PROCEEDINGS OF THE DoD/INDUSTRY TECHNICAL INFORMATION CONFERENCE 7-8 DECEMBER 1982

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The DoD/Industry Technical Information Conference was sponsored by the Director for Research and Laboratory Management, OUSDRE, to assess defense industry's requirements for DoD technical and management planning information. About 100 companies were

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represented providing a cross section of industry doing business or wanting to do business with the Department of Defense. Speakers from DoD and industry highlighted problems and accomplishments of the defense scientific and technical information program.

Working groups discussed and provided recommendations on three general areas:

- Industry perception of current and future DoD scientific and technical information programs

- Technical information and planning requirements of industry

- Improving the DoD/Industry information exchange process.

Recommendations made by the working groups included:

- Replace the R&D Planning Summary (DD 1634) Data Base with a new on-line data base.

- Expand information sources for use by industry.

- Improve access to information that is useful to planners, realizing that the information must be timely, complete, and contain projections for the future.

- Ensure consistency among the military services and DoD components when they interpret and implement DoD policy, directives, and instructions.

- Establish better means of communicating with industry and industry groups.

- Improve industry's knowledge of what information is available to them and its source.

FOREWORD

The DoD/Industry Technical Information Conference was held on 7-8 December 1982 at the Naval Research Laboratory. The conference objective was to assess defense industry's requirements for DoD technical and management planning information. Representatives were invited from a cross-section of defense industries to contribute their views and experience in obtaining and using DoD technical information and to obtain a perspective of the information available to industry.

The conference provided DoD a better understanding of industry's needs for technical and planning information. To meet these needs DoD must establish systems and programs that are simple and easy to implement. This will require careful review and coordination with the military departments and DoD components.

An Information for Industry Committee has been established to help formulate policy and guidance for the exchange of defense technical, planning, and acquisition information with industry. The committee has been asked to establish an industry advisory group to help DoD keep attuned to the needs of industry, and to help in effecting the exchange of defense information needed by industry.

These proceedings provide the edited content of the speakers presentations, summaries of the recommendations made by three working groups, and a list of attendees. In some instances presentations have been summarized in outline form rather than attempting to include verbatim transcripts. Slides used by the speakers were in some cases merged with the text to provide a more readable and useful record of the presentation. These proceedings provide a useful record of the conference and will serve as a reference on which to build a DoD technical information program that is responsive to the needs of U.S. industry.

Leo Young
Director for Research
and Laboratory Management

PROCEEDINGS OF THE

DOD/INDUSTRY TECHNICAL INFORMATION CONFERENCE

7-8 DECEMBER 1982

Naval Research Laboratory
Washington, D.C.

Office of the Deputy Under Secretary of Defense
for Research and Engineering (Research and Advanced Technology)
Office for Research and Laboratory Management
Washington, D.C. 20301

Dr. Leo Young, Conference Sponsor

Mr. Hubert Sauter, Conference Chairman

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Co-Leader: Ms. Hanna Kinley, Air Force Manager
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Co-Leader: Mr. Earle Kirkbride, Head
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Naval Research Laboratory

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Co-Leader: Mr. Frank Lukasik, Chief Patent Counsel
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Co-Leader: Mr. Robert Chaillet, Program Manager
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Session C

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Co-Leader: Mr. Walter Blados, Air Force Scientific
and Technical Information Officer

Co-Leader: Mr. E. Jack Kolb, Principal Army
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Mr. John Carney, DTIC-J

CONFERENCE RECOMMENDATIONS

1. Replace the R&D Planning Summary (DD-1634) Data Base with a new on-line data base.

a. Retain the present DD-1634 data base on line for at least 2 years to make data available which is useful beyond the current year.

b. Ensure that the new data base is search-compatible with the Work Unit Information System and Technical Report data bases.

c. Ensure that the new data base is updated in January (from the Program Element Descriptive Summaries), in May (from the Program Objectives Memorandum (POM)), and in October (to reflect changes since the POM).

d. Include task detail for projects below the five-million-dollar-level in the input data.

2. Expand information sources for use by industry.

a. Add additional data bases to the Defense RDT&E On-Line System (DROLS), e.g., How to Get It, Data Base of Data Bases, etc.

b. Provide additional information about foreign technology, e.g., coverage, access, availability of translations, etc.

c. Develop cross-references and appropriate links between the data bases and documentation maintained at DTIC to provide information about activities that are related.

d. Simplify procedures regarding the release of threat data to contractors.

e. Establish a clearinghouse or court-of-last-resort to which an appeal can be made when special problems arise in obtaining classified information.

3. Improve access to information that is useful to planners, realizing that the information must be timely, complete, and contain projections for the future.

a. Review DoD policies and practices regarding the release of information to industry.

b. Expand the services and staff at the Tri-Service Industry Information Centers (TIIC).

c. Expand coverage at TIICs to include information from other DoD agencies, and procurement planning data and information.

d. Make a data base of engineering facilities developed by DoD funds in both government and contractor plants available to industry to assist in capital investment and test programs.

e. Have more convenient and timely access to documents cited in RFPs, e.g., standards, specifications, forms, etc.

f. Have DoD simplify the submission of DD-1498s by DoD components to the Defense Technical Information Center (DTIC), and include the requirements for submitting the DD-1498s in the Defense Acquisition Regulation (DAR).

g. Improve DROLS to make the system more user-friendly and more responsive to subscribers.

h. Investigate other methods of providing/handling data such as networking and/or gateway programs and systems.

i. Improve the procedures of releasing limited documents to industry and improve the procedures for handling DTIC's Form 55 (Request for Limited Document).

j. Evaluate the requirement to maintain the Independent Research and Development (IR&D) Data Base.

k. Expand DROLS basic and refresher training.

l. Standardize the Potential Contractor Program among the DoD components and improve access of potential contractors to necessary information.

4. Improve industry's knowledge of what information is available to them and its source.

a. Compile and publish periodically an announcement bulletin listing R&D planning documents, sources, and points of contact to provide an overview of the information available for both DoD and industry managers and planners.

b. Provide both within DoD and for the contractor community additional publicity for the various programs for potential contractors.

5. Conduct, or encourage under DoD overview, a program to educate the gatekeepers for the dissemination of R&D planning and technical information with regard to government and DoD policies, procedures, and guidelines for release.

6. Ensure consistency among the military services and DoD components when they interpret and implement DoD policy, directives, and instructions.

7. Establish better means of communicating with industry and industry groups.

a. Establish a special task force to review and analyze the detailed information which industry has provided through letters from individual companies and industry associations concerning the types of R&D planning and technical information required and recommended actions to be taken.

b. Provide a report to industry and DoD agencies as to actions taken or to be taken on the recommendations.

CONTENTS

DR. JACK WILLIAMS
Acting Director
Technology and Innovation Division
Department of Commerce

PRODUCTIVITY IN THE U.S./LIMITED RESEARCH PARTNERSHIPS FOR R&D

I'm not strictly in the technical information business, but I think the bottom line is the commercialization of innovations, the actual putting into the marketplace of new and improved products and processes. I'm going to organize my presentation into three parts. The last part, and the part that will comprise about 80 percent of the presentation, is the part that deals with research and development (R&D) limited partnerships. This is essentially a financial device where companies such as yours can raise billions of dollars without having to repay it if the R&D is unsuccessful, with no control by others, and it is also interest-free. I will go into some detail as to how this is done, and it works.

The first two parts I will talk about are productivity and the learning curve strategy. The learning curve strategy is merely a pricing mechanism and it is very interesting. I will also give you my own view of the world, and just how R&D impacts with international competitiveness, etc., bearing in mind that my perspective is from the Commerce Department. My job is to promote United States business.

Productivity: just what is it? It is a ratio, a measure of output over input. Traditionally, labor and sales have been used to measure output. This approach does not take into consideration the capital, materials, energy, cost of inventory, etc. Internationally we have one of the lowest rates of growth in the entire western world. In 1978, 1979, and 1980 the growth rate of our productivity was either negative or it was zero. In 1981 it was a little over one percent.

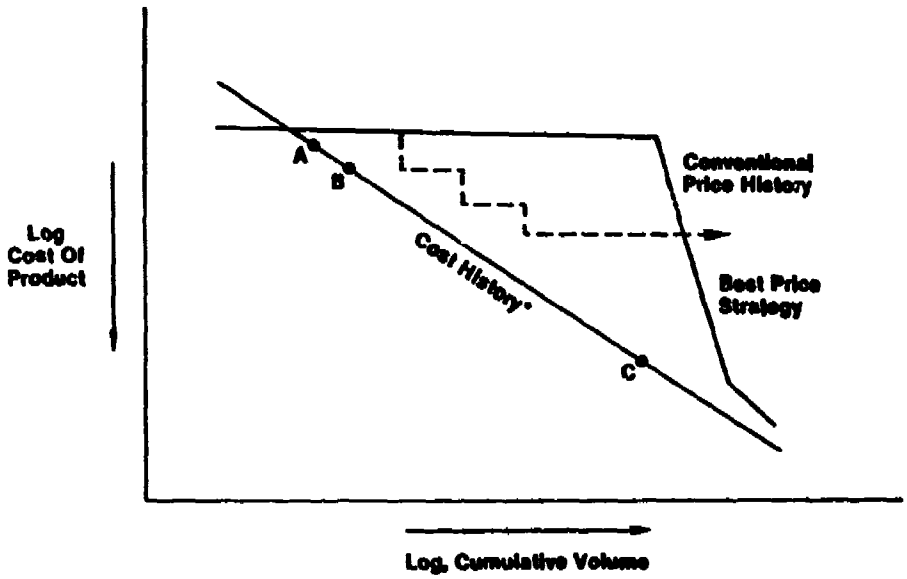
Trends in manufacturing productivity are a little bit better: a little less than one percent in 1980, 2.8 percent in 1981, and, if the third quarter figures for 1982 can be believed, it is up to 7.1 percent. This is a very good sign. A lot of the marginal firms have gone out of business, and other firms are cost cutting. Capacity utilization is very low (60-70 percent). When labor is added to that, there is a good increase in productivity.

A Productivity Advisory Committee was established by the President a year ago. It is headed by Bill Simon, former Secretary of Treasury. There are four subcommittees: capital formation, role of the government, science and technology, and human resources. Last month the President signed into law the White House Conference on productivity. We are not quite sure how this will be operated but it will be done within a year.

How is the United States doing with respect to export manufacturers? How is it doing with respect to Japan, West Germany, etc.? Again, our record is not too good. While we had a market share in total exports and manufactured goods of about 30 percent in 1962, we are now down to about 24 percent and the trend is not that encouraging. Germany, I believe, is the largest exporter of manufactured goods, and Japan sells more steel and autos than we do. We have to realize that other governments are very, very seriously considering R&D and targeting industries. What do we mean by targeting industries? They select a group of industries for further development, e.g., biotechnology, information processing, computers, machine tools, software. These countries buttress this decision by devices such as import barriers, R&D subsidies, relaxation of antimonopoly laws, and the fostering of cartels; for example, in Korea, standards, forced technology transfer among firms, etc. Is it working? Yes.

The countries are producing contrived comparative advantages, actually changing the international structure of comparative advantages. This is a change from the old classic economic theory in comparative advantages whereby what you have now is what you are going to be. That is, you are either going to be an agricultural producer or you are going to be an exporter of manufactured goods.

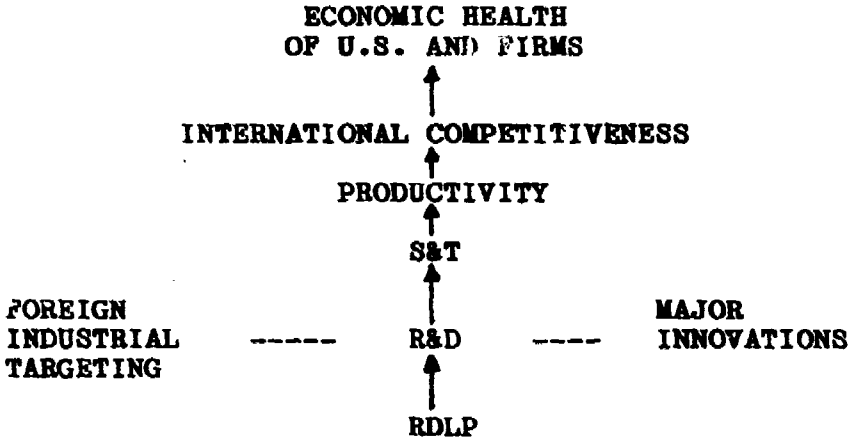
LEARNING CURVE STRATEGY



* Costs Decrease "About" 20% For Each Doubling Of The Volume

The learning curve strategy was developed by the Boston Consulting Group. Essentially, it describes the relationship between logged cost of the product and logged cumulative volume because the lines are straight. Costs tend to decrease about 20 percent every time volume is doubled. The solid line on the top, conventional price history, is typical of an American firm. As it moves out along the volume line, it tends to maintain the price. As cost is going down, the firm is looking very, very good. The difference between the price and the cost keeps expanding, and there is no real reason to change your strategy because you are looking awfully good to your board of directors. You are making profits. In fact, long-term market share is being sacrificed for short term profits.

Sometimes a foreign company can come in on you at points a, b, or c and undercut you. In the case of c, the entire price structure collapses. That is what has been happening especially with respect to Japanese penetration. Therefore, the best price strategy is to make incremental decreases in price as you move across the cumulative volume line, thereby forestalling the import of foreign competition.

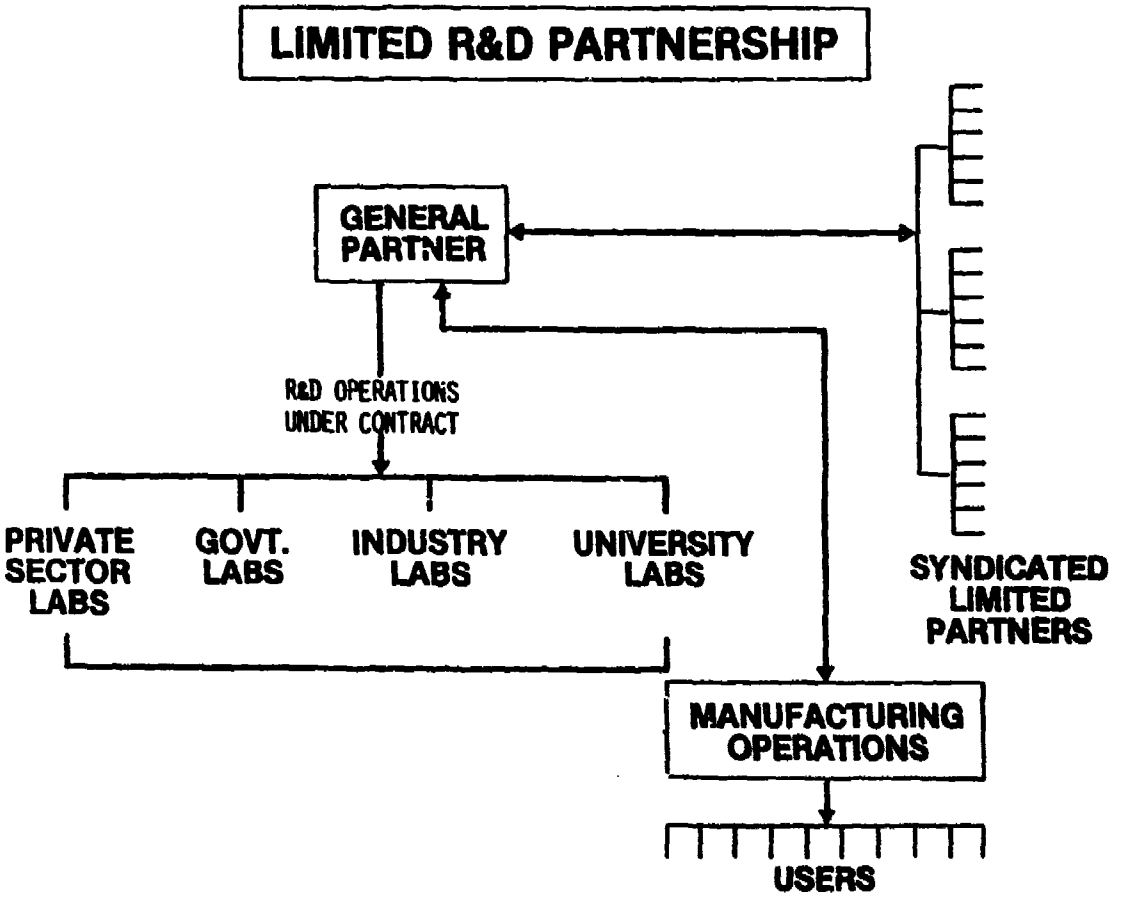


Representing the Commerce Department, my goal is the economic health of the United States and U.S. firms. If a firm is internationally competitive, then it has a good chance of surviving. The primary determinant of competitiveness is productivity. There is data to support this and to indicate that science and technology are the prime determinants of productivity. Kendrick, Jergensen, etc., indicate that the technology factor may be as much as 50 percent or even two-thirds of the productivity determinants. While there are many determinants of productivity and many reasons why we haven't done too well with labor-management problems, inflation, poor cash flow, government regulations, my analysis indicates that science and technology are the keys in productivity. Now, that is science and technology generally and includes basic research. The administration supports that.

What is the principal determinant of science and technology? I believe that R&D, directed, purposeful, project-related R&D, is the principal determinant of the science and technology component. A recent study that looked at concentration ratios of firms, the size of firms, the extent of unionization, and R&D showed that of all four indicators only R&D had a consistent positive correlation with productivity. Major innovations, like a transistor which is disseminated widely throughout the economy, may have a bonus on productivity of up to a sixth.

Japan, France, and most of the lesser developed countries are pursuing industrial targeting with fervor. England and Germany, yes, but not to the extent of Japan and France. Nevertheless, it is very important and it is going to work.

How do you get into R&D? There are many different ways. You can use your retained earnings; you can borrow; you can issue equity; cooperative R&D is one vehicle. What I want to talk about is the new R&D limited partnership (RDLP).



It has to be a partnership; it cannot be a corporation, association, or anything like that. There are certain tests that legal advisors will go through with you. Essentially, there are four questions that you ask to test for a partnership, things like limited liability, free transferrability of the securities, continuity of life, etc. It's very easy to be determined a partnership for tax purposes, but you must make sure you do it right. Again, what this is going to show you is a financing vehicle to raise tens of billions of dollars of interest free, minimum-risk capital, and you don't have to pay it back if the R&D is unsuccessful.

Typically, the partnership focuses on a clearly identifiable product such as a ceramic engine, a molecular chip, a new catalyst process, etc. It is attractive because it tends to attract more limited partners who are disinterested people usually in the 50 percent tax bracket.

Here's how it works. First, a general partner is created or self-created. He identifies the product that is going to be produced by market research, goes to the potential users of the product, and arranges advance contracts conditioned upon predetermined costs and requirement specifications. Then he goes to the various laboratories that are believed to be most competent. I have some trouble with government labs primarily because of the patent situation. Contracts with government laboratories must include provisions for getting the patents to any inventions that come out of the partnership. He now obtains a good strong manager in that general partner, then he goes out and issues a prospectus to attract limited partners.

Why would anybody give money to this operation? If you are in the 50 percent tax bracket and devote $100,000 to this partnership, the law states that you can deduct almost the entire amount of that $100,000 on your tax return, provided it goes to scientists and supplies as opposed to buildings and equipment. What you are going to do is come out with a net loss on your partnership and you apply that to your 1040 form. If you are in the 50 percent tax bracket, then you get a write-off of about 50 percent right away, but that's not enough. You have to hope that you will get royalties or some other return from a successful research and development product, and indeed that is what the prospectus tells you. The contract will define how much you can get, maybe four times the amount, for example; or, there could be a buy-out clause, or you can get stock. Clearly, the limited partners expect (a) a tax return and (b) a capital gain or some other royalties. Now, this model of a limited R&D partnership is a substitute for the following: (1) cooperative research and development, whereby the firms get together and pool their resources. Here the firms don't spend a cent. It is someone else's money, at risk money too on the part of the limited partners; (2) the traditional venture capital, whereby the venturer of the capital comes in and provides the money but also wants control, and exerts a good deal of control, and maintains an equity participation position; (3) one-on-one company/university relationships such as the Exxon/MIT relationship on combustion, the Monsanto/Washington relationship on peptides and proteins, and I think Stanford University has 19 companies cooperating with them in integrated circuitry; and (4) funding from retained earnings or borrowing or new equity issues.

What are the advantages? A producer can undertake much higher risks, longer-term efforts than any single company can operate alone, primarily because of cash flow problems, and it can manufacture with economies of scale. Also, parallel R&D paths can develop simultaneously, so that time for major breakthroughs can be telescoped.

Since this is not cooperative R&D, antitrust problems are minimized. The funding is within the tax provisions of the internal revenue code, and it's off-balance sheet funding. All you have to do is make sure that your company follows the Financial Accounting Standards Board regulations. This is very simple. In your prospectus you simply do not guarantee to repay the limited partners. You don't say whether the research is successful or unsuccessful. Thus, the limited partners still have risk in their investment.

Universities benefit from a long-term research contract. It is an opportunity to work with industry on a live industry need, and it provides the possibility of revenues from inventions. The investors get tax breaks, and can convert ordinary income into capital gains income. Essentially, the manufacturer of the product has to be at arm's length with the partnership. The users or the people who buy the product get proprietary rights to the latest technology, get a jump on competition, and they don't put up any money unless they want to. You can provide up-front option money which can be used to get the general partner off the ground. Often it is a very big company or a financial house like Merrill Lynch. If you produce a ceramic engine and it really gets off the ground, your limited partners are paid off via the contract, say four times the amount. The royalties keep coming in to the general partner. Hopefully, he will take those profits and reinvest them into R&D for international competitiveness.

Let's go through the list of sequences very carefully --

1. Individuals, associations, corporations, public organizations, or other entities first establish themselves as general partners to do market research, and develop a business plan.

2. The general partner then contracts in advance with companies or other organizations to buy or use the result of the technology, conditional only on the fact that the technology meets predefined specifications for cost and performance. The success depends upon the product of technical feasibility times commercial feasibility. Commercial feasibility is partially ensured by getting advanced purchase contracts from the users. There are a number of valid arguments why the user would not sign up in

advance to buy something in a multimillion dollar contract 4 or 5 years in advance, especially in an area where technology is changing, but it can be done. These contracts ensure the commercial feasibility of the venture and increase its attractiveness to potential limited partners.

3. The general partner then contracts for the prescribed R&D to be done in competent laboratories in private companies, or independent research laboratories (exclusive license a possibility in the case of universities). The general partner may acquire or license proprietary technology owned by companies (such as from potential users of the product or process to be developed) that may be necessary or desirable for the prescribed R&D work. These relationships are also "arm's length." The general partner also is free to seek guidance from interested companies or organizations and to hire expert skills for a period of time from those companies or organizations to coordinate, manage, and direct specific R&D programs. If and when these people return to their original organizations, they may accelerate the transfer of technology to those organizations. Another variation of the R&D limited partnership is where a single company (such as a manufacturer) elects to establish an R&D limited partnership to fund his own specific research agenda. Here, there may not need to be any outside research contracts. This company (which controls the general partner) may also license complementary technology from other sources.

