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# USER INFORMATION NEEDS: THE CHALLENGE AND A RESPONSE

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MCDONNELL DOUGLAS ASTRONAUTICS COMPANY
WESTERN DIVISION

MCDONNELL DOUGLAS
CORPORATION

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## ABSTRACT

Technical progress is the outstanding emblem of our times. That progress generates a phenomenal amount of information, which creates an interesting paradox. It is axiomatic that existing information is the raw material for future progress and, in turn, for profits. However, the flow of information creates a significant challenge in terms of both its quality and quantity. The challenge of an information system, therefore, is to become an accessible and rapid conveyor belt for appropriate high-quality information, from its generator to its user.

A major investigation into the flow of scientific and technical information has been completed recently. Its objective was to describe the information needs of scientists and engineers, and the information system which serves them. When generalized, the results of this study yield a characterization of the challenge in terms of goals for the flow of information.

The Mechanized Library Information System, which serves West Coast locations of the McDonnell Douglas Corporation, provides an excellent means for a local response to the challenge and its goals. Two pilot programs have been initiated to improve the flow of information, as well as to provide data concerning the mechanics of operation, effectiveness, and cost of this improvement. The first program concerns both inward and outward extension of information awareness, and the second program concerns a capability profile and a roster of expert personnel.

A description and evaluation of the Information Awareness Pilot Program, and a discussion of progress on the Capability Profile Pilot Program, are presented.

# INTRODUCTION

Technical progress is the outstanding emblem of our times. That progress generates a phenomenal amount of information. Both the volume of information and the complexity of its content are greatly increasing with time. The existence of this increasingly larger and more complex body of information creates an interesting paradox.

It is axiomatic that existing information is the raw material for future progress and, in turn, for profits. However, the flow of information creates a significant challenge in terms of both its quality and quantity. The challenge of an information system, therefore, is to become an accessible and rapid conveyor belt for appropriate high-quality information, from its generator to its user.

Response to the challenge is important to academic institutions, industrial organizations, and government. With new legislation treating the use of copyrighted material in an information system, it becomes relevant not only to the executive branch of government, but also to the legislative and judicial branches. It is of significance to those concerned with research and development, in addition to those concerned with information systems. Finally, it is pertinent to management, as well as to the information user – currently the one who is not only most affected, but also most complacent and least considered.

A major investigation into the flow of scientific and technical information has been completed recently. Its objective was to describe the information needs of scientists and engineers, and the information system which serves them. Organizations surveyed by the study constitute a reasonable cross-section of scientific and technical organizations, although they were selected on the basis of being defense contractors. In the absence of a comparably comprehensive and definitive investigation into the flow of information in general, it is informative to view the results of the study as indicative, if not totally applicable. When generalized, these results yield a characterization of the challenge in terms of goals for the flow of information. Reference 1 summarizes the investigation, which is covered in detail by Reference 2, and introduces the goals. A more general treatment of the challenge and its goals appears in the second section.

In January 1959, the Douglas Aircraft Company began an investigation into mechanization of its library information system. The resulting Mechanized Library Information System, which serves West Coast locations of McDonnell Douglas Corporation, provides an excellent means for a response to the challenge and its goals. It is described by Reference 3, and reviewed in the third section.

Three of the information-flow goals are to:

- Extend the information system inward to the environment of the information user.
- Extend the information system outward to the information community.
- Expand the information system to include expert personnel.

To improve the flow of information, West Coast locations of the McDonnell Douglas Corporation initiated two pilot programs. These programs also provide data on the mechanics of operation, effectiveness, and cost of improving information flow. The first program concerns both inward and outward extension of information awareness, and the second program concerns a capability profile and roster of expert personnel.

A representative sample of 65, from the approximately 350 recipients of notification from the System's Automatic Selective Dissemination of Information Subsystem, was selected to participate in an Information Awareness Pilot Program. Their standard notification was augmented with the appropriate portion of the Defense Documentation Center's Technical Abstract Bulletin. Then the effectiveness of both standard notification and notification augmentation, and the cost of notification augmentation, were evaluated by Program participants. A significant conclusion of the Pilot Program is that a library information system must couple an improvement in information awareness with a corresponding improvement in information acquisition, if it is to be effective. The fourth section describes and evaluates the Information Awareness Pilot Program.

A Capability Profile Pilot Program focuses upon personnel in the Western Division of McDonnell Douglas Astronautics Company that possess capability in probability, statistics, operations analysis, and related computation. Each of them was surveyed to ascertain his level of competence in areas within the disciplines. The resulting Capability Profile and Roster is being incorporated into the System's Literature Search Subsystem, as well as being circulated to selected management. Effectiveness of assistance by the personnel in these disciplinary areas will be evaluated. Progress on the Capability Profile Pilot Program is discussed in the fifth section.

