forces
15th - 1971	Headquarters, U.S. Air Force, San Antonio, TX
16th - 1972	Redstone Scientific Information Center
17th - 1973	Naval Research Laboratory
18th - 1974	Headquarters, Fort Huachuca, AZ
19th - 1975	U.S. Air Force Academy
20th - 1976	U.S. Naval Academy
21st - 1977	U.S. Army War College/Army Military History Inst.
22nd - 1978	Air Force Weapons Laboratory
23rd - 1979	Defense Documentation Center
24th - 1980	Naval Postgraduate School
25th - 1981	Air University
26th - 1982	U.S. Military Academy
27th - 1983	Defense Nuclear Agency
28th - 1984	Naval Coastal Systems Center
29th - 1985	U.S. Air Force Academy
30th - 1986	U.S. Army Corps of Engineers, New Orleans
31st - 1987	Defense Intelligence Agency
32nd - 1988	Naval Ocean Systems Center

FUTURE HOSTS

33rd - 1989	Air Force School of Aerospace Medicine
34th - 1990	U.S. Army Training and Doctrine Command
35th - 1991	Defense Language Institute
36th - 1992	Naval Underwater Systems Center
37th - 1993	Air Force Weapons Laboratory