4. The general partner arranges for the development of a prospectus.

5. The general partner then syndicates the raising of venture capital on a large scale from multiple sources. This process is attractive to investors because each limited partner can take the full tax deductions in the first year for funds committed. Moreover, if and when the R&D is successful, the limited partners can share in royalties and profits from the products or technologies which are commercialized (usually to a prearranged limit). These royalties can be taxable at capital gains rates (at a maximum of 20 percent for noncorporate rates). Remaining profits flow back to the general partner, hopefully for investment in new R&D.

6. The general partner initiates the commercialization of the newly developed technology. The general partner may have production capabilities, and may elect to perform the manufacturing operation himself, or may license on an exclusive or nonexclusive basis to others. Manufacturing operations by a single manufacturer may be appropriate where significant economies of scale are important to be competitive in world markets.

7. The general partner pays off the limited partners in accordance with the partnership agreement and disposes of the continuing stream of royalties as he wishes or according to prior arrangement.

In conclusion, you want to ensure that the partnership is able to treat income from the manufacturing operation, or however the partnership sells the technology, as capital gains. It has to be a direct assignment of the patent from the inventor in the laboratory to the partnership. Manufacturing is supposed to be done by a party unrelated to the partnership. Section 1235 of the IRS code deals with patents, royalties, and capital gains income. For a patent there is no 1-year waiting period. For trade secrets and other know-how you have to wait a year before the partnership can dispose of it, and there is no imputed interest from royalties for patents.

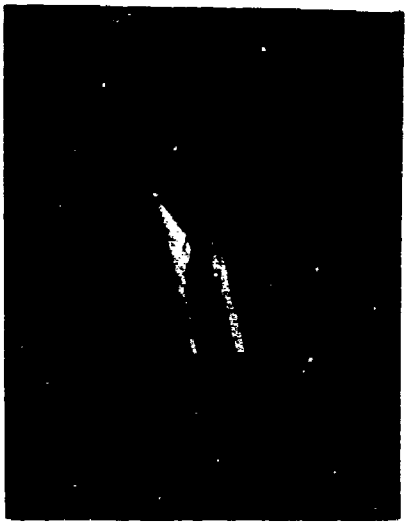
Are these things operating out in the private sector? Yes, they are. Nobody knows how many. Some are registered with the Securities and Exchange Commission (SEC); some have sought and received exemptions from the SEC, and that is also easy to do under a new rule. We have seen figures in literature that say there are 300-400 of these things operating; 80 percent, however, are below the million-dollar mark.

Advantages of single or multiple company model

- No dilution of equity
- Retention of control
- Ease of second round financing
- Less risk of loss
- Buyout of partnership
- No double taxation

Possible Disadvantages

- Start-up costs, (market research, legal)
- Royalties based on sales, not profits
- Funds can be used only for research or experimental purposes
- Must follow the Financial Accounting Standards Board regulations



DANIEL SULLIVAN
President
Frost & Sullivan Incorporated

INDUSTRY/DOD RELATIONSHIP

The purpose of my talk is to set the tone by presenting a few concepts and a general philosophy within which we might proceed - to agree, or disagree, of course.

About 20 years ago, Dean George Baker of the Harvard Business School gave a most interesting address to a group of alumni in New York presenting his observations on how Americans have decided which work will be done in the public sector and which work will be done in the private sector. I liked the talk very much because it seemed to sidetrack a lot of emotional ideas based on liberal versus conservative, or Republican versus Democrat, and presented this national decision-making as a sort of pendulum. He observed that we Americans tend to involve the public sector in that work that has a current need for regulation, and we tend to involve the private sector in that work that has a current need for innovation. He traced many different industries through our history to illustrate his point, including the defense industry.

He observed that throughout our various wars Americans chose to make weapons in the arsenals of the public sector and would have probably continued to do that in World War II if it had not been for the airplane. As we approached World War II, the role of the airplane became more and more critical, and the need for innovation superseded all thoughts of regulations, and the defense industry was born down in Southern California.

We never returned to the arsenals because the jets followed the pistons, and the missiles followed the jets, and the space program followed the missiles. Then, electronics and lasers and antisubmarine warfare and electronic warfare and nuclear warfare all coordinated with advanced computers followed one after the other in a rather frightening sequence.

Innovation is the raison d'etre for the defense industry. The labor to do the work has been divided. The public sector decides what will be done, and the private sector suggests how to do it and does it.

All defense companies are contractors. A contractor is a special kind of businessman, be he a building contractor, a defense contractor, or just the local electrician, plumber and carpenter. All contractors stand ready to do the work defined by the customers. The definition of that work in defense contracting is the Request for Proposal (RFP) or the Invitation for Bid (IFB). People responding to the IFBs have manufacturing capabilities. Contractors responding to RFPs have innovation and engineering capabilities. Those contractors are at the core.

The RFP is indeed a remarkable document. Taken for granted by all defense contrctors, its lack in other industries is, in my opinion, indeed unfortunate. I tried to publish a system of reports that would simulate RFPs, only in other industries. The idea was to look at labor-intensive pockets of work; to describe carefully the input, output, and environment that work took place in; and, to spell out the parameters of a new machine that would pay for itself by reducing the labor. The idea never took hold. But, I still believe that it's a good one and lacks just that final polish that stands between a great idea and a good product. Some day I'll make it work.

The point of all this is that the entire American defense industry-DoD relationship is centered on the RFP. I should indeed change the title of this keynote speech to "Information Industry Needs to Write Better Proposals: Better Proposals that Are Solicited and Better Proposals that Are Unsolicited."

The country's world political goals are, of course, the ultimate source. It's the government's job, once elected, to find those goals and the threats to them. It's DoD's job to convert those threats to the roles and missions of the Armed Forces and to decide what equipment will be needed to carry out those roles and missions--to decide the "requirements." Then, all of that pertinent philosophy, in more detail as the line of reasoning gets closer to the action, should be presented in the RFP.

There's an axiom that if you don't know about the RFP before you receive it, it's too late to bid it. So the information that should flow from DoD to the pertinent contractors must start on any given opportunity almost at the time of the idea, or even at the time of the threat, so that industry can present the idea in an unsolicited proposal. American defense must be conducted in a secure gold fish bowl. That's the challenge. If the security system works properly, there should be no wall between the government people setting the roles and missions and plans and requirements, and the industry people preparing to respond to the ultimate RFP.

Stated a different way: it must be the objective of the entire American process in the public and private sectors to keep the people in government with the problem definitions in contact with the people in industry that are the problem solvers.

There are contact people from every contractor whose job is to accomplish this. The problem solvers must spend most of their time solving problems, not looking for additional problems to solve. This task belongs to others and it's those others, the requirements analysts and the contact people, who must be treated importantly for the special role they're playing: getting the problem solvers into contact with the problem definers at the most opportune time, not too early but not too late. The effectiveness of the information flow should be measured against this criterion. If it doesn't help the process, it should be discarded.

There are many who feel that the best way to make the conversations between problem solvers and problem finders the most meaningful is to provide plenty of organized documentation. Requirements analysts tell me that there are simple impediments to this process. Unreadable copy from poor copying machines, or badly used copying machines, discourages anyone from using the documents. Civil servants and industry people who assume that the public and private sector are adversaries discourage the timely acquisition of the proper documents. Rapid personnel turnover in government information centers can cause inefficiencies and misunderstandings. A reluctance to cooperate on the design of such systems as program planning (1634) and its successors set into concrete mistakes that could have been avoided. Insensitivity to the details of what is needed can be extremely frustrating and waste weeks and months.

A lack of individual RFP bibliographies and even ad hoc libraries on the major proposals can be time-consuming, frustrating, and can result in wrong veiwpoints by the proposal writers. I'm told that Hanscom Air Force Base has an excellent system that could be used

as a model. A lack of timeliness on the release of planning documents such as the RDT&E Descriptors render them relatively useless.

Government people are the horse's mouth. We, in industry, must know your thoughts, desires, opinions, and plans if we're to participate fully in the process. We, in industry, have the competitive drive to win the contracts for our companies. You, in government, must focus your entire beings on service. Services that will improve the process. Information should be made to flow out of the government to the pertinent industrial people at the point where it eminates. Please don't create bottlenecks, but, rather, encourage its free flow.

I wish you the very best of luck in this conference. Some of my colleagues from industry have spent their lives in the details of what they will discuss with you in government, and I'm sure that you in government bring the same experience to this conference. We're all trying to do the country's work in the area of defense.

Thank God we do it as well as we do.

JO HANNA KINLEY
Air Force Manager
Tri-Service Industry
Information Center

TRI-SERVICE INDUSTRY INFORMATION CENTERS

Most of you here today have probably heard of our collective operation, alias the Tri-Service Industry Information Center. Some of you have dealt directly with one or more of our component offices (Navy Acquisition Research and Development Information Center (NARDIC), Technical Industrial Liaison Office (TILO), Air Force Information for Industry Office (AFIFIO)) over the past dozen or so years. There are some of you that may not be familiar with us at all. I'll try to bring all of you up to date on what and where we are today.

We are the official focal points for the release of research and development (R&D) plans and requirements information for the Army, Navy, Air Force and Marine Corps. The idea for these offices goes back a number of years. They operated separately and in various guises for a couple of decades, TILO and NARDIC being the first to establish officially. The Air Force followed suit around 1974 or 1975 and pulled together documents from the old "ROC/RAD reading room" and other scattered contractor reading rooms to form the Air Force Information for Industry Office at Andrews Air Force Base. Then, in 1977, the first official Tri-Service Center began operation at HQ DARCOM, Alexandria, VA. We hoped to serve industry better with a one-stop facility where the future needs of all the services could be addressed. Present-day operations appear to bear out that hope even in the face of skepticism. Our visitor logs indicate a steady increase over the years, and we have helped to introduce a number of high technology firms to the world of DoD R&D contracting.

Today, you'll find our offices in three locations: Alexandria, VA; Dayton, OH; and Pasadena, CA. The Alexandria center is the only current Tri-Service facility, with the other two locations hosting Air Force and Navy offices. A 6-month feasibility study will soon begin relative to reopening the TILO and Pasadena. Points of contact for that are Dolores Mahon (TILO, Alexandria) and Pat Eubanks (NARDIC, Pasadena).

Each of the offices operates under similar and fairly strict rules. The information in these offices is available only to U.S. organizations with an established need-to-know. That includes private industry as well as universities. Need-to-know is determined by current R&D contracts or participation in one of the services' Potential Contractor Programs (PCP). [I'll elaborate on the PCP a little later.] We use the Defense Technical Information Center's (DTIC) Dissemination Authority List as a quick reference of current contractors. Particulars of the contract are detailed in this printout including the government sponsor, the classification of the work, the expiration date, and the scientific and technical areas covered by the contract. All of this information is essential for us to relate the information we maintain to the established technical capability of the contractor. For example, a developer of tanks would probably not be given access to information about future aircraft needs. After establishing need-to-know, a prospective visitor needs to submit a personal security clearance and then make an appointment. We discourage drop-in visitors by requiring appointments. Each of our offices has a staff of one, and this requirement allows us to give the best service to anticipated clients.

The information available varies with the respective service, but there are a number of common elements to our data bases. These include the Program Element (or Congressional) Descriptive Summaries containing detailed information about items in the President's budget submitted to congress each January; Mission Element Needs Statements now known as Justifications for Major Systems New Starts; Manufacturing Technology Work Unit Summaries (DD Forms 1498) available either on line or in hard copy; and service requirements documents (statement of needs (SONs), required operational capabilities (ROCs), and operational requirements (ORs)). We have also made progress in obtaining the authority to release a number of master plans and long-range development plans. The balance of information in the offices is unique to the respective services. There are sanitization requirements imposed on many of the documents. They generally include funding (out-year) information, some of initial operational capability (IOC) dates, and anything that may be deemed prejudicial to the interests of the agency. The primary budget information available here is that which is found in the descriptive summaries.

I mentioned on-line services. Each location has some degree of on-line capability, including DTIC terminals at Pasadena and Wright-Patterson and access to the Air Force Management and Science Information System (MASIS) data base available at Alexandria and Wright-Patterson. Each office is also able to provide program contact points, often in lieu of any hard information on a particular program.

On occasion, we have been asked to release information on a short-term, special-project basis. These offices are custom-made for the purpose with our already-established machinery for screening prospective visitors. We can also make regular visitors aware of special material, thus providing an even wider dissemination of the information.

For example, the Air Force is currently making available to U.S. Industry a draft Memorandum of Understanding (MOU) concerning proposed international teaming on the Long Range Standoff Missile for the Air Force International Cooperative Development Office (HQ USAF/RDI). NARDIC held microfiche on the Advanced Lightweight Torpedo for a time some years ago, and the Army set up a special reading room for contractors to review BETA program material.

Lastly, each office is either the information focal point for or, as in the case of the Air Force office, the manager of the Potential Contractor Program. Each service has established its own brand of Potential Contractor Program as required by DoD Directive 5100.36 (now 3200.12). The Navy program is called the Navy Industrial Cooperative Research and Development Program -- NICRAD for short; the Army has the Qualitative Requirements Information program or QRI. Each of these programs requires a potential contractor to affiliate or register with a subordinate command or facility that deals with the company's technological expertise. NAVALEX, for example, would be the Navy focal point for electronics-oriented organizations. The Navy then requires the Potential Contractor to do a no-cost study on an agreed-upon subject, to sign a policy agreement defining the terms of the registration, and to use the DD Form 1498 as a reporting vehicle for the study. The Company is then registered (via a DD Form 1540) with DTIC in areas relating to the study.

The Army registers Potential Contractors with a subordinate command. That command then identifies problems or questions relative to on-going work at the command. Periodically, these problems are made known to the registered Potential Contractors, either by mail or during briefings conducted by the command, and solutions can be submitted by the Potential Contractor. The Army has awarded sole source contracts based on the solutions. Army QRI registrants are also registered with DTIC based on company expertise. A revision of the Army program is currently under consideration.

The Air Force Potential Contractor Program (AFPCP) is strictly a sponsorship for access to planning and technical information through the Tri-Service Center's component offices and through DTIC. PCP registrations are negotiated with the AFIFIO managers. Potential contractors are required to submit a policy agreement, a DD Form 1540, and a justification statement that substantiates company expertise in the Committee on Scientific and Technical Information (COSATI) areas requested. Typically, the justification will be brief but will include a description of company facilities, key personnel, and examples or descriptions of work done in the areas requested. For example, a previous contract to provide airborne radar sets for the Air Force would demonstrate that the company has a reasonable probability to acquire a contract in that area in the future. Past DoD work is not the only criteria. AMP, Inc., is a good example of a company which held a lion's share of the commercial market in connectors but which hoped to expand into military markets. They were registered in the PCP based on their commercial expertise and have subsequently investigated subcontracting possibilities in the DoD arena, notably on the MX program.

Although the Air Force requires no formal study or response to specific problems, it does help to direct a company's independent research toward Air Force goals. PCP registrants have potential access to Air Force Technical Objectives Documents (TODs) through DTIC. These are the Air Force Laboratories' versions of QRI problems (the TOD program was a precursor to the PCP). PCP registrations have also been used as the basis to allow aerospace companies access to information needed to pursue no-cost studies. One case that comes to mind is that of Lockheed Georgia's airlift study for the Rapid Deployment Joint Task Force (RDJTF). The RDJTF allowed Lockheed to access their data base to compile information pursuant to the study. Access was granted based on their PCP-registered areas.

It is hoped that the PCP is not viewed as merely a librarian's ticket to DTIC. That is not the intent. We try to stress that the PCP be used as a tool for marketing groups, strategic planning, and independent research and development. If we can let companies know about the major thrusts of the services, perhaps we can encourage private investment of time, technology, and ultimately dollars in those major thrust areas.

The Potential Contractor Programs were designed to help companies not currently under DoD contracts -- help them work around the "Catch 22" of establishing a need-to-know to acquire planning information necessary to successfully compete for contracts. It is also useful to current contractors that wish to pursue new technology areas not covered by their current contracts, their current established need-to-know.

There is concern about the possible transfer or compromise of technology through the PCP. Oddly enough, that danger is more real for companies registered on an unclassified basis, because no subsequent facility or personnel investigation by the Defense Investigative Service (DIS) is required to be registered for unclassified access. One suggestion has been to require all Potential Contractors to maintain, as a minimum, a confidential facility clearance. It's certainly a point which deserves further consideration.

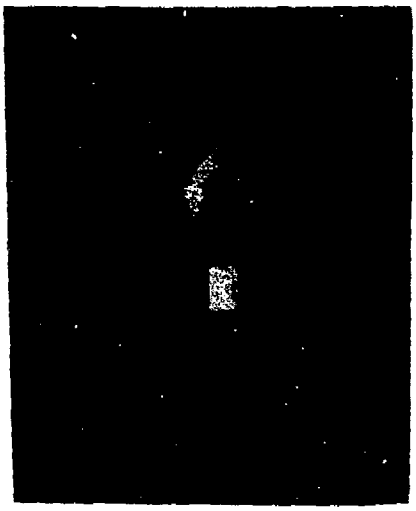
It is important to keep in mind that the PCPs like the Tri-Service Center offices are open only to U.S. organizations. I have had occasion in the past to cancel a company's registration once we were notified of foreign takeovers or buy-ins. Two specific cases were Cincinnati Electronics, now owned by Marconi, Canada, and E. I. DuPont, now partially owned by Seagrams.

Hopefully, my comments have helped to answer the "why" of offices like these. That is, providing for the controlled release of future DoD needs and requirements and thereby matching industry expertise to DoD needs. DoD offices receive informed industry responses to problems. Service program managers, engineers, etc., are relieved of administrative chores associated with the release of controlled information. Industry representatives are able to investigate numerous programs at our one-stop facility. And we provide valuable advice and counselling for small businesses and organizations new to the DoD marketplace. Finally, we are geared to handle special program data on short notice. Ultimately, the savings realized by both sides of the house are in time, money, and effort and the reward from a better DoD/Industry interface is the discovery of the best technology available to solve the nation's defense-related problems.

I might also mention our relationship to other information centers/services and programs, especially the Defense Technical Information Center (DTIC) and the National Technical Information Service (NTIS). Ours are complementary roles rather than competitive or redundant, the differences being in degree, magnitude, and special focus. It is our practice to make our visitors aware of other sources and to counsel them on access and use. Many items available for review in our offices can be ordered from DTIC or NTIS, and we encourage visitors to do so, especially large documents. (Our reproduction facilities are limited.)

The main problems we face are exposure and credibility. We constantly strive to let people know that we exist. Our efforts aimed at industry include participation in briefings, conferences, and exhibitions. We recently took our display and literature to the Interservice/Industry Training Equipment Conference in

Orlando, FL (in November) and to the Association of Old Crows (AOC) Electronic Warfare Symposium in San Francisco (in October). We estimated that we addressed a combined audience of between 6,000 and 8,000 in just those two conferences. We are also publicity hounds of a sort and have sought to have our center mentioned in trade publications including the Commerce Business Daily, Signal Magazine, and the Journal of Electronic Defense. We also use the direct-mail method. Our public relations efforts must be aimed in-house as well. Because of the nature of military assignments, there are frequent turnovers in management, and we must maintain continuing liaison with offices that produce planning information to assure that we receive all releaseable data in a timely fashion. We have been quite successful in that effort. I believe our clients of long standing can attest to the expansion of our information resources and the improvement in our service. We are a long cry from the "ROC/RAD reading room" of previous years.



FRED B. LEWIS
Manager, Advanced Projects Planning
Radar Systems Group
Hughes Aircraft Company

PRODUCTIVITY IMPROVEMENTS FROM A CLASSIFIED DTIC TERMINAL IN INDUSTRY

Good morning ladies and gentlemen. I appreciate the chance to talk with you about our productivity improvements using DTIC. We have learned a lot about using DTIC's Defense RDT&E On-Line System (DROLS) and have done some cost studies of how we searched for technical and planning information before we had DTIC and afterwards.

A number of years ago when the Army TILO office was in the Pentagon, I taped data for a week from planning data hard copy sheets. It took two secretaries a full month to transcribe the taped data after I got back to the plant. I figured there must be a more cost-effective approach.

When I learned of both Grumman's and Martin Orlando's success with the on-line DTIC, I became interested in the system.

When I learned that our library would not get a classified DTIC on-line terminal, I decided to get one for my planning work. It was a difficult job over a 2-year period to get the system up and running. Someday I may write a book about those experiences. But, we finally came on line 2 1/2 years ago in April 1980.

As manager of advanced projects planning, I work with management on all new business areas. We have a continuing need to get information about technology, programs, and projects. Of particular interest are the Work Unit file and Program Planning file.

Because of my continuous interface with marketing, engineering and program management, I can get people to come visit our DTIC terminal, when they might not get to the library.

Both the work unit summary (1498 forms) and the program planning summaries (1634 forms) are better understood by planning people than by librarians. Our use of these data bases is much more intensive.

HOW HUGHES RADAR SYSTEMS GROUP (RSG) USES DTIC

- **Marketeers**
- **Marketing Research and Planning**
- **Marketing Field Offices**
- **Engineering**
- **Contracts**
- **Program Offices**
- **Top Management**
- **Manufacturing**
- **Mail Room**

- **800 "Customers" (Do 5-25 Searches/Person)**

Over 400 people have visited our terminal for a "show and tell" demonstration of DTIC on line. Our log shows 800 visits from these 400 people over a 2-year period. We are developing a hard core user group who use the terminal regularly.

Getting this DTIC terminal and developing search strategies to really use it has been very rewarding. It is by far the most cost/effective move I've made and greatly increases our productivity.

I use the terminal for planning purposes. When I started working with DTIC on line I didn't realize that our engineers were spending so much time manually searching for data. Over 90 percent of the data needed by the engineers was found in DTIC.

The following section shows how our technical staff is using the DTIC on-line system.

We asked several of our engineers to estimate time saved using DTIC versus manual searching. We also asked if there were time savings ordering documents or any other benefits of DTIC. The way they use the DTIC on-line system is listed as the heading and their statements follow.

IR&D, COMPETITOR ANALYSIS

- **Time Savings - Personal Searching**
  "Literature searching time cut to a minimum, freeing me to pursue more demanding task"

- **Time Savings - Document Ordering**
  "Cut from several weeks to a week or less"

- **Other Benefits**
  "Primary benefit is the wealth of data unearthed...that asked for plus additional related data"

These people know, for they have been searching manually for data over many years.

The following response is from an engineering manager who uses DTIC for a lot of his work. Note the $40 per hour cost figure used in the calculations. When you use the direct labor, fully burdened, plus cost of money figure it would be higher than $40/hour. But to be conservative, $40/hour was used. The opportunity cost was a cost Walt Carlson mentioned at Dr. Gamota's meeting in March 1981. When a person is searching and not finding information, he could be spending that time productively--hence the opportunity cost of those nonproductive hours searching manually.