## THE CHALLENGE AND ITS GOALS

Conclusions of the investigation into the flow of scientific and technical information provide a set of goals for the flow of information, and a set of measures with which to evaluate a general information system. These goals characterize the challenge of an information system: to become an accessible and rapid conveyor belt for appropriate high-quality information, from its generator to its user. They are based upon a reasonable generalization of the investigation's findings, which are summarized by Reference 1 and covered in detail by Reference 2.

The *user of information and performance of a task* jointly determine *information needs*. To satisify these needs, the user embarks upon an *information acquisition process*, by *utilization of the information system* or *utilization of personal information contacts*. The objective of the *information system* is to aid the flow of information, by aiding the user in his information acquisition process. Media which contain and convey information resources of the information system constitute the *information base*. The information acquisition process then provides *information* to the user for *application* to task performance. Flow of information is pictorially depicted by Figure 1.

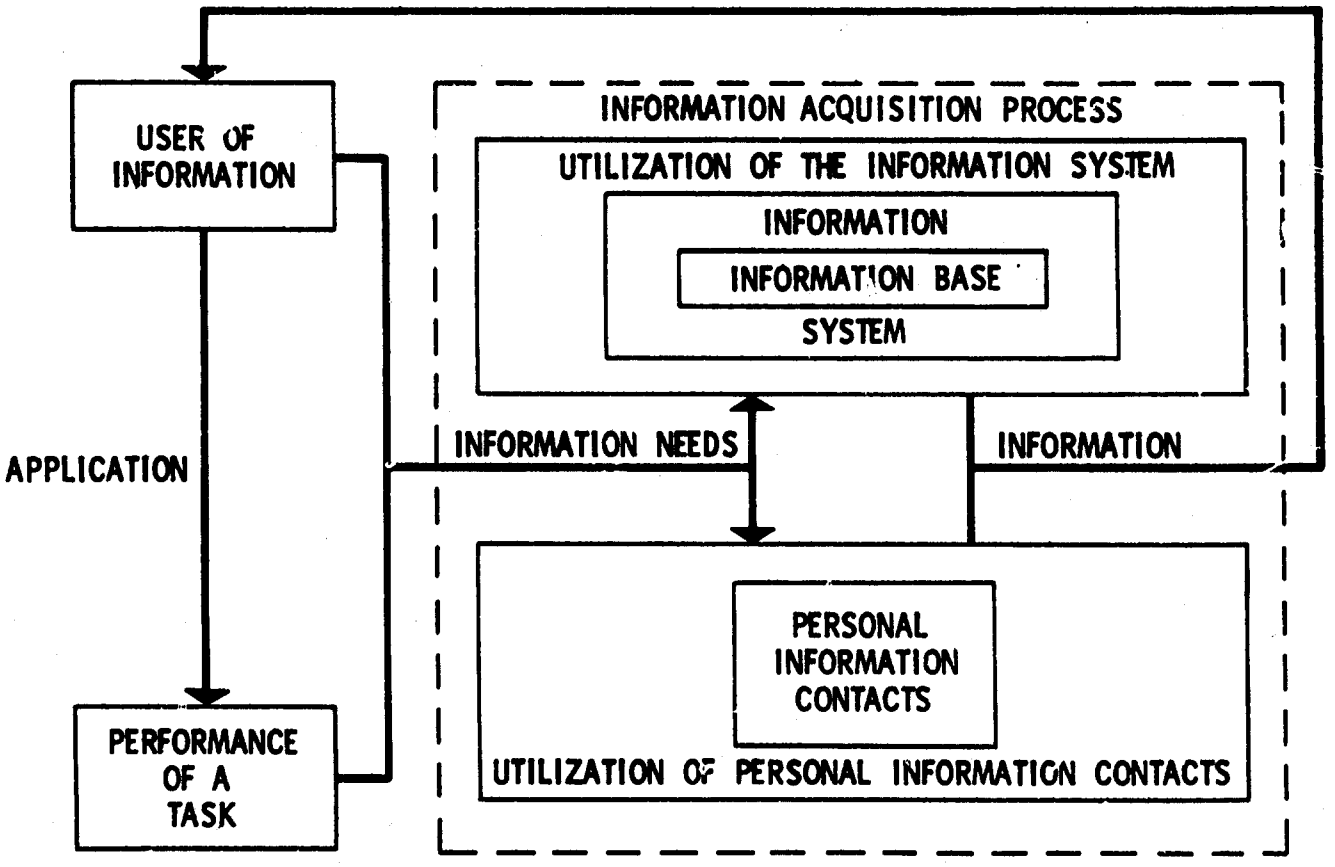


Figure 1. Flow of Information

Goals for the flow of information are to:

- *Bridge the information gap* between the user of information and the information system which serves him.