PRE RFP, CONTRACT REQUIREMENTS, STATE-OF-THE-ART AWARENESS

- **Time Savings - Personal Searching**
  "2 man weeks over a 3 month period"
  40 hrsx2x$40/hr = $3,200 +
  opportunity cost of $3,200

  Total $6,400/3 months

We see again the time saving of DTIC as a significant improvement, not 2- or 3-to-1 productivity improvement, much higher.

CONTRACT REQUIREMENTS, UNSOLICITED PROPOSALS

- **Time Savings - Personal Searching**
  "This system is a real beauty when it comes to doing searches - at least a 10-1 improvement"

- **Time Savings - Document Ordering**
  "Tremendous service! I can spend my time engineering and managing and not chasing documents"

- **Other Benefits**
  "This allows me to take advantage of work done already by others: to get up to speed fast"

Notice here the engineer would never have found material existing in DTIC's data banks by manually searching. This happens often and is more important to recognize than the cost savings themselves.

PRE-RFP, IR&D, STATE-OF-THE-ART AWARENESS

- **Time Savings - Personal Searching**
  "I could not ever find some of the data using manual methods"

- **Time Savings - Document Ordering**
  "Many hours...able to review abstracts on the screen quickly and make good decisions on ordering documents"

- **Comments**
  "DTIC is worth 10 times its cost!"

Our chief engineer is sold on the system; every week he uses our terminal.

PRE-RFP, RFP, CONTRACT REQUIREMENTS, IR&D, COMPETITOR ANALYSIS, STATE-OF-THE-ART AWARENESS

- **Time Savings - Personal Searching**
  "Inestimable...many things found through DTIC would not have been found at all"

- **Time Savings - Document Ordering**
  "2 to 5 months"

One of our best users describes the boring chore of manual searching. Now he has changed his searching habits and always includes the DTIC terminal.

PRE RFP, RFP, CONTRACT REQUIREMENTS

- **Time Savings - Personal Searching**
  "I have personally spent many hours searching through stacks of volumes such as the technical abstract bulletin. It's a tedious, boring chore which wasn't done thoroughly because it was a bad task. Now we get things done rapidly, with cross-references checked almost instantly, by a professional who knows how to search for things better than I ever will"

  "If we get an RFP without prior awareness we can get very quickly up to technical speed which is critical to winning"

  "I wouldn't want to think of how I'd be able to do my job without it"

A fairly new user has found significant savings: $640/week savings adds up to a tidy sum over a year's time.

PRE-RFP, RFP, CONTRACT REQUIREMENTS, COMPETITOR ANALYSIS, STATE-OF-THE-ART AWARENESS

- **Time Savings - Personal Searching**
  "Very substantial, at least 5-8 hours per week"

- **Time Savings - Document Ordering**
  "Again very substantial, at least several hours a week saved"

Productivity Increase	Cost Savings		
13-1	8 hrs/week x $40/hr	=	$320 week
	Opportunity Cost	=	$320 week
	TOTAL	=	$640 week

This was not expected, but the mail room spent 1 hour trying to find a person to receive some mail addressed only to Hughes. Someone suggested calling our terminal operator. Within a minute she found the name of a Hughes person to send the report to. The productivity savings was 1 minute versus 1 hour.

Many times the items found in the DTIC data banks, but not asked for, turn out to be more interesting than the original request. The beauty of the system is that it can search all around the request. Thus, a whole loaf of information is given when a person requests just a slice.

Over the last 2 years I have learned that waiting for data hurts productivity. People do other things while they wait many times after getting data they decide to do something a different way. If they had the "right" information earlier, they would have saved considerable effort.

Many decisions are made every day in defense work by the military and by industry, but getting information to them is not managed well. To be used, information must be timely. One day can be the difference of having the information used or not used. Decision making doesn't wait for information.

The cost of not knowing can be very high. The bottom line is effectiveness of information in addition to efficiency. It is usually harder to learn the effectiveness of information than the efficiency.

NEED TO FIGURE OUT A WAY TO GET:

Information into a person's brain
- **Not just on paper**
- **Not just in a verbal conference**
- **Not too much at one time**

People are overrun with data!!!
- **A computer can help weed it out**
- **Information in a file cabinet doesn't mean anything**

Not enough thought and attention are given to this universal problem. People are so busy they don't have enough time to get smart.

Each organization needs to analyze it's own set of circumstances. There may be a little knowledge that doesn't get into a lot of people's heads. If you total this up, there could be a fairly high "cost of not knowing."

WHAT IS THE "COST OF NOT KNOWING?"

- **People take the wrong action**
- **People take no action**
- **People work hard, but not smart**
  - **Leads to inefficient efforts**
  - **Can result in losing instead of winning**

Many companies underestimate the difficulty of getting good, factual, information into people's heads. Time pressures prevent this from happening. Good information is around, but a lot of it doesn't get into people's heads in time for decisions. Many decisions are made without the benefit of good, available facts.

DTIC = GOOD TOOL TO GET INFORMATION INTO PEOPLE'S HEADS

- **People will take time for a few minutes at the terminal**
- **People don't want to read a lot of data...DTIC gives them digestible bites**
- **People scan the screen...print small portion**
- **Often find valuable "not-asked-for data"**
- **People know their problems, but not how to get problem solving information**

The next section covers some specific examples of how DoD unknowingly has hurt productivity in the front-end RDT&E world. How? By taking steps or not taking steps. Both actions led to lengthening the front-end acquisition process by making it more difficult, costly, and time-consuming for industry to do their planning. Most of this can be corrected very easily.

DD Form 1498 is only a one page summary. When you analyze it, there is nothing that is of a proprietary nature or customer sensitive in 99 percent of the work units. Yet, industry hasn't been allowed to see a complete 1498 since 1972. That is changing now, but it should have changed years ago.

HOW HAS DOD HURT INDUSTRY PLANNING?

- **Closed the Army part of Western Tri-Service Planning Office**
- **Abolished 4 digit code on DD 350 form cross referencing contract to a program element number**
- **Gives P.E.D.s to congress in January and to industry in May and June**
- **Cancelled 1634s without having a replacement on line**
- **DTIC 1498 file has one half of RDT&E contracts**
- **DTIC Technical Reports file has only 60 percent of reports**
- **DTIC 1634 has: 96 percent of Army RDT&E P.E.s, 48 percent of Navy RDT&E P.E.s, 42 percent of Air Force RDT&E P.E.s (60 percent of these were old)**

The routine, after-the-fact contract awards have a well disciplined input process going - every day inputs are made. The same discipline should be applied to the 1634 replacement, 1498s, TRs, and P.E.D.s!

WHY DOES THIS HAVE A DISCIPLINED INPUT PROCESS?

DD Form 350 Individual Procurement Action Report

Army, Navy, AF } **Every month submits tape to OSD**

Army, Navy, AF } **Collects them every day**

AND NOT THESE?

- **DTIC 1634s Program Planning Summaries**
- **DTIC 1498s Work Units**
- **DTIC Technical Reports**
- **P.E.D.S**

WHEN THESE ARE THE BIG POTENTIAL PRODUCTIVITY FORCE MULTIPLIERS?

This is a management problem. The services have plenty of people. They can input fast and completely if top service officers tell their people to do it.

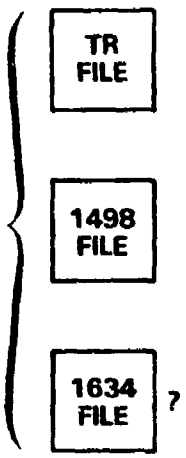
It's been my experience that admirals and generals are very smart people. When the great productivity improvement potential of DROLS is recognized, I believe they will have their people focus on the input problem and the transition from manual to computer searching.

THE PROBLEM

INPUTS ARE LACKING

QUANTITY AND QUALITY

NEEDS DISCIPLINE FROM BEGINNING TO THE END OF THE ENTIRE INPUT PROCESS!!



DROLS USERS

CONTRACTORS	210
ARMY	100
DTIC	60
NAVY	48
AIR FORCE	43
GOVT	20
I.A.C.	13
DOD	10
CANADA	1
TOTAL	505

Unfortunately, many people still regard industry somewhat as an adversary who doesn't need planning data. That concept is outdated and needs to be changed. Of all data, industry needs good planning data. Maybe there should be a new category of data called "FOR DOD AND DOD CONTRACTORS ONLY." It is frustrating when you know data is there and not available when you have a proper need to know recognized by the customer.

A few more key DoD people should realize these truths:

HOW CAN DOD IMPROVE ITS PRODUCTIVITY?

REALIZE THAT:

Industry ≠ The Press

Industry ≠ Congress

Industry does 3/4 of RDT&E Work

Industry is not an Adversary

Industry needs good planning data at the front end of the acquisition process... not after a contract is let

When your customer operates via a programing, planning, budget system, industry must also understand it. At all stages of RDT&E decisions, industry wants to know which task or project or program element covers the work in question, and is it budgeted, planned, or programed.

Industry needs project and task data.

Why not release the one-page project summary pages in the Program Objective Memorandum (POM) (RD-5 type report) and in the budget estimate submittal (BES) to industry?

Industry needs to get the PEDs in January as soon as they go to congress.

Industry needs to follow the yearly budget cycle and know the May POM and September BES as well as the January budget request.

DOD USED TO HAVE A WAY OF TYING CONTRACT AWARDS TO A PROGRAM ELEMENT

4 Years Ago
DoD had a four-digit code on the DD-350 form identifying the program element

Today
Changed the system when the new federal procurement regulatory system was established...can only get a code for 6.1, 6.2, 6.3, not the full P.E.

I feel this was a step backward from meaningful specific data to too general data. The four-digit coding system could easily be restored and would provide a cross-reference from the contract awards to the program elements.

This may appear to be an insignificant matter. Nevertheless, the four-digit code will provide a means of zeroing in on contract awards for program elements. This will enable planners to understand DoD planning better.

Let's switch gears and see what the President of the United States is doing about productivity.

WHITE HOUSE CONFERENCE ON PRODUCTIVITY ACT

- **Part of S 2375 Defense Production Act Amendments of 1982**
- **Within 1 year...President shall conduct a White House Conference on Productivity**

  Purpose: Develop recommendations to stimulate the nation's productivity improvement rate

PRODUCTIVITY CONFERENCE OPTIONS

1. **Reorganize Federal Government To Promote Productivity Improvement in the Private and Public Sectors Best**

5. **Encourage Government Agencies To Share With Industry New Discoveries and Processes that Improve Productivity**

6. **"Establish annual presidential awards of recognition for those businesses and industries which accomplish outstanding improvement in productivity and establish similar awards at the state and district levels"**

I've shown only three of many provisions of the bill. Note that presidential awards will be given for outstanding improvements in productivity. DoD could easily win one by carrying out the recommendations about DROLS that will follow shortly.

During the last 2 years industry has begun to make moves to manage the way information gets into people's heads. With the computer revolution well under way, particular attention is being given to computer retrieval of technical and planning information.

These conclusions have all been drawn after experiencing almost 3 years of intensive use of DROLS, especially the work unit and program planning data bases.

I don't think the Radar Systems Group is much different from other companies or people in the Services. Every organization can greatly improve its productivity when searching for information, including the Services.

CONCLUSIONS -- DROLS

- **Most of the searching of technical and planning data is done "manually" by DoD and contractors**
- **Manual searching is costing a "fortune"**
- **Manual searching takes precious time away from creative engineering**
- **Decisions are being made without getting good, existing information into the heads of decision makers**

Our knowledge of productivity is very recent. It took a combination of a planner and industrial engineer to learn about the cost savings. Two years ago Hughes (RSG) did not know about the tremendous productivity improvements possible by combining a DROLS terminal in a planning shop with a system to manage how RDT&E data gets into people's heads.

INGREDIENTS FOR SUCCESS

- **1 Genius Operator plus 2 Searchers**
- **1 Classified DROLS System**
- **1 Custom Designed Room for Productivity**
- **A system to get 400 people to visit terminal for a "Show and Tell"**
- **An open door policy to encourage use**
- **Focus on Fast Responses**
- **Focus on Better Search Strategies**
- **Focus on System Improvements**

I may have overstated the need for a genius operator. Any smart and talented person can learn to work DROLS successfully. What we did at Radar Systems Group could never have been achieved with an unclassified dial-up terminal.

RSG is constantly trying to think up ways to improve DROLS.

PRODUCTIVITY INNOVATION TO DTIC BY RSG

- **AD Number Ranges on the Screen**
- **Processing Date in Work Unit**
- **Processing Date in Program Planning**
- **Descriptors and Identifier in Work Unit**

The above innovations may not seem like major improvements, but they are. We cut down our searching time from 28 minutes to 3 minutes on a search we do 20 times a month.

DROLS CAN BE A GOLD MINE FOR PRODUCTIVITY IMPROVEMENT:

IF

- DoD Service Leaders Recognize Its Potential
- The Input Process is Recognized as the Key
- The Input Process is Managed in "Realtime"

That is a big IF, but not insurmountable. The push to do this mus come fror the admirals and generals. They must be educated on the productivity improvements possible. Managing the input process is the key.

SAVINGS POTENTIAL OF DTIC AT HUGHES

	NO. (MAY '82)	
ENGINEERS	13,422	
ENGR OTHER	4,824	
TECHNICAL	13,641	
TOTAL	31,887	
50% SEARCH 2 HRS/WEEK		15,000
+ 2,000 OTHERS		2,000
TOTAL		17,000
SEARCHING COST		
2 HRS/WK X 17,000 X $40/ HR X 50 WKS/YR =		$ 68,000,000/YR
OPPORTUNITY COST =		68,000,000/YR
SAVE 90% = $122M/YR		$136,000,000/YR

An average of 2 hours per week for manual searching is a conservative estimate. In almost all of our time studies more savings were noted. The $40-per-hour cost is conservative when you consider direct labor, burden, G&A, and cost of money (borrowing).

THE POTENTIAL BENEFITS

U.S. SCIENTISTS & ENGINEERS WORKING ON DoD RELATED WORK	=	360,000
ASSUME: ½ WORK ON RDT&E		180,000
OTHERS (DoD WORK)		50,000
TOTAL PEOPLE (SEARCH AVE. OF 2 HRS./WEEK)		230,000
230,000 PEOPLE X 2 HRS./WEEK	=	460,000 MAN HRS./WEEK
@ $40/HR. = 460,000 ($40)	=	$18,400,000 WEEK SEARCHING
$18,400,000/WEEK X 50 WEEKS/YEAR	=	$920,000,000/YEAR
OPPORTUNITY COST	=	$920,000,000/YEAR
TOTAL COST	=	$1,840,000,000/YEAR
SAVE 90%		**$1,656,000,000/YEAR**

No one can prove an exact figure of cost savings. Few people have done cost savings studies. From our studies, the average searching time of 2 hours per week is a good, conservative number. By switching to DROLS searching from manual searching, we have consistently found 90 percent or more of the data requested. In fact, more often than not we find more than the searcher requested. The "opportunity cost" is there although people can argue about it. Whatever total cost savings are, they are significant.

DROLS has been largely overlooked as a cost savings mechanism. It's real cost saving potential hasn't been known until very recently. DoD has been more concerned with efficiency and has been cutting many federal budgets including that of DTIC. It's time to change this trend. DROLS should be modernized on a crash basis to get the fastest response time possible for it's 600 users.

RECOMMENDATIONS:

- Add money to DTIC's budget to get and keep faster response time
  - Waiting time much too long
  - System was designed for 150 users
  - 575 users have overloaded the system
- Get DoD more involved in the entire input process for DROLS
  - Work Unit (1498) File
    - 1498 for all RDT&E program elements, not just 6.1, 6.2, and 6.3A P.E.s
    - Mandatory inputs in near real time
    - Changes, completed, terminated 1498s on line within 30 days
  - Program Planning File (Replacement for 1634)
    - P.E., project, tasks for big projects, for all RDT&E P.E.s
    - Changes, completed, terminated summaries on line within 30 days
    - Mandatory inputs in near realtime
  - TR File
    - Abstract for all technical work including government labs
- Expand DTIC's Role as Input Enhancer
  - Get A, N, AF to input via a terminal rather than mag tape or hard copy
  - Check all inputs with a separate group
  - Go after late inputs
  - Correct errors
  - Train people in services to input properly

Rather than hard copy or magnetic tape, the input process should be developed to a point where inputs are made via a terminal. Air Force studies and analysis might serve as a model of how to input in the future.

- **Submits 700 work units/year to DTIC via a computer terminal**

    - **Inputs on Wednesday**
    - **Data is checked by Friday**
    - **On line in DROLS by Monday**

Because we now are beginning to understand the tremendous potential for productivity improvement with DROLS, a concerted effort needs to be made to make it happen!

We made it happen at RSG...three dedicated people is all it took.

If you focus on obtaining a realtime input process for all RDT&E program elements, I think a lot of people within the military will be surprised at how many people will use the system.

Where else can DoD achieve so much potential productivity improvement with so little an investment?

MARGO GIORDANO
Manager of Army Ordnance
Programs Analysis
Honeywell Incorporated

HOW INDUSTRY USES PLANNING INFORMATION

Planning is an integral part of any defense contractor's business. It is vital to anticipate the future. This is the message of the often-used quote "the light at the end of the tunnel is probably a freight train." How important planning is!

My comments today will address the following three areas:

- The complex nature of defense business requires hard choices by industry.
- Industry uses planning in the decision process.
- To have effective planning, industry must have access to complete, timely, and accurate information.

Planning is an essential tool to project what business opportunities exist and to determine pursuit strategies. Keep in mind that most prime contractors are no longer stand-alone organizations devoted primarily to defense business.

Companies have diversified; therefore, several groups are competing internally for the limited capital that is available. Planning is essential to determine where the return on investment is best. Industry will pursue business only if they can validate the market. Often commercial investments are more attractive because defense contracts involve a higher risk with a lower return. For example, only 7-10 percent of last year's electronics market was for military electronics. In part this is because military buys are characterized by low volume, specialized

designs, extensive testing, high costs, and excessive paperwork. The military aircraft market also exhibits some unique problems. Frequent changes in production rates and schedules, longer lead times and uncertain priorities cause increased costs and program instabilities. At times, a prime and its subsystem suppliers must commit to material and component orders as much as 12-15 months before a contract is awarded. This constitutes a significant financial risk and presents capital formation problems.

The concerns of primes and large subcontractors are often intensified in smaller subcontractors and suppliers. In particular, small companies do not have sufficient personnel to handle the administrative burden imposed, nor the resources to gain insight into DoD planning. One local representative who works for a defense contractor specializing in ammunition components provides multiple services including export licensing, embassy contacts, legislative contacts, DoD visits, proposal writing, contract negotiations and, as time permits, planning. And, yet, planning is the essential ingredient that industry uses to allocate its resources for future profitability.

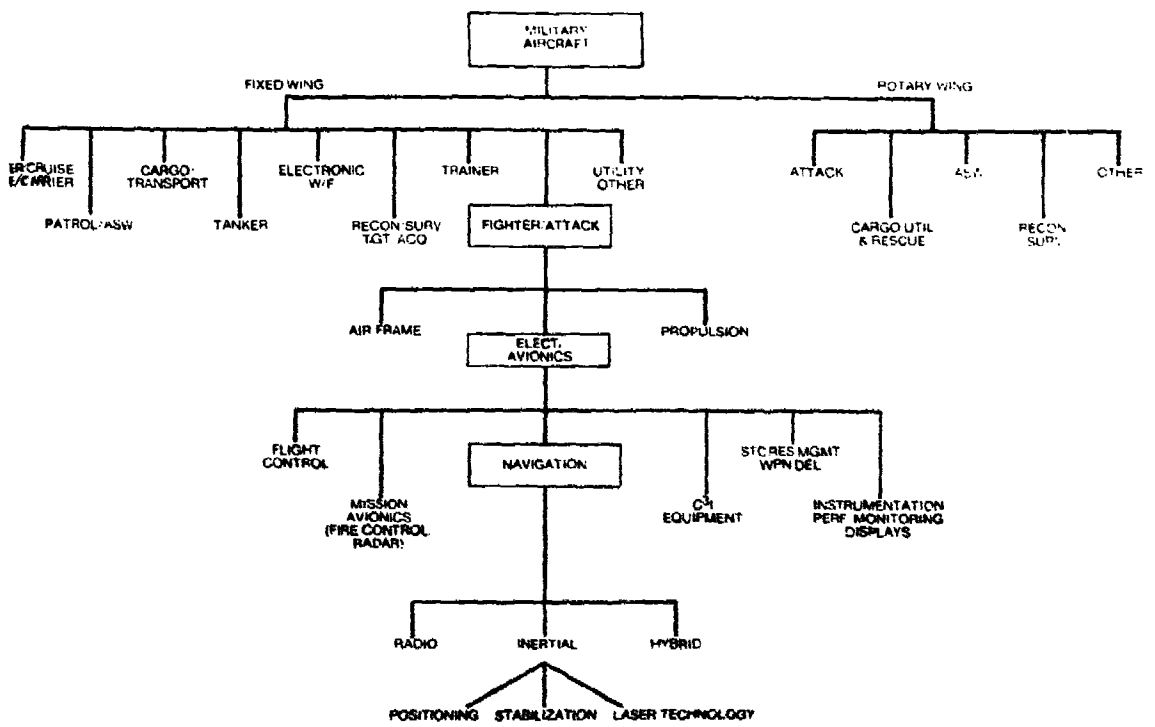
Unfortunately, industry planning is hampered by a number of misconceptions that exist within the DoD community. These statements are false. To have a true partnership, DoD and industry need to exchange ideas and compare information. An adversarial relationship is nonproductive. Industry has its own planning cycle. We understand that numbers and priorities change. Our own internal priorities and funding plans change also. Therefore, we understand that DoD numbers are not cast in concrete. There is a great advantage in updating internal company plans as the Services refine their priorities and allocations. Classified data is not distributed by industry associations. Rather, it comes from component parts of the Services including DTIC and the Tri-Service Industry Information Office. It is available based on a proven need to know. We strongly support information release based on established security requirements. We are not the news media looking for headlines. In recent years it has become increasingly difficult to obtain information directly from the Services. There appears to be a serious misunderstanding of the role of defense industry.

We had the unfortunate experience of having a Honeywell executive meet with high-level DoD personnel to develop mobilization base strategies. Our executive later requested that our planning group provide details of defense mobilization base requirements, but we were told by DoD that we, the planners, did not have a need to know. An unfortunate lack of communication somewhere. Most contractors work hard to obtain the information they need, but the amount of time required is often excessive, inefficient, and costly to both the company and to DoD.

How much simpler it would be to have a centralized, secure source for planning data so that a Service action office or program staff need not repeat the same information to multiple contractors. This would allow an even larger competitive base -- greater access for more companies. This supports the argument that Fred Lewis so aptly makes for on-line technical and planning data.

The bottom line is that rigorous planning and analysis contributes to more competition, more profitability, and more productivity.

Defense contractors such as Honeywell begin with advanced technology efforts. Note the examples of "stabilization," "positioning," and "laser technology" shown on the base of this chart. These technologies provide the building blocks necessary to develop future weapon systems. From this base we derive functional packages necessary to an operational system. The planners, scientists, engineers, and so on, must work closely with the services to determine future requirements and trends. Since defense business is extremely competitive, only those companies which carefully plan their IR&D will retain the edge necessary to bid successfully and win. At each level portrayed in this chart, it is important to make an intelligent assessment of the market and specific components thereof.



Descriptive summaries and R-1/P-1 documentation are also helpful. However, these sources provide very little detail on specific projects or tasks that comprise a multifaceted R&D program. In the past this gap was often filled by the R&D Planning Summaries. Some time ago, for example, I was asked to comment on an airborne minefield detection system. The best program detail came from the 1634 data base which described the component parts as an electro-optical imaging sensor, a remotely piloted vehicle and mobile data terminal -- all of interest to our divisions. Various subtasks and the action officer were also identified. The only gap was funding information. Even so, this detail was extremely helpful as we assessed our company interest in the project. Unfortunately, this data base is no longer available. And further, this type of detail is not published for procurement programs. Data on spares, embedded software, modifications, maintenance, and training requirements would be so helpful to primes and to subcontractors. But to obtain this information planners must make multiple visits to various locations.

It is essential for planners to evaluate: requirements, resources, and realities. Planners use their sources to assess both programs and markets. Knowing service and OSD requirements is absolutely essential in order to identify the type of equipment that is needed. This includes specific item requirements as well as overall guidance. Are we preparing for a long or short war? In Europe with winter weather conditions? In the desert with heat and sand constraints? Nuclear or conventional? Heavy or light equipment? Manpower intensive or automated handling?

What resources are available? Can we afford a 600-ship Navy? Should we upgrade the B-52 or build a new B-1? Can a single-year funding allocation for the M-1 tank provide enough money for most economical production rates? How will changes in priorities or schedules affect production rates? All of this information is vital when making investment decisions.

Both requirements and resources must then be tempered with a realistic assessment. What are the political realities of a dense pack deployment of the MX missile? Will precision guidance or a conventional weapon approach predominate? Is the answer different for the long term? What about multi-Service programs? Does JVX have a chance? What about the common radar/common missile solution for the assault breaker concept advocated by OSD?

These are some of the typical questions asked of planners. The whole defense business environment must be addressed.

Industry uses planning in a variety of ways, some of which are:

- Scope market segments of interest
- Identify responsible agencies/contact points
- Determine requirements
- Select programs/projects
- Determine size, schedules, milestones, and budget projections

If our market of interest is aircraft navigation as depicted in the previous chart, it is imperative to learn what new platforms will provide markets of opportunity. What technology is involved? Will the production run be long enough to make the investment worthwhile? Who must we talk to? Market identification and analysis is essential. Within one category (such as Military Aircraft) the planner must often go as far as four subsets below that category to determine his own specific interest. This level of detail is difficult to come by, especially when projecting the scope of this market for the next 5-10 years. Yet this is a common question for planners.

We recently tried to count the number of competing anti-armor concepts. We identified over 30 different solutions proposed by DoD, some of which were mentioned in a local newspaper article last week. This array of programs is impressive and meets different aspects of the requirement, but it is unrealistic in the current climate of limited resources. Industry planners need to know as much as they can about which of these concepts will survive. If we go down the wrong paths, both industry and the Services are losers.

To identify markets, planners use a variety of sources. However, the basic building block is the budget line item. Much of this detail comes from the laboratory director or the procurement program manager. Requirements are specified in various documents, e.g., JSMENS, ROC's, OR's, SON's. Industry often contributes to the preparation of these documents and therefore wants to participate well in advance of their publication. It is for this reason that 1634 planning summary information and 1498 technical concept details are invaluable. Of course, if the information is not available for maximum and timely access, everyone loses.

Requirements are uncertain, resources are limited; so, the priority and stability of a program are critical. Equipment programs do not exist in a vacuum, nor do they exist for a single year. Therefore, planners must identify and assess all relevant factors.

The message is: PLAN AHEAD.

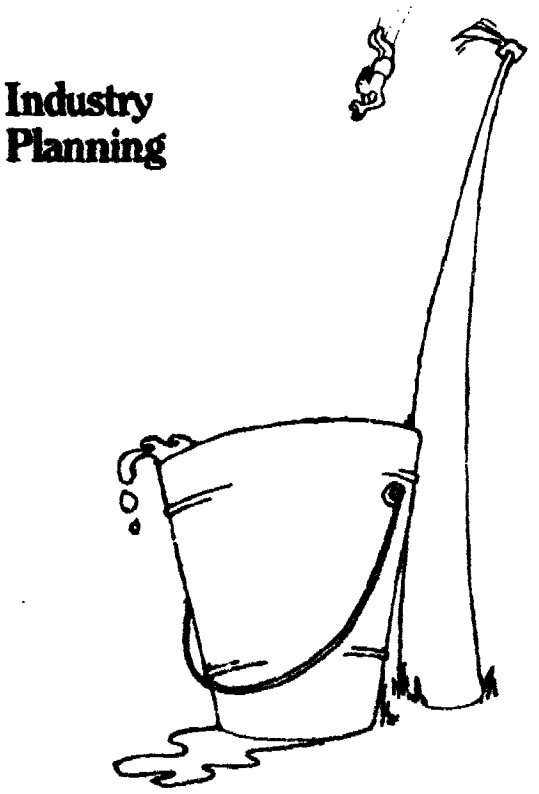
Being big didn't save the dinosaur.

Industry planners are not merely data gatherers. They are participants in a continuing effort to provide intelligence, to determine available markets, and to suggest strategies for successful business investments. Decisions are made with resulting shifts in business focus and specific action plans. In fact, many times the action taken is in response to a request for information, technical assistance, or program support needed by the services. We believe this is an essential part of the DoD/industry partnership and is vital to our national security.

So I would repeat my initial message:

- The complex nature of defense business requires tough industry decisions.
- Planning is an essential tool.
- Effective planning promotes DoD/industry productivity and partnership.

After all, we want to make sure we plan very carefully before we take the plunge. We may not have a second chance.



CARLYNN J. THOMPSON
Technical Information Specialist
Defense Technical Information Center

PROGRAM PLANNING DATA BASE REPLACEMENT

Good morning, my name is Carlynn Thompson and I am with the Office of Information Systems and Technology at DTIC. One of my current assignments is gathering requirements and examining alternatives to the Program Planning (1634) Data Base.

I am sure most of you are aware that the Program Planning Data Base was cancelled during June of this year, based on a perceived lack of interest in the data base on the parts of both the inputters (that is lack of consistent input) and the users (their very low usage statistics in the Program Planning file as compared to the Technical Report and Work Unit Data Bases).

As an aside, the lack of input and the low usage were a self defeating circle. "I don't input because I don't need the data" and "I don't use the data base because it is not complete or accurate" were common excuses regularly given for the lack of interest in the program planning data base. We were caught in a trap with no way out.

The announcement cancelling the Program Planning Data Base came as a surprise to many members of the Defense Community. The question uppermost in the user's mind was... "What will replace the 1634?" Almost immediately, a flood of concern was expressed to OUSDRE, and DTIC was challanged to examine user requirements and to propose alternatives to the now obsolete Program Planning Data Base.

It was realized that DTIC (and the users) had a Big Problem... What are our needs for program planning information? This is a question we will examine further; however, I believe that there is a silver lining to our program planning problem. A year ago we were faced with a system which was incomplete and inaccurate with very little chance of improving the situation. Today, we have been given the opportunity to state our program planning requirments and alternatives, to justify those needs, and, hopefully, to build a broad base of support and the necessary discipline for the replacement system that the Program Planning Data Base did not have.

Review Needs for Planning Information

Let us turn for a moment to the needs of DoD Managers. When I speak of DoD Managers I am including both in-house and contractor managers associated with DoD research and development (R&D).

For an effective R & D program our managers should know:

1. What research relating to his/her area of interest has been done in the past?

2. What research is currently being done in his/her field of interest?

3. What research is being planned in his/her field of interest?

Without this information the potential for duplication of effort within an organization as large as the Department of Defense is tremendous -- almost inevitable.

Our managers have certain resources at their disposal to accomplish their mission. These are funding, facilities and personnel. Planning, and in particular long-range planning, is essential in the effective management of these resources.

How is Planning Being Done Now

There are many planning documents that are available to the user community. Here are a few examples:

- Congressional Descriptive Summaries
- Program Element Descriptive Summaries
- Project Summaries

- The Five Year Defense Plan

- Technical Objectives Documents

- Long-range Plans

- Requirements Documents

With planning information the trick is to know:

- What is available to you;

- Where to get the information; and,

- Is the information timely and accurate.

In general, planning information is available only in a hard copy or paper format and the use of the information requires tremendous staff time to sift for what is relevant and to cull out what is not. In addition, there is no consistency in the data stored among the different elements of DoD. This inconsistency leads to considerable confusion.

Over the past few months, I have determined several methods used by DoD managers in obtaining planning information.

First, we have the CRYSTAL BALL method. In this approach, the manager tries to guess what will happen in the future and plan accordingly. This is not a very effective management style. (Unless you have a better crystal ball than we do in DoD.)

Second, we have the GET IT ANYWHERE YOU CAN method. Here, information is obtained "under-the-table" from various individuals (including friends, relatives or other DoD employees). This too is not a very effective management style because you can never quite trust the information. Further, it is not fair to the DoD community as a whole because it violates the principle of equal access to information.

Third, we have the RANDOM ACCESS method. In this case, the manager must search for documented sources of planning information. There is an incredible profusion of information and the manager can quickly be overwhelmed with extraneous information.

At best, we are lost in a maze of planning information and at worst, we are not using any planning information at all.

Why Isn't This Adequate?

In discussing planning information, we tend to think in our own small realm of experience when perhaps we should be considering planning from a national perspective.

In a speech given to the Committee on Science and Technology of the U.S. House of Representatives by General Robert Marsh last year, he touched on some rather sobering issues that we should consider in specifying our future planning information needs.

> "Our international competitors, both friend and foe, have been aggressively building their technological base, as well as out producing us on both the production line and in universities. This trend of foreign gain coupled with U.S. declining emphasis on technology, productivity and technical expertise is causing a rapid shift in the technological balance. The U.S. is approaching the loss of its world technological leadership."

General Marsh went on to say:

> "The Soviets have over 900,000 full-time scientists and engineers engaged in research and development, compared to 600,000 in the U.S. A large percentage of the Soviet scientists and engineers are believed to be engaged in defense-related research and development --- the comparable U.S. number is about 150,000."

We in the DoD information industry must be more efficient in the use of one of the most valuable resources in the world -- INFORMATION.

We need to promote and encourage a cooperative, rather than competitive, environment among various sectors of DoD R&D with more productive use of our collective resources.

We need to educate DoD managers in the use of information resources that are readily available to them, particularly the automated information systems that can help them greatly improve their productivity.

Program Planning - Areas of Consideration

While we can intuitively justify the need for planning information, we are faced with the task of documenting our specific needs. In an attempt to begin documenting user needs, DTIC

prepared a letter that was sent to individuals within the DoD community who had expressed concern over the cancellation of the Program Planning Data Base.

A list of the questions that were asked in the letter follows:

What specific types of DoD planning information are needed by your organization? (What do you use today?)

What type of coverage is needed (i.e., years, program element areas)?

Who are the users of planning information in your organization (i.e., planners, managers, marketing staff, bench-level scientists)?

How is planning information used (i.e., pre-RFP, RFP, contract requirement, IR&D, competitor analysis, state-of-the-art awareness, other)? How does it benefit your organization?

From what sources do you now obtain DoD planning information (i.e., within the Services, at OSD, from DTIC, other)?

What types of people do you use to obtain information (marketing staff, planners, librarians, engineers/scientists, or several types)?

How can DTIC best let you know of new planning documents, new data in data bases, and new services?

Gathering of requirements is not a closed process. Hopefully, additional ideas will come out of this conference.

We sent out about 60 inquiries in August 1982 and to date have received over 70 replies. I think this type of response indicates a very keen interest in the continuation of some type of planning system within DoD.

There are some general data base requirements present in the responses we have received, and I would like to mention a few of these:

--Information that is complete and up to date.

--Program Element as well as Project Level information for all RDT&E projects.

--Responsible organizations, names, and phone numbers.

--Narrative information on the project including current status as well as five years of planning projections.

--Ballpark dollar figures that are updated after congress takes action on the budget.

--Portion of research to be done on contract.

There are many alternatives available to us in the replacement planning system. Some may be interim measures until a permanent system can be established or some might be useful to the user community no matter what the long-term solution is. I would like to say that this is only a partial list, and if you have additional ideas that you would like to contribute, we will be happy to add them to the list.

1. Create a new program planning data base utilizing existing data available from the services or DoD.

2. Expand the Work Unit (1498) reporting requirment to include planning data. (The planning data would be gathered at a higher level in the chain of command than work units.)

3. Make the Congressional Descriptive Summaries available on line.

4. Gather as much information as possible as to where planning data can be obtained (bibliography) and make it available to the user community.

5. Locate and make available via DTIC's Technical Report Data Base as much planning information as possible.

6. Prepare a directory of principal investigators involved in R&D.

7. One last possibility, do nothing.

Since I started work on this project I have had a vision of what the replacement system will be like.

-- It will be automated using the latest technology.

-- It will be easy to use and flexible.

-- It will be self reinforcing using the "carrot and the stick approach" so we will always have accurate and timely data.

No matter what alternatives we propose, justify, and recommend: we must work together as a cohesive unit that speaks with a unified voice, and we must muster support for the replacement system whenever and wherever we can.

With your help and support we can come up with a viable alternative to the Program Planning Data Base. Hopefully, only the end of this paper is near, not the end of Program Planning information within DoD.

DAVID WHITMAN
Security Specialist
OSD Information Security Directorate

RELEASE OF RDT&E INFORMATION TO INDUSTRY

Setting aside previous involvement in the development of our security classification Executive Orders for a few minutes, and perhaps more than any other time over the last 8 years -- when I have been in the Office of the Secretary of Defense -- there are developments taking place in the security area that are both intellectually engaging and bureaucratically promising. They reflect not only a renewed and substantial interest among policymakers, but they also ultimately should provide security and technical information specialists in both industry and government with some meaty responsibilities that you can sink your teeth into.

There has been a tendency among many, to perceive security policy requirements as a hindrance to the desired flow of RDT&E information. People in the security business have been thought of with a bundle of manuals under one arm, a bundle of forms under the other, and a sheriff's badge pinned on our chests. To a degree, we have ourselves to blame. All too often, once the policy is established and the system is working, we have been inclined to go about our business, enforcing the rules, but doing little else to expand our services and our horizons.

Today I sense that things are changing, thanks largely to those in our ranks who have the courage and ingenuity to address new problems, find solutions, and then sell them to the policymakers. Particularly over the past 2 years, there has been a growing recognition of both the strengths and weaknesses of U.S. policies in the security area and of the importance these policies play,

and can be made to play, to protect vital U.S. interests. Until recently, neither the Department of Defense nor the government as a whole regarded the loss of unclassified technology as a security problem. It was a trade problem, or it was an export control problem, but not a security problem. If it's not classified, it's not a concern of security!

In the Department of Defense, at least, this attitude has done "a 180" so to speak. In fact, we now regard the loss of unclassified technology with significant military application to our adversaries as the most serious security problem we have to cope with. It has been dramatically and painfully demonstrated to us that the loss of such technology is providing our adversaries an enormous advantage in developing their military capabilities. The late Chairman Brehznev told the world in a speech this past October that the Soviets intended to do whatever was necessary to obtain and develop military technology sufficient to gain superiority over the West. So there is no reason to believe the intense efforts of the Soviets to acquire western technology will abate. And with every enhancement of the Soviet side, U.S. defense requirements and expenditures increase.

The United States simply must make more of an effort to control the loss of its technological edge, both at home and with its allies. Export controls and trade policies cannot do the job alone. They have little affect, for example, on the loss of such technology within the United States, either through purchases of commercially available end-items, or through business and professional contacts, or through technical and professional publications. It is for this reason that Defense for the last year and a half has been looking at its protective security programs and policies as a means of limiting the accessibility of high technology with military application.

Some of you may be aware of our ill-fated effort to incorporate a new category of classification into Executive Order 12356, "National Security Information." By devising a new security classification which would have permitted the Secretary of Defense to approve less stringent clearance and handling requirements, we hoped to take advantage of the existing system for protecting classified information, while imposing minimal restraints on the use of such information in defense industry and academia. Such a proposal would also have allowed us to withhold presently unclassified technical data under the Freedom of Information Act -- something we are unable to do now. As you may know, our legal counsels have consistently advised that the export control laws are now (B)(3) statutes under the Freedom of Information Act. Unless advanced military technology is classified, therefore, the chances are it must be made available to all comers under the Act.

To change this situation, the Department of Defense last year sought and obtained the Administration's endorsement for an additional Freedom of Information Act exemption to permit the withholding of technical data subject to export controls. Although the Senate Judiciary Committee reported out this proposal as part of its action on the Administration bill, no further Congressional action ensued, nor can any be expected in the lameduck session.

Defense, however, has not given up. We intend to pursue this initiative in the next Congress and, indeed, are exploring the alternative approach of obtaining specific statutory authorization for the Secretarty of Defense to withhold technical data subject to export control under the Freedom of Information Act. This alternative has been coordinated within the Department, and, I believe, has gone to the Office of Management and Budget. We are hoping that the appropriate Congressional committees will help us with it.

We are also approaching the technology-loss problem from the standpoint of internal DoD dissemination controls, short of security classification. As you are probably aware, the Department already has a directive that prescribes procedures for marking RDT&E information to limit its distribution into public channels. That directive is now under revision by the Office of the Under Secretary of Defense for Research and Engineering, with the expectation that it will contain additional authority for applying dissemination controls to technical data with significant military applications. Information under such administration controls would still be available under the Freedom of Information Act, but at least it would not be made available on a silver platter--the way it currently is being served up to everyone.

The Department is also reviewing its procedures with respect to clearing papers to be presented at scientific and technical conferences, or published otherwise.

You probably noticed the stories in the press following the San Diego conference of the Society for Photo-Optical Instrumentation Engineers, whose acronym is SPIES. Defense absorbed a considerable amount of criticism for its actions with respect to this conference which were largely portrayed as stifling a free exchange of ideas. What occured was simply that Defense sent a representative to the conference, with the prior agreement of the conference sponsor, to hand out a short memorandum reminding DoD employees and contractors presenting papers at the conference of their responsibilities under DoD regulations for clearance of such papers prior to public release. Much to our surprise, there were slightly over 100 papers withdrawn as a result of this reminder.

This experience obviously indicated that applicable DoD policies were not being followed. It also indicated that recent policy changes were not understood. I am dwelling on this episode, now, as a prelude to a mention of the policy change itself, which people at all levels should be aware of. Last spring the DoD Directive requiring Office of the Secretary of Defense review of speeches, including this one, articles, and publications prior to their presentation was amended to include, as a grounds for such review, the disclosure of unclassified critical military technology. Hence, papers that reveal such technology cannot be released to the public without being raised to the OSD level for a determination.

After the SPIES conference, our Assistant Secretary for Public Affairs went out with several messages to DoD Components reiterating this policy change. It now seems the word is getting through.

Other problems were highlighted by our SPIES conference experience. One was that the Department has no mechanism whereby it is advised systematically of scientific and technical conferences -- even when DoD employees or contractors are present -- where the chance for serious technology loss is present. In the case of the SPIES conference, for example, OSD Public Affairs learned of it by chance 3 days before it was to take place, despite the fact that the department had a substantial contingent; the areas under discussion involved highly advanced technology; and there were persons attending from the Soviet Union, Bulgaria, Romania, and Czechoslovakia. It also made us realize that persons who do review papers prior to such conferences often do so in a vacuum, without benefit of knowing how the paper under review relates to other subjects to be addressed, or knowing how the information will be used or presented, or who will be sitting in the audience. For any department seriously interested in stemming the flow of critical military technology, this is simply an unacceptable state of affairs.

There are other problems. Right now a contractor working on a DoD classified contract must obtain DoD clearance to disclose publicly information that is related to classified contracts. This clearance system is a longstanding part of the Industrial Security Manual. But there is no similar requirement with respect to contractor-generated information that relates to unclassified contracts, even if they relate to militarily critical technology. Without going further into the bureaucratic intricacies, suffice it to say that we are taking a closer look as much of our critical technology is developed under unclassified contracts.

Countering the transfer of technology to our potential adversaries must begin by identifying what the United States wishes to protect. While this accurate statement of the problem has immense appeal and broad acceptance, the remedy has been illusive, that is, achieving an unambiguous, concise list of technologies to be protected. The Department's principal effort in this area continues to be its Militarily Critical Technologies List which, as just published for the third time, is about two inches thick and classified. It is a detailed and structured technical statement of development, production, and utilization technology that the Department assesses to be crucial to given military capabilities and of significant value to potential adversaries.

But identifying critical technology remains a problem. To illustrate, once information is classified, recognition of needed protection does not require specific expertise in the information to be protected. Given the circumstance that it is necessary to protect certain unclassified technology, identification of such technology will remain a problem to those who lack sufficient technical expertise to make unerring judgement unless a broadly understood means is devised to identify clearly and mark such information for protection.

On a broader plane, significant efforts are under way in both the industrial and academic areas to determine what controls should be placed on companies and universities with Defense contracts to minimize the opportunities for technology loss.

In the National Academy of Science's report on this subject, the Academy panel concluded that indeed there is a serious problem. They then decided what sort of information in the academic area ought to be subject to controls, and, once identified, what those controls should be. There is plenty of room for disagreement on where the Academy's panel drew the lines on both counts, but it is nevertheless significant that they conceded there was a problem at all. The DoD University Forum, under the sponsorship of the Office of the Under Secretary of Defense for Research and Engineering, is pursuing the Academy's recommendations.

We hope to undertake a similar analysis with respect to Defense industry, in essence, identifying what we wish to protect, what controls should be imposed, and in what manner. The answers to these questions may come out very differently in the industrial context than in the academic context. For example, in the industrial context, technology ordinarily comes closer to application than basic research. Moreover, the opportunities for transfer in a commercial setting are considerably different than those in the academic community. There are also mitigating factors, such as industry's own interest in protecting proprietary information, that serve to control the availability of high technology.

No one is under the illusion that these efforts will in themselves stop the flow of useful technology to our adversaries. They will, however, make such technology far less accessible than it currently is under U.S. laws and regulations and deny our adversaries the ability to reap the benefits of U.S. ingenuity and know-how.

The real trick in all this will be to take away the silver platter and make information less accessible without stifling the exchange of ideas among DoD employees and contractors that is so crucial to the research, development, and production of U.S. military equipment. It is a tough problem but not an insuperable one. Moreover, unless some effort is made, we are going to find ourselves continually facing more and improved Soviet military capabilities, at greater and greater expense to the United States.

I must take this opportunity to encourage each of you to begin thinking about our national technology loss problem in the context of your personal responsibilities. Whatever policy changes may be forthcoming will ultimately depend on you for their effectiveness. Cooperation -- across the board -- is going to be the key word in stemming the unintended outward flow of U.S. militarily critical technology.

Thank you.

RODERICK ALDERTON
Program Manager
Aerospace Business Analysis
General Electric Company

DOD REQUIREMENTS AND PLANNING INFORMATION CURRENTLY AVAILABLE TO INDUSTRY

I am going to bring to you this morning some of the results of a review and survey of DoD requirements and planning activities that I conducted for General Electric over the past few months. My emphasis is going to be almost entirely on so-called management information as opposed to technical information, although I realize that in this field it is almost impossible to separate the two types of planning and requirements information.

CHARACTERISTICS OF THE REQUIREMENTS/PLANNING INFORMATION PROGRAM

- **Amount of available information is increasing**
- **Surprising amount of valuable unclassified information**
- **Numerous sources generating information**
- **Numerous types of documents**
- **Variety of channels for distributing information**
- **Program is constantly changing**
- **Little Service uniformity in practices and documentation**

These are the characteristics of DoD requirements and planning activity programs that were identified during my review. They also outline the organization of this presentation. There is

little doubt that the amount of information in this area available to industry is increasing. One reason is that DoD is endeavoring to improve its information program. Another pertinent factor is the increased congressional interest in DoD activities and programs. Both classified and unclassified information were considered. The amount and usefulness of unclassified information was surprising. Of course, the classified data is extremely useful as well. I will go into detail on sources of information, types of requirements and planning documents, channels used to distribute this information, changes in this arena, and, finally, lack of uniformity in the practices and documentation of the Services in this area.

This list of requirements and planning information sources reflects the broad view taken in this review, and it recognizes the information generated by some non-DoD, as well as DoD, sources.

MAJOR REQUIREMENTS/PLANNING INFORMATION SOURCES

- **DoD requirements/planning offices**
- **DoD concept/study offices**
- **DoD industry briefings (subject area, organization, project office)**
- **DoD potential contractor programs (QRI, NICRAD, PCP, DARPA)**
- **Advisory committees (DSB, NAS/NRC, OSTP, etc.)**
- **Congress**
- **Creations of Congress (CBO, CRS, GAO, OTA)**
- **Trade associations (EIA, NSIA, etc.)**

The DoD concept study offices, in addition to regular requirements planning offices, appear to be an emerging vehicle for the exchange of information between industry and DoD. The Army has an Army Concept Office at ARRADCOM, where the contractors and the Army Armament people can get together and exchange ideas. The Air Force has a new Concepts and Initiatives Office at Andrews AFB and Systems Command and there is an Aerospace Studies Office at Kirtland. There is some interesting work going on in these offices.

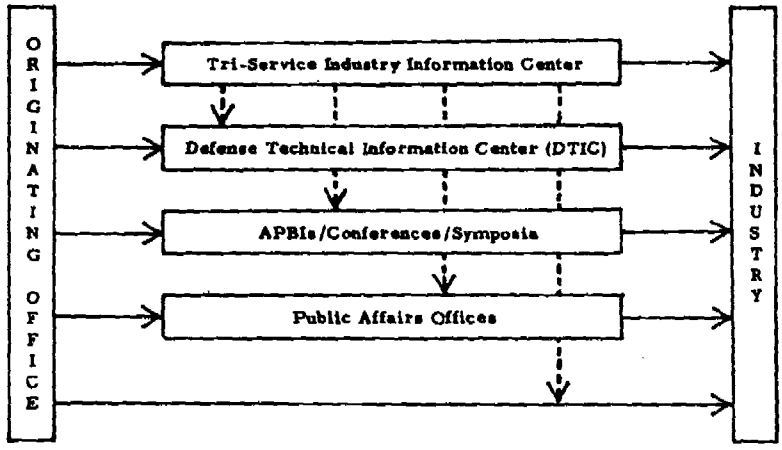
The different kinds of briefings are a valuable source of requirements and planning infcrmation. There are formal, large-scale briefings on subject areas such as the APBIs (Advanced Planning Briefings for Industry). There are also organizational briefings. RADC, I understand, annually holds a 2-day meeting with industry at which it explains its progress, its problems and needs. Finally, there are project office briefings at the program level, quite often around RFP time. The interested contractors can get briefed on programs by the project offices.

The next four items are the major non-DoD sources considered in my review: Advisory Committees, Congressional Hearings, Congressional Budget Office, and trade associations.

TYPES OF REQUIREMENTS/PLANNING DOCUMENTS

- **Advisory committee reports**
- **Congressional hearings/reports**
- **Department/agency annual reports**
- **Laboratory reports**
- **Long-range plans**
- **Management guides/manuals/directives**
- **Mission area analyses**
- **Operational requirements**
- **Policy papers**
- **R&D program summaries**
- **Speeches/statements**
- **Symposium/conference/briefing proceedings**
- **Technology area reports**
- **Technology needs/objectives documents**
- **Threat analyses**

PRINCIPAL REQUIREMENTS/PLANNING INFORMATION DISTRIBUTION CHANNELS



This chart portrays the flow of requirements/planning information from the originating offices within DoD through the various channels to industry. The arrows going down from the Tri-Service Industry Information Center are intended to portray the key role of that organization. The Tri-Service Center can alert you to the documents available from DTIC and provide you with AD numbers. They can alert you to upcoming advanced planning briefings for industry, provide you with proceedings from past APBIs, and alert you to upcoming things from the Public Affairs Offices.

Requirements and planning, as far as DoD is concerned, is a continuously changing scene.

THE CHANGING REQUIREMENTS/PLANNING INFORMATION SCENE

- **New documents continually appear**
- **Established documents disappear**
- **Document publication dates are often missed**
- **Content/format of documents change**
- **Classification/availability of documents change**

Change is inevitable. The whole process of requirements and planning information is constantly subject to review and is amended as new people take a look at the situation.

The following is a list of requirements/planning documents available to industry.

REQUIREMENTS/PLANNING DOCUMENTS AVAILABLE* TO INDUSTRY
(C=classified;U=unclassified)

OSD/Defense Agencies

1. Annual Report To The Congress, Fiscal Year 1983 (U)
2. United States Military Posture For FY 1983 (U)
3. The FY 1983 Department of Defense Program for Research, Development and Acquisition (U)
4. Five Year Defense Program (FYDP) (C)
5. Program Element Descriptive Summaries, Defense Agencies, FY 1983 (C & U)
6. DARPA Fiscal Year 1983 Research & Development Program, 30 March 1982 (C & U)
7. North American Air Defense Master Plan, January 28, 1982 (C)
8. Congressionally Mandated Mobility Study (CMMS), 30 April 1981 (C)
9. Department Of Defense Space And Aeronautics Activities In FY 1983, 18 March 1982 (U)
10. The Department Of Defense Research, Development, Test And Evaluation Support To The Office Of The Secretary Of Defense And The Organization Of The Joint Chiefs Of Staff, FY 1983, March 30-31, 1982 (U)
11. Department of Defense Basic Research Program, 1 August 1980 (U)
12. The DoD Research (6.1) Effort, 1 March 1980 (U)
13. Required In-House Capabilities For Department Of Defense Research, Development, Test And Evaluation, 1 October 1980 (U)
14. Department Of Defense In-House RDT&E Activities, Management Analysis Report, 30 October 1980 (U)
15. Soviet Military Power, 1981 (U)
16. Congressional Presentation, Security Assistance Programs, FY 1983 (U)
17. Military Assistance And Sales Manual, DSAA (U)
18. USDRE Independent Review Of DoD Laboratories, 22 March 1982 (U)
19. Planning, Programing & Budget System -- An Executive Primer, November 1981 (U)
20. Statement On Role And Responsibilities Of Defense Research And Engineering In Export Control, 11 May 1982 (U)

*Available in whole or in part

Army

1. Program Element Descriptive Summaries, FY 1983 (C & U)
2. Required Operational Capability (ROC) (C & U)
3. Letter of Agreement (LOA) (C & U)
4. Letter Requirement (LR) (C & U)
5. Material Need (MN) (C & U)
6. Training Device Requirement (TDR) (C & U)
7. Long Range RDA Plan, FY84-98, 3 March 1982 (C)
8. DARCOM Long Range RDA Plan, FY83-98, Vol. I, 28 May 1982, Vol. II, Jan. 1983 (C)
9. Justification for Major System New Start (JMSNS) (ex MENS) (C & U)
10. Army Battle Interface Concept, 1980/82 (C)
11. Army Aviation RDT&E Plan, October 1981 (U)
12. Army Aviation RDT&E Plan, Threat Addendum, July 19, 1980 (C)
13. Army Aviation RDT&E, Capability Analysis, June 1981 (U)
14. Army Air Defense Program Plan '90, February 1980 (C)
15. Army Command and Control Action Plan, September 1982 Update (U)
16. Army Missile Command Long Range Weapons Plan (MICOM LRWP), 6 Aug. 1982 (C)
17. Catalog of Approved Requirements Documents (CARDS), August 1981 (U)
18. Science & Technology Objective Guide (STOG), FY80 (C)
19. Comprehensive Plan for Training Devices, July 1981 (U)
20. U.S. Army Simulation And Training Device Technology, Five Year Exploratory Development Plan, 1982-1986 (U)
21. National Training Center, September 1979 (U)
22. U.S. Army Research Office, Program Guide, September 1981 (U)
23. U.S. Army Research Office, Research In Progress, 1981 (U)
24. U.S. Army Armament Research And Development Command, Preview, Technological Base Program, FY82 (U)
25. Seven-Year Conventional Ammunition Program, FY82-88 (U)
26. U.S. Army Manufacturing Methods and Technology Program (U)
27. Manufacturing Methods & Technology, Program Plan, CY 1981 (U)
28. Manufacturing Technology Advisory Group, CAD/CAM Subcommittee, 1980 Annual Report, October 1980 (U)
29. Manufacturing Technology Handbook, 1981 (U)
30. Manufacturing Methods & Technology, Five Year Plan, FY80-84, June 1978 (U)
31. Research And Development Planning Summary (DD Form 1634) (C&U)
32. Research And Technology Work Unit Summary (DD Form 1498) (C&U)

33. Annual Laboratory Posture Reports, FY-81:
    Armament Command (U)
    Aviation Command (U)
    Communications & Electronics Cmd. (U)
    Electronics R&D Command (U)
    Mobility Equipment R&D Command (U)
    Missile Command (U)
    Natick R&D Command (U)
    Tank - Automotive R&D Command (U)
    Human Engineering Lab (U)
    Materials & Mechanics Research Ctr (U)
34. TRADOC Mission Area Analysis (MAA) Documentation:
    Combat
    Close Combat (Light), Sept. 1981 (C)
    Close Combat (Heavy), Sept. 1980 (C)
    Fire Support, Nov. 1980 (C)
    Air Defense, Oct. 1980 (C)
    Army Aviation, Sept. 1981 (C)
    Battlefield Nuclear Warfare, Oct. 1982 (C)
    Combat Support
    Command & Control, Nov. 1980 (C)
    Communications, June 1980 (C)
    Intelligence/EW, Mar. 1982 (C)
    Engineering/Mines, Aug. 1981 (C)
    Nuclear/Biological/Chem., Oct. 1981 (C)
    Summary
    Air/Land Battle 2000, Aug. 1981 and 1982 (C&U)

Navy

1. Program Element Descriptive Summaries, FY 1983 (C & U)
2. Subproject Program Plans (SPPs) (C & U)
3. Claimant Program Proposals (CPPs) (C & U)
4. Operational Requirements (C & U)
5. Naval Aviation Plan, 17 June 1982 (C)
6. Naval Avionics Master Plan, 26 February 1981 (C & U)
7. Attack Submarine Warfare Plan, 21 October 1981 (C)
8. Navy Command & Control Plan, April 3, 1982 (C)
9. ASW Master Plan (C)
10. Surface Warfare Master Plan (C)
11. Ocean Surveillance Master Plan (C)
12. Electronic Warfare Master Plan (C)
13. Miniature Management Information Papers (Mini-MIPS) (C & U)
14. SSN Integrated Communications System (ICS), 14 April 1980 (C)
15. Naval Oceanography Command Mid-Range Objectives, 1980-1990, 31 March 1980 (C)
16. Air Weaponry Technology Task Area Objectives, Mission Need Statements and System Design Concepts for FY82, March 1981 (C)

17. FY82 Exploratory Development Program Summary, 1 October 1981 (C)
18. Navy Exploratory Development Technical Strategies, January 1980 (C)
19. Approved FY82 Special Focus Programs, ONR, July 1981 (C)
20. Naval Air Systems Command, Long-Range Procurement Estimates, Fiscal Year 1983 (U)
21. 1980 NRL Review, 1 July 1981 (U)
22. NRL Fact Book '82 (U)
23. Naval Ocean Research And Development Activity (NORDA), Program Summary, Vol. I & II, 1 October 1981 (U)
24. The Navy Manufacturing Technology Program (U)
25. Manufacturing Technology Program, Budgeted FY 1983, Proposed FY 1984, Proposed Out-Year Thrusts (FY 1985-1987), September 1982 (U)
26. Manufacturing Technology, Program Accomplishments, October 1980 (U)
27. Department of the Navy RDT&E Management Guide, 15 December 1979 (U)
28. Exploratory Development Program Management Manual, 15 June 1981 (U)
29. An Introduction To Navy RDT&E (U)
30. Understanding Soviet Naval Developments, January 1981 (U)
31. RDT&E Center Management Briefs, Vol. I & II, 30 September 1981 (U)
32. Justification for Major System New Start (JMSNS) (ex MENS) (C & U)
33. Laboratory Program Summaries, October 1981/October 1982:
    - Naval Air Development Center (C)
    - Naval Surface Weapons Center (C)
    - Naval Ocean Systems Center (C)
    - Naval Underwater Systems Center (C)
    - Naval Weapons Center (C)
    - Naval Personnel R&D Center (U)
    - Naval Research Laboratory (C)
    - Naval Civil Engineering Laboratory (U)
    - Naval Coastal Systems Center (C)
    - Naval Ship R&D Center (C)
34. Research And Development Planning Summary (DD Form 1634) (C&U)
35. Research And Technology Work Unit Summary (DD Form 1498) (C&U)

USMC

1. Required Operational Capability (ROC) (C & U)
2. Marine Corps Research And Development Objectives Document (RADOD), 13 January 1981 (U)
3. Search, USMC Development and Education Command (U)

4. Miniature Management Information Papers (Mini-MIPS), October 1981 (U)
5. FY82 Exploratory Development Program, 25 January 1982 (C)
6. Landing Force Organization Systems Study (LFOSS), 8 August 1980 (C)

Air Force

1. Program Element Descriptive Summaries, FY-83 (C & U)
2. Program Management Directives (PMDs) (C & U)
3. Statements Of Need (SONs) (C & U)
4. AFSC Vanguard Planning Summary, June 1982 (C)
5. Electronic Combat Action Plan, January 1982 (C)
6. Air Force Logistics Research And Studies Program, 1982 (U)
7. 1981 Logistics Needs, December 1980 (U)
8. Air Force Systems Command Research Planning Guide (Research Objectives), 1 February 1982 (U)
9. Air Force Manpower, Personnel & Training (AFMPT), Research, Development And Analysis (RD&A) Plan, Vol. 1 & 2, January 1982 (U)
10. Air Force Aircrew Training Devices Master Plan, March 1978 (U)
11. Laboratory Capabilities Pamphlet, Air Force Systems Command, 15 April 1982 (U)
12. Research Interests, Air Force Office of Scientific Research, May 1982 (U)
13. Avionics Laboratory Technical Programs And Contacts, December 1980 (U)
14. Air Force Laboratories & Research Organizations, March 1981 (U)
15. USAF Avionics Master Plan, February 1982 (C)
16. Avionics Master Plan, 21 November 1979 (U)
17. Avionics Planning Baseline, April 1982 (U)
18. Armament And Avionics Planning Guidance (AAPG), December 1980 (U)
19. Command, Control, Communications and Intelligence Technology Planning Guide, February 1981 (C)
20. Tactical Air Forces Integrated Information Systems (TAFIIS) Master Plan, Nine Vols., September 1980 (C & U)
21. Proceedings Of The United States Air Force STINFO Officers Policy Conference - 1981, August 1982 (U)
22. Manufacturing Technology Program Financial Plan, FY 1982, 17 August 1981 (U)
23. Manufacturing Technology Program Budget Estimate, FY 1983, 17 August 1981 (U)
24. Productivity/Reliability/Availability/Maintainability (PRAM) Activity Report, March 1982 (U)
25. The Air Force Budget, 1979 (U)

26. The Planning, Programming & Budgeting System (PPBS), A Primer, November 1981 (U)
27. Justification for Major System New Start (JMSNS) (ex MENS) (C & U)
28. Technical Objective Documents (TODs):
    - A.F. Avionics Lab, FY-82 (C)
    - A.F. Aeropropulsion Lab, FY-83 (U)
    - A.F. Armament Lab, FY83-92 (U)
    - A.F. Flight Dynamics Lab, FY-83 (U)
    - A.F. Geophysics Lab, FY-83 (U)
    - A.F. Human Resources Lab, FY-83 (U)
    - A.F. Materials Lab, FY-83 (U)
    - A.F. Rocket Propulsion Lab, FY-83 (U)
    - A.F. Weapons Lab, FY-83 (C)
    - Rome Air Development Center, FY-83 (U)
    - Engineering & Services Lab, FY-82 (U)
    - Aerospace Medical Division, FY-83 (U)
29. Technology Needs (TNs):
    - BMO Technology Needs Document, January 20, 1982 (U)
    - Space Division Technology Needs Document, February 1981 (C)
    - Electronic Systems Division Technology Needs, June 1977 (C)
    - Aeronautical Systems Technology Needs: Escape, Rescue & Survival, February 1981 (U)
    - Aeronautical Systems Technology Needs: Test Facilities & Test Equip., Feb. 1981 (U)
    - Aeronautical Systems Technology Needs: Flight Systems, June 1982 (C)
    - Aeronautical Systems Technology Needs: Avionics, May 1980 (C)
30. Research And Development Planning Summary (DD Form 1634) (C&U)
31. Research And Technology Work Unit Summary (DD Form 1498) (C&U)
32. Air Force 2000: Air Power Entering the 21st Century (C&U)

Some key requirements/planning documents that are available from DoD follow.

SOME KEY REQUIREMENTS/PLANNING DOCUMENTS

OSD/Defense Agencies

1. Annual Report To The Congress, Fiscal Year 1983 (U)
2. The FY 1983 Department of Defense Program for Research, Development and Acquisition (U)
3. Program Element Descriptive Summaries (C&U)
4. DARPA Fiscal Year 1983 Research & Development Program, 30 March 1982 (C&U)

Army

5. Army Long-Range RDA Plan, FY 84-98, 3 March 1982 (C)
6. Army Missile Command Long-Range Weapons Plan (MICOM LRWP) 6 August 1982 (C)
7. Army Aviation RDT&E Plan, October 1981 (U)
8. Air/Land Battle 2000, August 1981 and 1982 (C&U)

Navy

9. Naval Aviation Plan, 17 June 1982 (C)
10. Navy Command & Control Plan, April 3, 1982 (C)
11. Subproject Program Plans (SPPs) (C&U)

Air Force

12. Air Force 2000: Air Power Entering the 21st Century (C&U)
13. AFSC Vanguard Planning Summary, June 1982 (C)
14. Electronic Combat Action Plan (ECAP), January 1982 (C)
15. USAF Avionics Master Plan, February 1982 (C)

Next is a listing of requirements and planning documents relative to command and control.

COMMAND & CONTROL REQUIREMENTS/PLANNING DOCUMENTS

Army

1. Army Command and Control Action Plan, September 1982 Update (U)

Navy

2. Navy Command & Control Plan, April 3, 1982 (C)
3. SSN Integrated Communications System (ICS), 14 April 1980 (C)

Air Force

4. Command, Control, Communications and Intelligence Technology Planning Guide, February 1981 (C)

Defense Science Board

5. Report Of The Defense Science Board Task Force On Command And Control Systems Management, July 1978 (U)

General Accounting Office

6. The Worldwide Military Command And Control Information System -- Problems In Information Resource Management, October 1981 (U)

7. Evaluation Of Defense Attempts To Manage Battlefield Intelligence Data, February 24, 1982 (U)

Congressional Budget Office

8. Strategic Command, Control, and Communications: Alternative Approaches For Modernization, October 1981 (U)

Office Of Technology Assessment

9. Strategic Command, Control, Communications And Intelligence (C^3I), mid-December 1982 (U)

Following are observations that were made as a result of the review.

OBSERVATIONS

- **Value of information varies considerably**
- **"Need To Know" affects information availability**
- **Personal contacts are important**
- **There is room for improvement -- by both DoD and industry**
- **It helps to have a man (or woman) in Washington**

CHARLIE MAIORANA
President
INFO/tek

FINDING OUT: A PHILOSOPHY AND A FEW METHODS

Before I talk to you about "finding out," I'd like to tell you who I am, what I'm doing, and why I'm doing it.

Basically, I'm an information-oriented defense engineer. About seven years ago I came to the conclusion that most engineers and program managers, including myself, were lost when it came to information support. I observed that this was true at all levels, and that it was equally true both within DoD and within the defense contracting community. Most of the people I considered to be users of information were, and still are, lost on the far side of the information gap.

I looked for training on the topic of information resources and found almost none directed towards end users. Most of what I found was directed towards the technical library and business communities, or discussed a single information product. I was seeking perspective and training that was directed towards working defense engineers.

Finding no suitable training, I approached a number of individuals and organizations with a proposal to put together such a course so that I (and the people around me) could get this training. All of the people I approached told me either that there was no need for this training, or that engineers should rely on their technical librarians and information specialists for information support.

I was faced with a dilemma. All around me were engineers reinventing wheels and corporate memories that had failed, and I couldn't find anyone who wanted to change this situation. I decided to channel my dilemma and indignation into a book that would be targeted for working defense engineers, contractors, and program managers, and which would be more relevant than the technical information guidebooks which were available at that time. As the book developed, I quickly learned just how much I didn't know about many of the topics. Also, I wasn't prepared for the rate at which the information explosion was changing the world. Everytime I worked on the draft, I would be shocked at how out of date and incomplete the previous draft chapters were. I couldn't keep up!

Eventually the book draft became the notes for a workshop entitled INFORMATION RESOURCES FOR ENGINEERS AND SCIENTISTS. I currently give this workshop both publicly and on-site at various defense laboratories. I have been giving this training for about a year now, and about 150 people have attended the course.

CONTEXT OF THE FOLLOWING PRESENTATION

What I would like each of you to do is to imagine yourselves at the last half-hour of one of these workshops. You've just gone through three packed days of looking at a mountain of print resources, being introduced to many different techniques for finding information, and have watched a number of on-line demonstrations.

To set the stage a little more: by this time your mind is spinning at having had all this information presented in such a short period of time; your arms are tired from having about 900 pounds of print resources passed around; and, if most of the material was new, you are wondering why you didn't know more about these things before the workshop.

At this point I usually have about 20 minutes left to sum up the important points made over the past three days. Also, this is the point at which I inject my personal philosophy about the importance of information.

What I'm going to do now is pretend you're my students and give you my summary speech. Keep in mind that by doing this I'm giving you about 20 minutes of punch lines without the corresponding 3 days worth of jokes.

EVERY INFORMATION USER SHOULD HAVE THE SKILLS NECESSARY TO FILL THEIR OWN INFORMATION SUPPORT NEEDS.

I am not saying that you should fill your own information support needs, only that you should have the skills. If you do not have these skills, you are probably not asking all the questions you could be asking of your information gatherers. Also, you must rely on the assumed quality of those supplying you with information.

INFORMATION HAS BECOME A PRIME SOURCE OF POWER.

I think that this is one of the major consequences of the information explosion and on-line revolution. It is also the basic reason that people are reluctant to be entirely candid about what they know and how they found out certain information. I personally feel that the amount of power we give to those capable of "finding out" is out of proportion to the information gathering skills.

DON'T LOSE SIGHT OF THE FACT THAT PEOPLE, NOT COMPUTERS, ARE BEHIND ALL OF THE INFORMATION YOU ARE USING.

It is very easy to lose sight of the fact that people, not computers, are behind all of the articles, abstracts, technical reports, etc., that we are using. Most of these people are still alive and have something important to say that expands or puts in context the information you are using.

DON'T BE AFRAID TO CALL ANYONE FOR INFORMATION, BUT DO YOUR HOMEWORK FIRST!

Don't use the telephone as a substitute for doing your homework. Time is the most valuable thing any of us has, and calling someone for a piece of information that could be easily obtained from a document can be very disruptive and wasteful of that other person's time. However, if calling that person is the next logical step in your information search, do it.

WHENEVER SOMEONE SHOWS YOU AN IMPORTANT DOCUMENT OR TELLS YOU SOMETHING IMPORTANT, ALWAYS ASK THEM HOW THEY OBTAINED THAT INFORMATION.

This is a very powerful habit to get into. You'll find that the answers to this question will often be more important than the specific piece of information you were originally seeking.

WHEN YOU APPROACH AN INDIVIDUAL FOR INFORMATION, ALWAYS ADMIT WHAT YOU ALREADY KNOW ABOUT THE TOPIC.

A very common occurrence is that person "A" will ask person "B" for some information. Person "B" will go off and find some things and then will come back and show these to "A." Person "A" will say, "I already know about all those. What else do you have?" At this point, person "B" fantasizes doing in person "A."

IF YOU ARE GETTING YOUR INFORMATION FROM A PRINTED SOURCE, IT IS PROBABLY OUT OF DATE AND INCOMPLETE.

If the timeliness of a piece of information is critical to what you are doing, don't rely on the printed word. Somewhere there is someone who has an update on that specific piece of information. Also, don't forget that only a small part of anything usually gets printed; the rest of it probably still exists in some file folders in someone's desk.

WHENEVER YOU FIND A DOCUMENT THAT INTERESTS YOU, ALWAYS:

1. **FIND OUT WHERE IT IS LISTED, INDEXED, OR ABSTRACTED.**

2. **MAKE A MENTAL NOTE OF THE OTHER TYPES OF GENERAL QUESTIONS THAT THE DOCUMENT CAN PROVIDE ANSWERS FOR.**

A rule of thumb about information is that if one title interests you, probably others of the same type will also interest you. By knowing where the title is listed or indexed, you have a starting point for finding these other items.

The second item listed is just a common sense reminder that spending a few extra minutes to determine what other types of answers can be found in a document is time well spent.

THERE ARE GUIDES TO EVERYTHING.

For every class of information and for every facet of "finding out" there is a guide. Finding and accessing the best guide is always the first step in seeking information.

DON'T BE EMBARRASSED BY WHAT YOU DON'T KNOW.

This is one of the significant barriers to learning. We all feel that we <u>should</u> know more than we do, or that others know more than we do. This is especially true in the information world where there was a lot to deal with before the explosion.

LIBRARIES ARE NOT LIMITED BY THEIR COLLECTIONS, AND YOU ARE NOT LIMITED TO ANY ONE LIBRARY.

Don't forget that libraries are networked together and tend to cooperate to fill information needs. If you are looking for a particular item that your library doesn't have, they can usually find a copy and borrow it for you.

Also, you should consider all libraries and special collections to be accessible to you. If you need materials in a subject area that is not covered by your local technical library, you can easily find one that does cover that subject that you can have access to.

TO BECOME AN EFFECTIVE USER OF A LIBRARY:

1. **READ THE LIBRARY GUIDE**
2. **BROWSE THE ENTIRE REFERENCE COLLECTION**
3. **OBTAIN A JOURNAL HOLDINGS LIST**
4. **ASK A NON-TRIVIAL QUESTION OF THE REFERENCE STAFF**

It is quite simple to become an effective user of a particular library or information center. Start by reading the guide. Every library has one, and, although some are quite bad, they are the starting point. The second step is to become familiar with the reference collection. I do this by taking a leisurely browse through the reference collection. Be sure to include the ready-reference collection that some librarians keep behind their desks. Make a note of which special series (such as the DATAPRO reports) and which major directories are in the collection.

If you plan to be a regular user of that library, obtain a copy of the journal holdings list. Browse this list also.

The final step is to become comfortable with the reference staff. I do this by deliberately asking the reference librarian some non-trivial question and evaluating the response.

BE VERY SELECTIVE AS TO WHAT CROSSES YOUR DESK REGULARLY.

Having a pile of journals and magazines crossing your desk each month is a very ineffective way of maintaining current awareness.

MAKE SURE THAT YOU ARE USING THE APPROPRIATE ABSTRACT AND INDEX.

It usually comes as a surprise to those who are only familiar with a few abstracts and indexes such as the TAB, STAR, Engineering Index, etc., that there are a few hundred others.

Instead of always using the same few, check to see which is the appropriate one for the particular problem you are working on. One of the ways to check this is to consult the subject index in the new Gale Directory of Abstracts and Indexes. A second way is to identify a couple of the key journals in the subject area, and then find where they are abstracted.

THE LIBRARY OF CONGRESS IS A PHENOMENAL INFORMATION RESOURCE.

1. **MAIN READING ROOM (ULTIMATE REFERENCE COLLECTION)**

2. **SCIENCE & TECHNOLOGY DIVISION (REPORTS COLLECTION, TRACER BULLET SERIES)**

3. **NATIONAL REFERRAL CENTER (NRC)**

4. **GEOGRAPHY & MAP DIVISION**

5. **CONGRESSIONAL RESEARCH SERVICE (INFO-PAK's, ISSUE BRIEFS)**

The Library of Congress is an information goldmine. What else can I say?

CHECK YOUR INFORMATION ASSUMPTIONS!

Never assume that something doesn't exist just because you haven't seen it or because its existence seems unlikely. Check it out!

I could write a large book listing some of the bad information assumptions I have made. Some of the information boners I've made were:

1. **Assuming that the full text of the DoD Congressional Hearings was on line in the DMS/ONLINE system,**

2. **Assuming that the World Transindex wasn't on line,**

3. Assuming that there were no guides to terrorism literature,

4. Assuming that there was no major guide to all the U.S. documents stored following World War II.

All wrong!

BEFORE PERFORMING ANY INFORMATION SUPPORT TASK, TAKE A FEW MINUTES TO PUT TOGETHER AN INFORMAL "RESEARCH PLAN" AND USE IT.

1. **A CLEAR STATEMENT OF WHAT IS BEING SOUGHT AND WHY IT IS NEEDED**

2. **A SUMMARY OF WHAT YOU ALREADY KNOW ABOUT THE TOPIC**

3. **A PREDETERMINATION OF THE TIME AND MONEY YOU ARE WILLING TO SPEND ON INFORMATION SUPPORT**

4. **A CHECK-OFF LIST OF THE INFORMATION SOURCES THAT ARE THE MOST LIKELY TO SUPPORT YOUR NEEDS. (CONSIDER ALL SOURCES WHEN MAKING UP THIS LIST.)**

The quality of my research has improved considerably since I've started planning my research before carrying it out.

The research plans I use are short; they always fit on one page and take less than an hour to write. I pin this page to the wall in front of my desk and leave it there for as long as I'm working on the project.

The research plan serves many purposes. It serves to focus your energy. The ordered check-off list of sources ensures that you'll search the most likely places first. Also, writing a research plan helps to clarify what it is you are looking for and why you need it.

THE INITIAL STEP IN CARRYING OUT A RESEARCH PLAN IS <u>NOT</u> TO START LOOKING IN THE SOURCES.

THE INITIAL STEP IS TO DISCUSS THE RESEARCH PLAN WITH SOMEONE ELSE. (REFERENCE LIBRARIANS ARE IDEAL FOR THIS.)

THEN, THE NEXT STEP IS TO SPEND A FEW MINUTES WITH THE GUIDES TO EACH OF THE SOURCES TO CHECK THAT YOU ARE NOT OVERLOOKING AN OBVIOUS ITEM, AND TO CHECK THAT YOU ARE ACCESSING THE SOURCE CORRECTLY.

One of the advantages of using research plans is that it puts your needs and intentions in a convenient form for others to comment on. After writing a plan, I always show it to someone else and ask if they think I'm on the right track.

Also, before going directly to the sources you have listed, look over the guides to the types of sources. For example, if you are planning to look in a specific abstract and index, check to be sure it is the appropriate one.

MAKE SURE THAT YOU ARE FAMILIAR WITH USING THE KEY "SPECIAL SERIES."

1. **JANE'S YEARBOOKS**
2. **CARROLL ORGANIZATIONAL CHARTS**
3. **FROST & SULLIVAN REPORTS**
4. **DMS MARKET INTELLIGENCE REPORTS**
5. **DATAPRO REPORTS**
6. **AUERBACH REPORTS**
7. **INTERAVIA REPORTS**
8. **YELLOW BOOKS**
9. **LONGMAN/HODGSON GUIDES TO WORLD S&T**

I think that special series, of the type I've listed here, are the most important type of reference material.

One of the interesting things that the items on this list share is that people are seldom aware of the full set of that item. Take Jane's Yearbooks for example. Most people are aware of two or three of this series. In fact, Jane's currently publishes 14 different volumes in this series (as of mid-1982).

The last item is one that you may not be familiar with. This is an English series that started in the early 1970's and only contains four titles so far. However, 10 additional titles are being written now and will be added to the series by the end of 1984. An example of one of the earlier titles in this series is Guide to Science and Technology in the USA (somewhat dated now).

THE TESTIMONIES GIVEN DURING THE CONGRESSIONAL AUTHORIZATION-APPROPRIATION HEARINGS CONTAIN A WEALTH OF USEFUL INFORMATION.

There is no need to even mention this point here, but you would be surprised how many people connected with the DoD R&D community have never seen the R&D volumes of the hearings. And I'm referring to just those people to whom this information would be meaningful and useful.

IN ADDITION TO THE HEARINGS, THE INFORMATION SUPPLIED DIRECTLY TO CONGRESS IS, FOR THE MOST PART, VERY USEFUL AND AVAILABLE TO ANYONE.

1. **GAO REPORTING REQUIREMENTS DATA BASE**
2. **CONGRESSIONAL RESEARCH SERVICE PUBLICATIONS (VIA CONGRESSMAN)**
3. **CONGRESSIONAL BUDGET OFFICE**
4. **OFFICE OF TECHNOLOGY ASSESSMENT**

The GAO data base contains information about all organizations and systems that have any sort of congressional reporting requirement.

I don't know of a way to access the publications of the CRS directly, but you can get them via your congressman. If you've never seen a CRS Info-Pak, ask your congressman for information on the congressional budget process or on defense spending. What you'll get in the mail is one of the hundreds of constantly updated packages put together by CRS.

TO FIND OUT ABOUT AN AGENCY (OR LAB):

1. **LOOK IN THE US GOVERNMENT MANUAL**
2. **CONTACT THE PUBLIC INFORMATION OFFICE**
3. **CHECK THE MAJOR DIRECTORIES**
4. **REVIEW THE LATEST HEARINGS FOR THAT AGENCY**
5. **REVIEW THE LATEST ANNUAL REPORT**
6. **BROWSE THE STRUCTURAL SECTION OF THEIR TELEPHONE DIRECTORY**
7. **ORDER A NATIONAL REFERRAL CENTER LISTING**
8. **ACCESS THE MAJOR PLANNING DOCUMENTS**

This is my approach for finding out what's going on in an agency or laboratory. I've found that if you follow these steps, you'll know more about that agency than 90 percent of the people that work there.

WHEN DEALING WITH ANY ORGANIZATION, BE ON THE LOOKOUT FOR:

1. **THE DOCUMENT GIVING THE BEST OVERVIEW OF THE ORGANIZATION AND ITS COMPONENTS**

2. **WHERE ITS PUBLICATIONS, BOTH TECHNICAL AND OTHER, ARE INDEXED AND ABSTRACTED**

3. **ANY SPECIAL INFORMATION CENTERS ASSOCIATED WITH THAT ORGANIZATION**

4. **THE DOCUMENT GIVING THE BEST DESCRIPTION OF THE PLANNING PROCESS USED IN THAT ORGANIZATION**

These are the four things that I always look for. The first three items are fairly easy to locate. The last item is sometimes nonexistent.

THERE ARE A LOT OF OFFICIAL AND UNOFFICIAL INFORMATION ANALYSIS CENTERS (IACs).

IF YOUR INTERESTS HAPPEN TO MAP ONTO AN IAC's SPECIALTY AREA, FIND OUT WHAT INFORMATION SUPPORT SERVICES THEY CAN PROVIDE AND USE THEM.

Whenever I give my course to engineers, I ask them if they know whether an IAC exists in their area of interest. If there are any positive replies, I ask if any have actually used the services of an IAC. My guess is that five percent know if there is an IAC in their area and one percent have actually used an IAC's services. If my sample is representative of the general defense community, the percentages are too small!

WHAT CAN YOU GET FROM A PUBLIC INFORMATION OFFICE?

1. **ORGANIZATIONAL CHARTS & TELEPHONE BOOKS**
2. **POINTS OF CONTACT PUBLICATIONS**
3. **FULL TEXT OF STATEMENTS**
4. **PUBLICATION LISTS**
5. **SUMMARIES OF COMPLETED RESEARCH**
6. **SUMMARIES OF ONGOING AND PLANNED RESEARCH**
7. **PLANNING INFORMATION**
8. **POINTERS TO OTHER INFORMATION OFFICES**

Public Information Offices can be surprising sources of important information. Some can supply you with all of the information listed above. Others have a hard time giving you a one-page organization chart. Most will know who to refer you to so that you can get these items for yourself if they don't supply them.

WHAT ARE THE MOST IMPORTANT ITEMS ON THE READY-REFERENCE SHELF OF AN INFORMATION-CONSCIOUS DEFENSE ENGINEER, CONTRACTOR, OR PROGRAM MANAGER?

1. **US GOVERNMENT MANUAL**
2. **DOD TELEPHONE DIRECTORY**
3. **HOW TO GET IT**
4. **LIBRARY AND REFERENCE FACILITIES IN THE AREA OF THE DISTRICT OF COLUMBIA**
5. **ENCYCLOPEDIA OF INFORMATION SYSTEMS AND SERVICES**
6. **INTRODUCTION TO US GOVERNMENT DOCUMENTS**
7. **ONE S&T INFORMATION GUIDEBOOK**
8. **DATA BASE CHAPTERS (OR GUIDES) FOR ALL OF THE COMMONLY ACCESSED DATA BASES**

This is a list of what I feel should be on the ready-reference shelf behind your desk. I shouldn't get too much argument on the first three items. The fourth item is local to the Washington area, but parallel guides exist for each of the major metropolitan areas.

The fifth item is a major Gale Publishing Co. directory. If you've never used it before, take a look at it the next time you are in your library. The sixth item is a paperback reference book by Joe Morehead that is used as a text in many Government Documents courses. It's a wonderful book that deserves being read by anyone dealing with the government.

There are a number of excellent scientific and technical information guidebooks. A very basic one is Saul Herner's A Brief Guide to Sources of Scientific and Technical Information.

Every data base has some sort of corresponding guide. Having a collection of the guides for those data bases you commonly use will make you a more effective user of those data bases.

THE KEY STEP IN USING ON-LINE DATA BASE SERVICES IS FIRST IDENTIFYING THE DATA BASES OF INTEREST.

THERE IS NO SINGLE COMPLETE GUIDE OR LISTING OF DATA BASES.

I think that the key step to using on-line services is to first identify all the data bases that are of interest. Then you can match this list against those you have immediate access to and decide if it's worth the trouble to get access to the rest. I think that most people approach this the other way around. They see which data bases they have immediate access to, and they pick from this list.

Unfortunately, there is no single comprehensive listing of data bases. I know offhand of about seven different listings including the new DTIC data base of data bases that is being put together. I always start by looking in the Encyclopedia of Information Systems and Services.

YOUR EFFECTIVENESS IN USING AN ON-LINE DATA BASE WILL BE MULTIPLIED IF YOU ARE FAMILIAR WITH AND COMFORTABLE USING THE CORRESPONDING PRINT RESOURCE.

I would guess that over 90 percent of the data bases have a corresponding print product of some sort. Sitting down and browsing through a sample of these for the data bases you commonly search will give you a much better feeling for what's in the data base, and will make you a more effective user of it.

A VERY COMMON PITFALL OF DATA BASE USERS IS TO FORGET THE TIME COVERAGE OF THE DATA BASE.

When using a bibliographic data base, it's very easy to forget that you are searching, usually, a small number of years relative to the entire collection. Only a couple of data bases start with day one of the collection (such as the Comprehensive Dissertation Index which starts in 1897). Keep the time coverage of the data base in mind when you are using it, and interpret the search results accordingly.

THE KEY TO KEEPING UP WITH THE FAST-MOVING INFORMATION WORLD IS TO TUNE INTO THE INFORMATION INDUSTRY.

THIS CAN RANGE FROM BROWSING THE KEY SUPPORT MAGAZINES -- TO JOINING ONE OF THE PROFESSIONAL ORGANIZATIONS AND REGULARLY ATTENDING AN ON-LINE CONFERENCE.

I don't know of any other way of keeping up with the world of information than by hooking into the information industry. Taking a course, such as the one I offer, may bring you up to date, but you've still got the formidable task of keeping up. If you have a good information support staff, you might be able to keep up through them, but...

THE MAJOR INFORMATION ISSUES TO WATCH ARE:

1. **END-USER ACCESS TO ON-LINE SERVICES**
2. **GATEWAY (COMMON COMMAND LANGUAGE) ACCESS TO DATA BASE COLLECTIONS**
3. **MOVEMENT AWAY FROM MAJOR VENDORS OF DATA BASES AND TOWARDS MANY SMALLER VENDORS**
4. **EASIER, COMMON ACCESS TO EUROPEAN DATA BASE COLLECTIONS**
5. **MORE COMPLETE-TEXT DATA BASES (SUCH AS THE "BINDER" DATA BASE OF DMS/ON LINE)**

These are the major information issues that I am keeping an eye on.

The main valid reason to limit end-user access to the current data base services is that many of the systems, such as DROLS, are not user-friendly. Also, because of the large number of different command languages in use, it is difficult for the casual user to know how to use each efficiently. As soon as the command languages improve and gateway systems become commonplace, all end-users will have access to these services.

I think that there will be a movement away from the large vendors of data bases, such as DIALOG, and towards a collection of smaller, more specialized vendors such as the ISI Search Network and Pergammon's INFOLine.

Easier access to the major European networks is happening right now.

THE MOST IMPORTANT ATTRIBUTE OF THE INFORMATION SEEKER IS PERSISTENCE.

FINDING OUT IS AN ART, NOT A SCIENCE (SO FAR). IT CAN BE ENJOYABLE, EXCITING, AND REWARDING.

If you sincerely want to get access to some information, and you have a valid reason for getting it (the proper clearance, etc.), then don't give up until you get it.

There are people you will run into who are self-appointed information guardians, and who will say "no" to you and others who come seeking access to information. My advice is to treat these encounters as challenges. Find someone else who has the information, and get it from them. Persist!

TAKING A SHARING STANCE ABOUT INFORMATION WILL MULTIPLY YOUR INFORMATION, NOT REDUCE IT.

SHARE WHAT YOU KNOW AND YOU'LL FIND THAT WHAT YOU GIVE OUT WILL BE RETURNED OVER AND OVER.

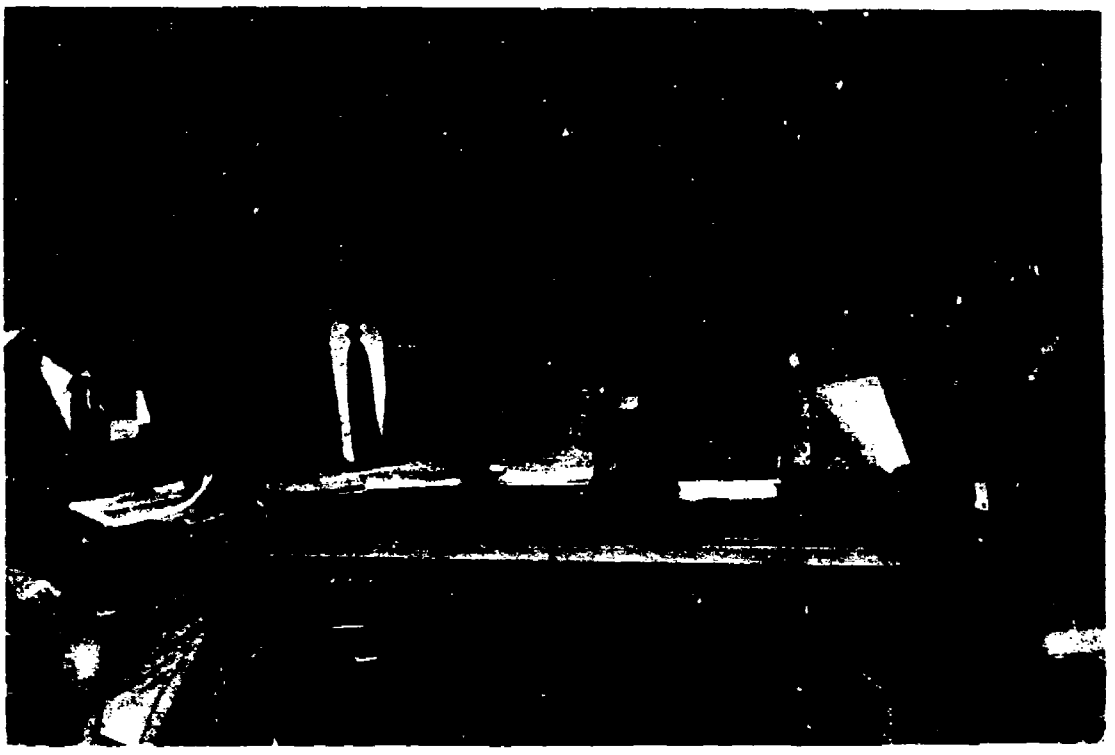
When you find something that you think would be of interest to someone else, go out of your way to tell them. When someone comes to you for information, tell them more than the minimum necessary to get rid of them. If you take a sharing stance, you'll find that people will start going out of their way to make sure that you know about things you would not have known otherwise.

AT ALL COSTS, STAY INFORMED!

(To paraphrase the title of Andy Garvin's book)

YOU WILL WIN WITH INFORMATION,
OR YOU WILL LOSE WITHOUT IT!!!!

I sincerely believe this. If you get control of your information needs and stay on top of what is happening in the information world, you will win!



DOD TECHNICAL INFORMATION SERVICES AND PRODUCTS AVAILABLE

A panel of five speakers provided a cross section of technical information services available to industry from the Department of Defense. In the photograph above from left to right the speakers are: Mr. Donald Fortune, NPPC; Mr. Walter Blados, U.S. Air Force; Mr. E. Jack Kolb, U.S. Army; Mr. Earle Kirkbride, U.S. Navy; and Mr. Hubert Sauter, DTIC. Each speaker addressed the topic of technical information services and products available from his organization.

HUBERT E. SAUTER
Administrator
Defense Technical Information Center

The Defense Technical Information Center (DTIC) is under the operational control of the Defense Logistics Agency (DLA) and under the policy guidance of the Office of the Under Secretary of Defense for Research and Engineering (OUSDRE).

PROGRAM AUTHORITY AND MISSION

- In Oct 81 a DoD Directive on the Defense Scientific and Technical Information Program (STIP) was signed into effect. It prescribes composition and policy of the STIP; defines a program for carrying out OSD's responsibility for the STI function; and outlines DTIC's mission, responsibilities, and functions.

  The governing instructions listed beneath 5100.36 (now 3200.12) are in the process of being revised and updated with the exception of 7720.16 which has been cancelled, and a study is under way to determine requirements for planning data as you heard about this morning from Carlynn Thompson.

- DTIC's mission was expanded in 1979 to include providing direct information system and data base support to OUSDRE and to principal staff assistants of OSD in coordinating the overall STIP.

Here is a list of our functions which include, centralized document and data base services for DoD.

- Centralized DoD document services
- Centralized DoD data base services
- DoD Information Analysis Center support
- DoD technical library support
- Application of advanced information science and technology
- Related STI support services

DTIC's USER POPULATION

- R&D activities with the U.S. Government and their contractors, subcontractors, and grantees with current government contracts are eligible to obtain DTIC services.

- R&D organizations without current contracts may become eligible for service under various potential contractors programs if sponsored by a military service.

- Certain reports and collections are available to defense components only.

- If a request is received for a DoD sponsored report not available to public, DTIC forwards copy of requested report and original request to Military Controlling Office to determine if distribution limitation can be waived.

  If authority for public release is given, the report is sent to the National Technical Information Service (NTIS) for public distribution.

- DTIC does not serve foreign requesters. Release may be arranged through foreign release organizations of the respective military services. We assist requesters through foreign embassies.

PRODUCTS AND SERVICES

Technical Report (TR) Data Base - Demand Services

- DTIC fills requests for TRs in both paper copy and microform on demand.

- Demand bibliographies (List TRs related to a specific subject) are also conducted at user's request. To prepare bibliographies, a computer searche is made in the TR data base. Reports that fit research parameters are listed with control numbers, abstracts, and other descriptive data.

- Management information reports are similarly provided on demand. The search involves one or more of the management data bases (WUIS, R&DPP, IR&D).

- Reference services - identifying DTIC documents and locating sources for documents DTIC does not have.

Technical Report (TR) Data Base - Automatic Services

- Technical Abstract Bulletin (TAB) for anncuncing new technical reports twice monthly, TAB, TR announcement bulletin, available in paper copy, microfiche, magnetic tape, distribution limited.

- TAB Indexes for Corporate Author Monitoring Agency, Subject, Title, Personal Author, Contract, Report Number, and Release Authority.

- Automatic Document Distribution (ADD), every 2 weeks, microfiche of new TRs, based on user interest profile, charge per report is 1/3 of demand price.

- Current Awareness Bibliographies (CAB), based on user interest profile, every 2 weeks, paper copy printout of TR abstracts.

- Recurring management information reports - choice of monthly, quarterly, semiannually, from management data bases, paper copy printout of desired report fields.

THE DEFENSE RDT&E ON-LINE SYSTEM (DROLS)

- Coast-to-coast network of terminals (586 on 3 Dec 82).

- Typical connection - Terminal, page printer, magnetic tape cassette storage.

- Terminal can order bibliographies for TRs, management data reports, printouts, and copies of TRs.

RECORDS IN DTIC DATA BASES

- As of 30 Sep 82.

  Technical Reports 1500K, 85.8 percent.

  Program Planning 41K, 2.3 percent

  Independent R&D 49.6K, 2.8 percent

  Work Unit 158K, 9 percent

RDT&E ON-LINE SYSTEM GROWTH

- Originally access was via leased, dedicated lines - both classified and unclassified terminals. All terminals were UNIVAC.

- Several years ago, dial-up became available for unclassified users. Variety of terminals - pay only for hook-up time.

SHARED BIBLIOGRAPIC INPUT NETWORK (SBIN) OBJECTIVES

- SBIN provides for direct input of BIB records form participating remote terminals at libraries and information centers.

- SBIN is a coordinated structure of decentralized activities.

- Provides DTIC a focus for actions to provide and enhance DoD-wide STI services.

- SBIN makes maximum use of existing organizations who collect, process, and disseminate STI.

- Currently there are 38 participating sites.

INFORMATION ANALYSIS CENTERS (IACs)

- Administration and coordination with technical monitors for resourcing and monitoring effectiveness of the IACs.

- Working with IACs to make their information more readily available to the technical community.

MAJOR DEVELOPMENT PROJECTS

Free Test Experiment

- Technique by which single terms or words extracted from narrative portions of the data base are placed in inverted file for retrieval.

- '80 - '81 DTIC experiment with free-text searching to retrieve records from TR data base proved feasibility.

- Implemented this capability in management data bases as a trial in May 81.

- Free text search for unclassified titles in TR data base for TRs entered since 1975.

Expanded Retrieval Training Program for DROLS

- Supplemental Training Method to training courses held at DTIC.

- Computer-Aided Instruction (CAI) is one possibility.

Data Base of Data Bases

- Questionnaire was sent out to 1,300 DoD registered users, at 100 other DoD activities.

- Data from questionnaire goes into UNIVAC 1108 concerning DoD sponsored computer-readable data bases containing S&T data, bibliographic and nonbibliographic.

- A directory will be compiled.

Multimedia

- Establishing capabilities and procedures for DTIC to accept varied formats of TR input.
- Camera-ready document input.
- Direct microfiche input.
- Input of citations to TR data base.
- Combination report input (e.g., paper copy having enclosed microform).

USER GROUPS

- Advisory groups that meet periodically. An asset to DTIC for advice and to work with DTIC to improve the program.
- Resource Sharing Advisory Group, primarily in the shared bibliographic input network area of concern. Advises DTIC on needs of the network.
- Committee on Information Hangups, Federal information systems review group.
- Los Angeles Regional Technical Information User's Council, same as the Hangups, but west coast group.
- DTIC Steering Group is chaired by Dr. Young.

PROBLEMS

Input to Data Bases

- Not as complete or timely as it could be.
- WUIS Review.
- DoD PUB changes to strengthen control of input.
- Contemplating DAR change.

Out of Date Directives

- DoDI 7720.13, R&TWUIS
- DoDD 5100.36 (now 3200.12), this directive has been implemented, but it has been changed to the R&D series.
- DoDI 5100.45 (IACs)
- DoDI 5200.21, Dissemination of DoD Technical Information (To be updated)
- DoDD 5200.20, Distribution statements on technical documents (being expanded to 5)

For addition information, call our Office of User Services, (202) 274-6727.

DONALD FORTUNE
Director Planning Department
Naval Publications and Forms Center

The Naval Publications and Forms Center (NPFC) handles all printed matter within the Navy as the third of three inventory control points (ICPs) within the Navy Supply Systems Command. The other two inventory control points are: the Aviation Supply Office in Philadelphia and the Ships Parts Control Center in Mechanicsburg, Pennsylvania. So we consider ourselves the third of three ICPs. I say that because the Navy is unique among the services in that only the Navy treats printed matter as a true item of supply. The Air Force and Army treat technical manuals as administrative manuals. The Navy assigns stock numbers to technical information manuals, forms, publications, and the fleet users must order them just like any other item of supply.

At NPFC we perform shipping, stocking, and storing. We are the face to the fleet for 18 different Naval sponsors or authors of technical information. The largest of this list would be NAVSEA, the Naval Sea Systems Command, next one is NAVAIR, Naval Air Systems Command, NAVALEX, and right on down the line. We have a few small ones like Navy Recruiting Command. We handle all the Navy and Marine Corps recruiting information (bumper stickers, pens, pencils, etc.).

Publications are free in the Navy to the customer. They are funded and replinishment is paid for by each of the sponsors of the manuals. Forms in the Navy are a stock-funded item. Navy customers actually send in a funded recquisition to buy forms from us. However, publications are available to private industry free if private industry is working on a contract. Once that information is known to us, we ship the publication, so it is expected that private industry will come into us with a funded requisition through the local DCAS representative that is dealing with that private concern.

The other mission that NPFC has, beyond the Navy mission, is the DoD single stock point and distribution center for ALL DoD specifications and standards. In this mission we catalog, determine requirements, buy and physically receive, distribute, store, issue, and control all current specs and standards listed in the Department of Defense Index of Specifications and Standards. The catalog that is available is known as the DODISS. Both military and federal specifications and standards, and QPLs lists of companies that have dealt with the government in the past are listed by the product they are involved in. We handle a lot

of industry documents as specifications and standards, bought by the government, and written by the particular industry involved. We are also involved in STANAGS, international NATO documents, and military handbooks.

I want to talk about three basic areas - cataloging, distribution and requisition processing at NPFC.

The catalog, the index of specs and standards, is available in both hardcopy and microfiche. It is prepared at our activity in Philadelphia. We receive new items indexed for camera copy to go into the catalog from 147 sources. The catalog is published annually with bimonthly supplements and is distributed to and stocked for DoD activities. Hardcopies are also available from the Superintendent of Documents in Washington, D.C., for industry and non-DoD activities. Microfiche is available from the Naval Printing and Publishing Service for industry and non-DoD activities.

The catalog of DoD index of specifications and standards is in three parts: Part 1, all specifications and standards listed by alphabetical title; Part 2, numeric by document number; and Part 3, numeric by federal class. All the specifications and standards business is tied to the federal class system. Once every 3 years we print a supplement to Part 2 that lists all the documents that have been cancelled during the past 3 years, the next one is due out in 1984.

To obtain the catalog: for a hardcopy, write directly to the Superintendent of Documents in Washington, D.C. There is a charge of $90.00 for parts 1 and 2, and $55.00 for part 3. The microfiche copy is available from Philadelphia at the Naval Publications and Printing Service for $25.00.

Anyone can be on automatic distribution for this document. The services will submit their requirements through a specific service coordinating office.

Our command will cover any customer with a full year's supply of specifications and standards, updates, changes, ammendments, etc., for $13.00 per year per federal class. For the subscription cost we will keep you updated with every addendum, change, update, and cancellation that comes out in a 12-month period. You must order the basic specification, and it is free.

Most of our business is done with commercial concerns. You have to have the specification to bid on a government contract. The subscription service is the best way for an interested company to keep covered on a particular federal class. There are 614 classes available and the cataloging handbook (H2-1) is available upon request from the Naval Publishing and Printing Service.

Currently, we have approximately 2000 industry subscribers receiving updates and amendments for 26,000 individual classes. We also distribute the same information to federal agencies at no subscription charge.

Our target date for getting all of the distribution out from the moment the new updates, changes, and amendments arrive on our receiving platform is 10 days.

The third area is requisition processing that handles the actual requests that come in for specifications and standards. We take any type of request and have a form available that is mailed out with each order for subsequent ordering. But, we take whatever you send; mail, message, telephone, or personal visit are all acceptable. Without taking you through all the details, we have a system that handles this that is not automated, it is all manual. We open every letter, take every call, pull the document from the shelf, and mail. We do have a telephone answering system that operates 24-hours a day.

Our customers for the specifications and standards include just about everyone. There is no catagory that is missing. We ask customers to understand that we have a priority system. We do prefer that the requests be mailed in, but almost everyone uses the telephone.

We are not a research organization; we don't do look-ups or bibliographies or anything like that.

We do have limitations on the quantity that we distribute. We will only send you two copies.

We ask that a perspective bidder for a contract should maintain a good specifications and standards library. Be ready for that invitation to bid which you want to consider. That is why the catalog and the DODISS are essential for you to subscribe to and order the specifications you are interested in. Also review the H2-1 I talked about, the document that lists every federal class you may be interested in.

This is a dynamic business. Specifications and standards in DoD are a family of 71,000 items. Actually, 40,000 are the basics and the other 30,000 make up the changes, updates, and amendments. At our single stock point we are receiving roughly 30 shipments a day of new or revised specs. We process over 2400 customer requests involving over 9800 line items, (different specifications each day). Our objective is a 5-day turnaround.

Future improvements at NPFC will be to automate most of our system. We are getting some new equipment called Navy Printing on Demand System. We intend to digitize all the specifications and standards and as a request comes in we intend to print it on demand. This system will provide our customers printed documents on request. A whole new area of inventory control that we are familiar with but not in specifications and standards. Accurate rejection status to a customer is a feature, and it will eliminate a "not-in-stock" position, provide faster service, provide a record of requests (so we can facilitate a follow-up operation) and of course all the other necessary information regarding handling of specifications and standards.

EDWARD J. KOLB
Principal Army Technical Information Officer

The program is divided into two segments, one which is budgeted and one which is technology oriented. In the budgeted segment I have responsibility for a major item in the Army's Program, a 6.5 budget program element for management and support of R&D. There are eight individual projects in that program. I am going to mention some of them --

Project M720 is responsible for financial support for the 1498 program. It is under the management purview of Bob Chaillet, who is with us today.

Project M728 is technical information activities and information technology, and the one nearest and dearest to my own heart. It sponsors research and development to promote information access, storage, and distribution. In setting up that program I used a 94th congress public law 94-282 known as the Kennedy Bill. It was the first mandate in a public law that said we must do an organized job in scientific and technical information. This law took 3 years to develop and was constantly in congruence in its planning through the House, Senate, and the Executive Office building.

The Army Technical Information Program provides research bench people, the user community, and industry their information needs that were developed in the Army.

Breaking this up into intellectual parameters, there are six parameters of information technology developed by Professor Williams. He is an expert in this field and tracks with us very closely in development of a philosophy of information management. They have to do with quantity, content, structure, language, and quality of life. The individual parameters serve as a basis for organizing the program and placing R&D in these areas. These parameters expand our base telling us how we are manipulating the information today, how we ought to manipulate it, and how we can manipulate it. They enable us to do things that we are not doing yet. Having pocket calculators, for example, means we can all do calculations we did with our pen and pencil 20 years ago. But we avoided doing calculations with pen and pencil, so today everyone is doing calculating.

Certainly, energy is an example too. We wouldn't be able to have pocket calculators without the microminiature batteries that power them.

There are several tasks in this project that are worth about a million dollars, and they are reviewed yearly. Most of them are pursued through the laboratories, others are by private contractor. If you have an interest in pursuing an information technology element such as was mentioned above, and you see a benefit to the Army mission in pursuing it, you can come to one of the Army laboratories and negotiate with them to establish a contract.

Project 731, known as Government Industry Data Exchange Program (GIDEP), receives $367,000 of Army money that is blended with the other military services to make over a million dollars input. It is managed by the Navy in Corona, California. We support it as a Tri-Service Logistics Commanders preapproved program. In addition, we have another segment of this particular project which is called the Advisory Group on Electronic Devices (AGED). It was originated immediately after World War II as a vacuum tube study group and has been continued as a group of experts in solid-state physics and related fields. They enable us to bring together technologies that relate to solid-state devices so that DoD and industry are aware of the state of the art, pitfalls, common problems, resource materials, and so on.

Another project involves the Information Analysis Centers (IACs). There are 19 of them in DoD and seven of them belong to Army. The Army Centers are located at: Waterways Experiment Station, Cold Regions Research Laboratory, Fort Belvoir, and Dover, New Jersey. Dollars to support these centers amount to about $800,000 a year. They also get money from consumers and patrons for products and services produced by the IAC.

Another project in the program is Youth Science Activities that support high school science fairs and related youth activities. Its purpose is to interest high school students in science-related fields. Also to influence an other than adversarial attitude toward the military first-hand working experience with the military is provided. We invite the students to come to the laboratory for 2 to 3 weeks. If the program works out, we hope to invite them to spend an entire summer at the laboratory working directly with a research scientist. This allows them to get first-hand exposure in working with technology to encourage them to go into technical fields.

The next project in this program is called SIGINT EW. About $300,000 per year supports information technology specifically in the classified arena for signals intelligence and electronic warfare. This is primarily done at Fort Monmouth to develop special techniques needed to manipulate that kind of data. The goal is to get away from the digital, verbal, dialog type of data and to get into more analog processing so that information technology can be used to process information other than conventional book print.

Another responsibility within Army technical information is the principal coordination with the Defense Technical Information Center (DTIC). If you have a problem with anything having to do with the Army and it relates to dealing with DTIC, I am your point of contact if you need one. Of course, you can go directly to DTIC.

Another Army technical information responsibility is technology transfer responsive to the Stevenson-Wydler Act. The Stevenson-Wydler bill (passed in 1980) says that technology transfer must be implemented by government agencies to optimize the military dollar by transferring technology for private enterprise and public good. I am the Army point of contact to coordinate that entire effort.

In contrast, we have the Military Critical Technology List (MCTL), that is, technology export control. That area has emerged rapidly during the past year. I'm expecting it to loom significantly during the next few months because the parameters regarding MCTL are very vivid. I invite you to share your problems with me having to do with MCTL.

The three of us representing the Services are here to help you and provide that connecting link between your problems out in the field and relationships with scientific and technical information. Our service is not limited to DTIC but includes all the project areas addressed today.

EARLE E. KIRKBRIDE
Head, Technical Information Division
Naval Research Laboratory

I really had hoped to be the last person on this panel to speak. Then I could just have said; "Navy has the same program as these other guys." I could then have sat down. However, since I didn't get to be last on the program, I will list the major ways we contribute to scientific and technical information (STI) exchange. You will recognize most of them as supporting parts of the DoD-mandated program. There is an attachment that lists contact points on some of the items in case you want more information.

The technical reports data base at the Defense Technical Information Center (DTIC) is constantly being fed new reports on completed R&D work, both conducted by labs and by contractors. I recently identified 1625 new submissions during a 12-month period.

The work unit data base is also being regularly fed by Navy. For example, there were 2800 new and 21,000 modified 1498s submitted through the labs and centers in a recent 13-month period. There were many more submitted by various headquarters commands.

Navy Acquisition, Research and Development Information Center (NARDIC)

NARDIC has already been discussed as part of the Tri-Service Industry Information Center. NARDIC is the focal point within the Department of Navy for making information regarding research and development (R&D) planning and requirements available to industry representatives who are registered for DoD information services.

NARDIC has three offices for the convenience of industry: in Alexandria, Virginia; in Pasadena, California; and at Wright-Patterson Air Force Base, Ohio. At Alexandria, NARDIC is colocated with counterpart Army and Air Force offices, creating a Tri-Service Industry Information Center. At Pasadena and Wright-Patterson AFB, NARDICs are colocated with counterpart Air Force offices.

Each NARDIC office provides a reading room where representatives of qualified organizations may review those documents relevant to the R&D capability of the organization. On-line access to DTIC holdings is also available.

The services of NARDIC are available to representatives of industrial, scientific, or other organizations registered for access to DoD information services. An organization may register for DoD information services as a contractor or potential contractor.

Navy/Industry Cooperative Research and Development Program (NICRAD)

NICRAD was established to inform the scientific and technical community of the problems confronting DoD and the Navy. NICRAD provides a mechanism for interchange of classified technical information with civilian scientists and engineers and for facilitating technology transfer.

Through NICRAD both classified and unclassified technical information on Navy Requirements and existing R&D is provided to nongovernment activities. NARDIC and DTIC services are available to NICRAD participants. Participation is accomplished through the execution of a policy agreement with a NICRAD focal point. Firms, individuals, or activities with substantiated R&D capability and a reasonable potential for eventually receiving and executing a contract with the Navy, and/or those desiring to participate in the unclassified technology transfer program are eligible. Additional information can be obtained from the NARDIC offices.

Open literature, professional society conferences and technical meetings are pretty well evident, but I do want to say a word about patents.

The Navy publishes the Technical Invention Disclosure Bulletin. You may want to get on the mailing list for it. See the attached sheet for the address. Also, the Office of Navy Research provides information on patents available for licensing.

The Manufacturing Technology Program is an effort directed toward the establishment of new, or the improvement of existing, manufacturing processes, methods, techniques or equipment to reduce the costs of defense material and/or weapons systems by providing first-of-a-kind application to industrial scale operations. Remanufacturing operations are appropriate within the context of new technology applications. This embodies the application of manufacturing know-how to the acquisition and life cycle of defense material. The techniques or process tooling employed are production oriented and are based on research and development demonstrated feasibility or extrapolation of existing technology. Manufacturing technology is a process-oriented function and is not directed at design changes in the weapon system hardware as in value engineering, but instead to the processes which result in the fabrication/production of that hardware. It does include new methods of producing or processing basic materials required for fabrication of hardware. A contact point in NAVMAT is listed on the attachment.

The focal point for the Navy Technology Transfer Program is Marty Pearl. His address is on the attachment.

Government-Industry Data Exchange Program (GIDEP)

GIDEP is a cooperative activity between Federal Government and industry participants seeking to save time and money by making maximum use of existing knowledge on electronic components. The program provides participants with a system for the communication and automatic exchange of technical data essential in the research, development, production, and operational life cycle of systems and equipment.

GIDEP is centrally managed by Headquarters Naval Material Command and is funded by the U.S. Government. Participating organizations, in addition to the Navy, are the Army, the Air Force, the Marine Corps, and various other Federal Government agencies, as well as industrial-commercial organizations and the Canadian Department of Defense.

GIDEP participants have access to four major data banks: (1) Engineering Data Bank, (2) Failure Experience Data Bank, (3) Failure Rate Data Bank, and (4) Metrology Data Bank. Three special services available to GIDEP participants are: (1) the Alert System, which notifies participants of problem areas; (2) the Urgent Data Request System, through which a participant may query all other GIDEP participants on specific problems; and, (3) the Metrology Information Service (MIS), which provides rapid response to GIDEP participants on queries related to test equipment and measurement services. The MIS system also includes an extensive research capability which is available to participants on a fee basis.

GIDEP service is available without charge to participants. The program specifically excludes classified and proprietary information. Navy activity participation in GIDEP is mandatory.

The Shock and Vibration Information Center (SVIC) is the only Navy-managed IAC. SVIC collects, evaluates, and disseminates information on current and past studies of mechanical shock and vibration technology.

SVIC sponsors The Shock and Vibration Symposia and publishes the proceedings in The Shock and Vibration Bulletin. The Shock and Vibration Digest is a monthly SVIC publication containing abstracts of articles taken from over 125 worldwide journals and from unclasssified documents and reports. The Digest also includes feature articles, news briefs, reviews of meetings, short course offerings, a calendar of technical meetings, and reviews of books and technical documents. SVIC covers the current state-of-the-art in shock and vibration by publication of monographs written by experts in the field. A significant SVIC function is

its Direct Information Service, i.e., answering the questions of its subscribers by pertinent references, detailed literature searches, and referral to senior investigators and engineers who have direct knowledge of the requested information.

SVIC is located at the Naval Research Laboratory, Washington, D.C. Henry Pusey is the head of SVIC.

Advanced Planning Briefings for Industry (APBI)

APBI provide information to American industry to use in developing research and development plans that will be responsive to future Navy needs. They are formal, classified presentations of Navy research and development plans, programs, and problems relating to military requirements. Each briefing is sponsored by the Navy with administrative support by an industrial association such as the National Security Industrial Association or American Defense Preparedness Association. Proceedings of APBIs are available for review by qualified users through the NARDIC offices.

Test Technology Information Center (TTIC)

Although not officially an IAC, TTIC provides a similar service. TTIC maintains and disseminates information regarding research documentation in the field of test technology. Services available on request to Federal agencies and Defense contractors are (1) "customized" bibliographies, (2) dissemination of citations resulting from monthly data searches in response to specific information requests, and, (3) data search of in-house and other publication in the field of RDT&E and particularly test technology.

NAVY CONTRIBUTIONS TO STI EXCHANGE

- Technical Reports to DTIC
  - Labs/Centers
  - Contractors
- 1498s to DTIC
- Participation in Tri-Service Industry Information Center (NARDIC)
- Navy/Industry Cooperative Research & Development (NICRAD) Program
- Open Literature Articles
- Patents and Invention Disclosures
- Participation in Professional Society Conferences
- Sponsorship of Technical Meetings
- Manufacturing Technology Program
- Domestic Technology Transfer Program
  - Technology Transfer Fact Sheet
  - Technology Transfer Conferences
- Government-Industry Data Exchange Program (GIDEP)
- Shock & Vibration Information Center (SVIC)
- Advanced Planning Briefings for Industry (APBI)
- Test Technology Information Center (TTIC)

NAVY STI PROGRAM
Selected Contacts

Director Scientific and Technical Information
Earle E. Kirkbride
Naval Research Laboratory, Code 2600
Washington, DC 20375
Telephone: (202) 767-2187

NARDIC & NICRAD

In the Washington, D.C., area the NARDIC representative is located in the Headquarters, U.S. Army, Material Development and Readiness Command (DARCOM). The mailing address is:

Navy Acquisition, Research and Development
Information Center
Naval Ocean Systems Center
5001 Eisenhower Avenue
Alexandria, VA 22333
Telephone: (202) 274-9315

On the West Coast, the NARDIC representative is located in the Office of Naval Research. The mailing address is:

Navy Acquisition, Research and Development
Information Center
Naval Ocean Systems Center
1030 E. Green Street
Pasadena, CA 91106
Telephone: (213) 792-5182

At Wright-Patterson Air Force Base the NARDIC representative is located in Area B, Bldg. 22, Room S122 in the Air Force Avionics Laboratory. The mailing address is:

Navy Acquisition, Research and Development
Information Center
Air Force Avionics Laboratory (AFAL-TSR)
Wright-Patterson AFB, Ohio 45433
Telephone: (513) 258-4261

PATENTS AND INVENTION DISCLOSURES

Director, Navy Patent Program
Office of Naval Research
800 N. Quincy Street
Arlington, VA 22217

MANUFACTURING TECHNOLOGY PROGRAM

Headquarters, Navy Material Command
ATTN: Mr. John W. McInnis
Director, Manufacturing Technology Program, MAT 064
Washington, DC 20360

GOVERNMENT-INDUSTRY DATA EXCHANGE PROGRAM (GIDEP)

GIDEP Operations Center
Fleet Analysis Center (Code 805)
Corona, CA 91720

SHOCK AND VIBRATION INFORMATION CENTER (SVIC)

Shock and Vibration Information Center
Naval Research Laboratory, Code 5804
Washington, DC 20375
Telephone: (202) 767-2220

ADVANCED PLANNING BRIEFINGS FOR INDUSTRY (APBI)

Headquarters, Naval Material Command
ATTN: Code 00K5
Washington, DC 20360
Telephone: (202) 692-8831, 692-3201

TEST TECHNOLOGY INFORMATION CENTER (TTIC)

Fleet Analysis Center
Naval Weapons Station, Seal Beach
Corona Annex
Corona, CA 91720
Telephone: (714) 736-4264

WALTER BLADOS
Air Force Scientific and Technical Information Officer

The Air Force scientific and technical information program is an integral part of the Defense Scientific and Technical Information program, and in the Air Force we have dubbed our program the STINFO Program.

The office of prime responsibility for the Air Force STINFO program is the Director of laboratories through his laboratory management division, Headquarters, Air Force Systems Command. As with the DoD program, the Air Force STINFO program is intended to assist the RDT&E process by optimizing the use and generation of scientific and technical information.

STINFO offices are established at major commands such as SAC, MAC, TAC, ATC, AFLC, and at each product division, test center, and R&D laboratory. There is a twofold goal of these STINFO offices. One is to ensure that information generated at each command is properly processed and entered into a pertinent data base so that it may be accessed by others. The second is to provide searches and services to support the information needs of managers, scientists, and engineers.

But, let me move on to how the Air Force STINFO program contributes to the support of industry's information needs.

The Air Force information for industry offices are a vital part of the STINFO program. We use the focal points for these offices for providing industry with planning information.

A large part of the STINFO function is concerned with technical reports that are documented results of DoD-sponsored research and engineering projects. They cover work performed in-house or by contractors, subcontractors and grantees. Technical reports may consist of final reports, test evaluation reports, any data believed to be of potential value to other organizations, solutions to specific problems, and journal articles. Air Force technical reports may be definitive, exploratory, or a record of inconclusive or negative findings. All technical reports are made available through the Defense Technical Information Center (DTIC).

At many commands, the STINFO function includes participation in the R&T work unit information system (WUIS). We use the WUIS to increase the effectiveness of our R&D programs by identifying ongoing research and technology and to eliminate undesirable overlap of effort by coordinating programs with other components and agencies. Our work unit summaries are available through DTIC.

The abstracts of new technology (ANTS) are another vehicle we use to transfer our information and technology. ANTS are a one- or two-page summary describing new technology developed in Air Force laboratories or by Air Force contractors. ANTS are available through the National Technical Information Service (NTIS), published in their NTIS technotes. The small business administration is a principal user of NTIS technotes to bring new technological developments to the attention of the small business community.

The Air Force supports and contributes to the Government Industry Data Exchange Program (GIDEP). GIDEP is concerned with the acquisition, storage, retrieval, and dissemination of reliability test and usage information on parts, components, and materials, test equipment information and calibration procedures and related metrology data. In addition it is concerned with other reliability, maintenance, and maintainability data obtained in the development, testing, or field operation of hardware systems and other technological data of interest to program participants.

The information available from GIDEP can be applied to industry's system design, development, production, and support process. Design engineers find a ready source of proven parts information to meet specific applications. The nonstandard parts data packages are of great value during design and parts selection. Reliability engineers find the failure rate and mode information invaluable, and the continuous flow of safety and potential or actual failure experience information may preclude a system malfunction at any step of the way. Logisticians find the GIDEP information useful in projecting support and resupply requirements. Production engineers frequently find new and innovative techniques in these data interchanges to expedite operations or to reduce production costs. The most important aspect of all is the broad range of direct contacts in almost every technological area.

The Air Force domestic technology transfer effort, pursuant to the Stevenson-Wydler Technology Innovation Act of 1980 - Public Law 96-480, falls within the purview of the Air Force STINFO program. We provide technology application assessments through the Center for the Utilization of Federal Technology (CUFT), which is an adjunct of NTIS. Our STINFO offices also participate in the Federal Laboratory Consortium which is an informal network of laboratory members to transfer technology to the public and private sectors.

STINFO offices also provide support for the Information Analysis Centers. They are on distribution for pertinent reports and other documentation.

Air Force regulation 80-40 serves as the bible for the Air Force STINFO program. It implements DoD Directive 5100.38 (now 3200.12), and states policy and functions of the Air Force STINFO program. This regulation applies to all Air Force organizations generating or using scientific and technical information and outlines their responsibilities.

WORK GROUP SESSIONS

Three work group sessions were held concurrently the afternoon of the first day. Each session provided a forum for attendees to express their needs and concerns. The session had leaders and co-leaders from a cross section of DoD. The session on industry requirements was lead by an industry representative. The sessions were:

A. INDUSTRY PERCEPTION OF CURRENT AND FUTURE DOD SCIENTIFIC AND TECHNICAL INFORMATION PROGRAMS

Leader: **Col. A. Buswell**
Deputy Executive Director
Technical and Logistics Services
Defense Logistics Agency

Co-Leader: **Ms. Hanna Kinley**
Air Force Manager
Tri-Service Industry Information Center

Co-Leader: **Mr. Earle Kirkbride**
Head, Technical Information Division
Naval Research Laboratory

B. TECHNICAL INFORMATION AND PLANNING REQUIREMENTS OF INDUSTRY

Leader: **Mr. Earnest Deadwyler**
Manager
Technical Information Services
Equipment Group
Texas Instruments Incorporated

Co-Leader: **Mr. Frank Lukasik**
Chief, Patent Counsel
Headquarters Air Force Systems Command

Co-Leader: **Mr. Robert Chaillet**
Program Manager
Army Work Unit Information System

C. IMPROVING THE DOD/INDUSTRY INFORMATION EXCHANGE PROCESS

Leader: **Mr. Hubert Sauter**
Administrator
Defense Technical Information Center

Co-Leader: **Mr. Walter Blados**
Air Force Scientific and Technical Information Officer

Co-Leader: **Mr. E. Jack Kolb**
Principal Army Technical Information Officer

Participants shared freely in the discussions and were able to change sessions during the break. The discussions were summarized and recommendations were generated for the summation of the work groups at the conclusion of the conference.

SUMMARY OF DISCUSSIONS AND RECOMMENDATIONS FOR WORKING SESSION A

Leader: Col. A. Buswell, Co-Leaders: H. Kinley, E. Kirkbride

INDUSTRY PERCEPTION OF CURRENT AND FUTURE DOD SCIENTIFIC AND TECHNICAL INFORMATION PROGRAMS

Work Group A divided the recommended areas into two categories. The first being current issue areas and the second being future issue areas.

CURRENT ISSUE AREAS

1. Incompleteness of Data Bases: Both Work Unit (1498) and Tchnical Reports.

Submissions of 1498s as well as technical reports were low, inaccurate, and not timely.

Recommendation: (a) DTIC attempt to simplify submission process; (b) DoD reemphasize the program through increased command emphasis and make every effort to include the requirements for 1498s in the Defense Acquisition Regulation (DAR). A proposed DAR case - contracting officers shall receive Research and Technology Work Unit Information Summary (DD 1498) prior to award of R&D contract/ grant, is currently in coordination before being submitted to the DAR Council.

2. Problems With On-Line Access.

Process to obtain a secure terminal was too lengthy and cumbersome, that delays were being experienced in the dial-up program based on the number of terminals, and that at the present time DROLS is over-subscribed causing an impact on current users.

Recommendation: DoD/DLA/DTIC expedite system upgrades and seek necessary DoD support for funding of these upgrades.

3. Publicity of STI Programs Needs Improvement.

Additional publicity aimed at industry is needed. Publicity and information should be targeted at the corporate management level in addition to the librarian community. DTIC's Newsletter contains too much technical jargon that is not understood by the corporate management level. A catalog of available data bases is needed and every effort should be made to continue and expand DoD participation with industry associations.

Recommendation: DTIC/DoD make every effort in the above areas.

4. Limited Statements Are Being Abused

DTIC Form 55 (Request for Limited Document) procedures are cumbersome and currently poorly defined. Currently it is easier to get confidential materials from DTIC than to get limited material.

Recommendation: The revision to DoDI 5200.20 (Distribution Statements on Technical Documents) currently being processed needs to be expedited and to permit the use of additional options to those which currently exist. Contractors in the field need to be provided continued education as to the benefits and disadvantages of limited classifications. The DTIC role in the process needs to be more authoritative to ensure that the 55s are validated.

5. Industry Perceptions

DTIC is generally doing a good job, however, they would like more and faster service. Tri-Service Agencies are working very hard in providing a valuable service, but if provided additional staff could even be more beneficial to industry. Generally, DARPA was not provided high marks and indication was that DARPA failed to respond in most instances to requests form industry.

Recommendation: DoD/DTIC continue the emphasis to providing the assistance.

FUTURE ISSUES

1. Worth of the IR&D Data Base is Questionable.

Statistics indicate very low accession, and based on industry comments the data base may be of limited value.

Recommendation: DoD evaluate the need to continue this data base on a cost versus benefits analysis.

2. DROLS Training Should be Expanded.

Training is very difficult to get due to limited DTIC training resources and that, in addition to basic training, refresher training is needed for those activities currently on the system.

Recommendation: Additional resources be applied to providing the training or that a system of contractor-provided training be established.

3. Improvements to the 1498 Input Procedures Should be Considered.

The current method of submitting 1498 data either in hard copy or tape could be expanded to state-of-the-art using Optical Character Recognition (OCR), etc.

Recommendation: DoD evaluate input systems and possibly expand the methodology to include a program similar to the shared bibliographic input system.

4. Improvements in the Access Systems Need to be Explored.

Current programs are extremely complicated, not user friendly, and frequently are delayed due to system workloads.

Recommendation: DoD explore other methods of providing the data or handling the data such as networking, user friendly language, gateway programs, and systems that are currently available under the state-of-the-art.

5. Potential Contractor Programs (PCP) Should Be Reviewed.

Inconsistencies in submission requirements are a problem for potential registrants.

Recommendation: DoD review the program with a view to standardizing PCP registration procedures.

6. Procedures for the Removal of Limited Statements Should Be Streamlined

A system of automatic review could be established to remove limited statements after a period of time, or a formalized contractor industry program might be appropriate.

Recommendation: DoD review the program to see if some type of automatic downgrading is possible.

7. Alternate to the Program Planning Data Base Recently Terminated is Required

This type of data is vital to industry, and cancellation of this data base has hurt the potential contractors program and may lead to a further diminishing of manufacturing sources.

Recommendation: DoD explore other types of programs such as the Navy Sub Project Program Plan or the Program Element Descriptive Summaries as possible alternatives to the 1634 program.

SUMMARY OF DISCUSSIONS AND RECOMMENDATIONS FOR WORKING SESSION B

Leader: Earnest Deadwyler, Co-Leaders: F. Lukasik, R. Chaillet

TECHNICAL INFORMATION AND PLANNING REQUIREMENTS OF INDUSTRY

This report is based upon discussions in the working session and the requirements stated earlier in letters to DTIC from individual companies and industry associations regarding research and development planning data and technical information needs. Comments in the working session reemphasized and amplified the requirements expressed in these letters and those stated in the presentations of Margo Giordano and Fred Lewis earlier in the conference. The letters and working session discussions also expressed industry's concern with the cancellation of DoD Instruction 7720.16 requiring DD Form 1634 input to the research and development planning data base.

Basically, those who obtain and use it are concerned with the increasing difficulty in obtaining defense requirements and planning data and technical information. The cancellation of the R&D planning data base also seems to be a shortsighted and counterproductive action. It was noted that these actions seem not to be in consonance with the spirit of the Carlucci memorandum of 30 April 1981 regarding improving the acquisition process, DoD Directive 5000.1, published 29 March 1982, and statements of Dr. DeLauer regarding the Independent Research and Development Program in congressional testimony in April 1982. These documents and statements refer to being more agressive and imaginative in looking for ways to save money throughout all phases of the acquisition process; maintaining an ethical distance in business relationships between DoD and industry without the relationships becoming adversarial; maintaining technical collaboration with industry to achieve major systems objectives and meet technological challenges; and creation of an environment which encourages development of innovative concepts which complement and broaden the spectrum of concepts developed internally to DoD. Cancellation of the R&D program planning data base also runs counter to the general trend in technology and information science toward greater utilization of computerized information search and retrieval techniques to make scientists and engineers more productive.

Industry is encouraged by the interest in this problem shown by Dr. Young and the opportunity given by this conference for a voice in identifying actions needed to improve the technical information exchange process. That Dr. Young would request DTIC to hold this conference and take time from a very busy schedule to be with us during this conference is especially appreciated.

Considering the exchange of research, development, and acquisition planning data and technical information in light of DoD memoranda, directives, and statements such as those referred to earlier, the basic goal of the process which emerges is improved efficiency and productivity of U.S. research and development and production resources. The basic needs of U.S. defense industry to achieve this goal include:

-- Maximum access to defense research, development, and acquisition program planning and technical information within limits imposed by national security and the proprietary data rights of individual companies.

-- Maximum focus on development of innovative concepts and technology, and minimum diversion of industry scientists and engineers to locate and acquire required planning and technical information.

-- Uncomplicated access to data sources containing timely and complete research, development, and acquisition planning information from all DoD agencies.

-- Information insight at DoD and military service levels high enough to identify those requirements having highest priority and emphasis.

-- Real time insight into the DoD/congress planning, programming, and budgeting process to help determine priorities and trends.

-- Information accessible by on-line search techniques to locate and extract quickly information on specific programs of interest.

-- "Real" information used by DoD planners, rather than information prepared especially for industry.

-- Option for on-line access to classified information via remote terminal.

The specific types of research, development, and acquisition planning data and technical information required by industry have been identified and discussed in detail in the numerous letters sent to DTIC in response to the industry survey reported on by Carlynn Thompson. Participants in the working session emphasized the need for insight into total defense requirements from the long-range strategic plans down to the subproject and task level. Contractors require information to determine their own strategic thrusts and to make decisions about where to place research and development and capital investments in order to position

themselves to remain competitive in the long term, as well as to continue to generate cash flow by participating in near-term development and production programs. The information requirements to do this were summarized by one participant as a complete listing of planning information, confidence in its contents, and a ready mechanism for access to the information.

An accompanying basic and critical need is a top-down effort to educate those who control the flow of information to industry with regard to policies and procedures to enable them to assist industry in obtaining information to which they have legitimate access, rather than hindering its release.

The specific actions which are recommended to meet the research, development, and acquisition planning and technical information needs of industry are:

1. Restore the R&D planning data base or replace it with a new on-line data base. It is essential that this data base be search-compatible with the work unit information system and technical reports data bases.

2. If not restored, retain the present 1634 data base on line for at least two years to continue to make available data such as historical trends and contact points which has useful value beyond the current year.

3. Include in the new data base input by project (technical and funding requirements) including January FIDEP data, the POM in May, and changes to the POM in September. Include in the input data task detail for projects below the five-million-dollar level.

4. Provide an overview of the information available for both DoD and industry managers and planners by compiling and publishing periodically an announcement bulletin listing research, development, and acquisition planning documents, sources, and points of contact. (The document list presented by Rod Alderton in this conference is an example of the type of information of interest.)

5. Make available to industry a complementary data base of engineering facilities developed by DoD funds in both government and contractor plants to assist in planning capital investment and test programs.

6. Continue and expand the highly effective DoD Tri-Service Centers. Industry members who have used them are highly complimentary of the attitude of the personnel and the cooperation received in locating and obtaining needed information. Expanded coverage should include information from other DoD agencies and procurement planning data and information.

7. Simplify procedures regarding the release of threat data to defense contractors (recognizing that it is difficult to obtain a coordinated and approved threat even within DoD, because of the sensitivity of the information).

8. Provide both within DoD and for the contractor community additional publicity for the Army Qualitative Requirement Information (QRI), the Navy/Industry Cooperative Research and Development (NICRAD) Program, and the Air Force Potential Contractor Program.

9. Conduct, or encourage under DoD overview, a program to educate the gatekeepers for the dissemination of research, development, and acquisition planning and technical information with regard to government and DoD policies and procedures and guidelines for release.

10. Establish a clearinghouse or court-of-last-resort to which an appeal can be made when special problems arise in obtaining classified information (recognizing the desire to keep the authority for release at the lowest possible level).

11. Establish a special task force to review and analyze the detailed information which industry has provided through letters from individual companies and industry associations and presentations at this conference concerning the types of research, development, and acquisition planning and technical information required and recommend actions to be taken, provide a report to industry and DoD agencies as to the actions taken or to be taken on the recommendations.

In closing, we wish to recognize the splendid service provided by DTIC and the cooperative and helpful attitude of those who work with industry in providing technical information. Both DTIC and the DoD Tri-Service Centers should be continued and supported with additional resources. Finally, we appreciate the interest, time, and support given by Dr. Young in this critical area of DoD/industry relations.

SUMMARY OF DISCUSSIONS AND RECOMMENDATIONS FOR WORKING SESSION C

Leader: Hubert Sauter, Co-Leaders: W. Blados, E. Kolb

IMPROVING THE DOD/INDUSTRY INFORMATION EXCHANGE PROCESS

The following is a summary of the group's discussion. It is felt that there was a need to:

1. Improve industry's knowledge of what information is available to them and the sources from which this information may be obtained.

2. Improve access to information that is useful to planners. The information needs to be timely, complete, and contain projections for the future. A listing of planning documents is desired.

3. Have more convenient and timely access to documents cited in RFPs, e.g., standards, specifications, forms, and even technical reports.

4. Expand the services and staff at the Tri-Service offices.

5. Make additional data bases available on DROLS, e.g., How to Get It, Data Base of Data Bases.

6. Have consistent application by the military services and DoD agencies of DoD policy, and DoD directives and instructions.

7. Develop cross-references and appropriate links between the data bases maintained at DTIC to provide needed information about activities that are related.

8. Provide additional information about foreign technology, e.g., coverage, access, availability of translations, etc.

9. Review the DoD policies and practices regarding the release of information.

10. Establish better means of communicating with industry and industry groups.

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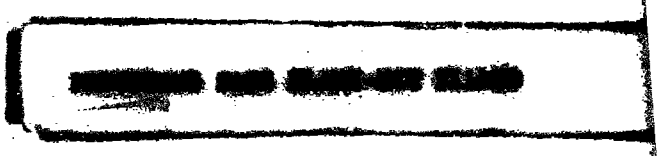

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