- *Reorient the user of information* to be an active seeker of high-quality information, *the information system* to be an active provider of high-quality information – rather than merely a passive document repository, *and management* to be an active supporter of both.

- *Extend the information system inward* to the environment of the information user, by providing automatic and selective awareness of information through dissemination of abstract or key-word descriptions for media in the information base, and by coupling this with quick and easy acquisition of desired information.

- *Extend the information system outward* to the information community in general, by the appropriate utilization of available information resources – such as those offered by national mission-oriented information networks, national product-oriented information services, national discipline-oriented information activities, national library-oriented information functions, national information cooperatives, and regional information cooperatives.

- *Expand the information system* to include expert personnel, for functioning interactively as both information sources and connections with the informal information system ("professional in-groups"), by the compilation and dissemination of listings of expert personnel within significant disciplinary and program areas.

- *Expand the information base* to include information media which are more diverse in orientation and mode of expression (form, composition, and layout), and which are modular in construction – so that new media may be synthesized by the selective organization, analysis, and repackaging of appropriate information modules.

Figure 2 summarizes the goals. The goals have been phrased so that each of them may apply to a general information user/system combination, although all of them need not jointly apply to a particular information user/system combination. In addition, the degree to which each of them should be implemented depends upon the significance and type of information user, and capability of the information system – which together determine implementation feasibility.

- BRIDGE THE INFORMATION GAP BETWEEN THE USER OF INFORMATION AND THE INFORMATION SYSTEM WHICH SERVES HIM
- REORIENT THE USER OF INFORMATION TO BE AN ACTIVE SEEKER OF HIGH-QUALITY INFORMATION, THE INFORMATION SYSTEM TO BE AN ACTIVE PROVIDER OF HIGH-QUALITY INFORMATION, AND MANAGEMENT TO BE AN ACTIVE SUPPORTER OF BOTH
- EXTEND THE INFORMATION SYSTEM INWARD TO THE ENVIRONMENT OF THE USER
- EXTEND THE INFORMATION SYSTEM OUTWARD TO THE INFORMATION COMMUNITY
- EXPAND THE INFORMATION SYSTEM TO INCLUDE EXPERT PERSONNEL
- EXPAND THE INFORMATION BASE TO INCLUDE INFORMATION MEDIA WHICH ARE MORE DIVERSE IN ORIENTATION AND MODE OF EXPRESSION, AND WHICH ARE MODULAR IN CONSTRUCTION

**Figure 2. Goals**

## THE MECHANIZED LIBRARY INFORMATION SYSTEM

Development of the Mechanized Library Information System was begun in January 1959. While evolving to keep pace with improving computer equipment, the System has remained essentially the same since its inception. This section provides a current review of the System, as a background for discussion of the two Pilot Programs. Reference 3 contains a more complete, but less up-to-date, System description.

As indicated by Figures 3 and 4, the System follows what has become a standard pattern for such systems. Books, reports, microfilm, mocrofiche, and other forms of documentation are directed to the technical processing department of the library, to be checked for duplication, assigned a number, recorded, and analyzed for bibliographic and descriptive cataloging. Once cataloging is completed on the work sheet, the document and work sheet are separated, with the document going to its requestor and the work sheet going to a flexowriter operator. Input to the System's computer operation is made once every two weeks, with major libraries alternating weeks to avoid an overload of computing facilities.

Computer operation of the system begins after work sheets are transcribed on punched paper tape by means of a flexowriter, and instructions to the computer are transcribed on computing loadsheets. The System's computer operation utilizes several different types of equipment (see Figure 4). Punch cards are created from the computing loadsheets on a key-punch machine, and both paper tape and punch cards are converted to magnetic tape on an RCA Spectra 70/45. This magnetic tape is input to an IBM 360/65, where the master reference and inverted file tapes are updated and the print and new transaction tapes are generated. A dictionary tape is updated through a special program on the IBM 360/65. The new transaction tape is then run against the Automatic Selective Dissemination of Information (ASDI) profile tapes. Print tapes for general output are processed on the RCA Spectra 70/45, and print tapes for the book-form printout are processed on the SC 4020.

Computer output is returned to the library for dissemination and use (see Figure 3). This output contains 3 x 5 catalog cards and/or book-form printout, 5 x 8 coordinate index cards, accession lists, ASDI current awareness, machine literature searches, and numerous statistics concerning System input.

For the user, the major products of the System are machine literature search and ASDI current-awareness response cards. Figure 5 contains an example. Card format is essentially the same for both literature search and ASDI, with only a difference of notation in the upper right-hand corner. The card's 3 x 5 left-hand section is for retention by the recipient, and its 3 x 5 right-hand section is for return to the library with an appropriate response -- a "Yes" response under "Request Copy" serves as an order slip to the library. The desirability

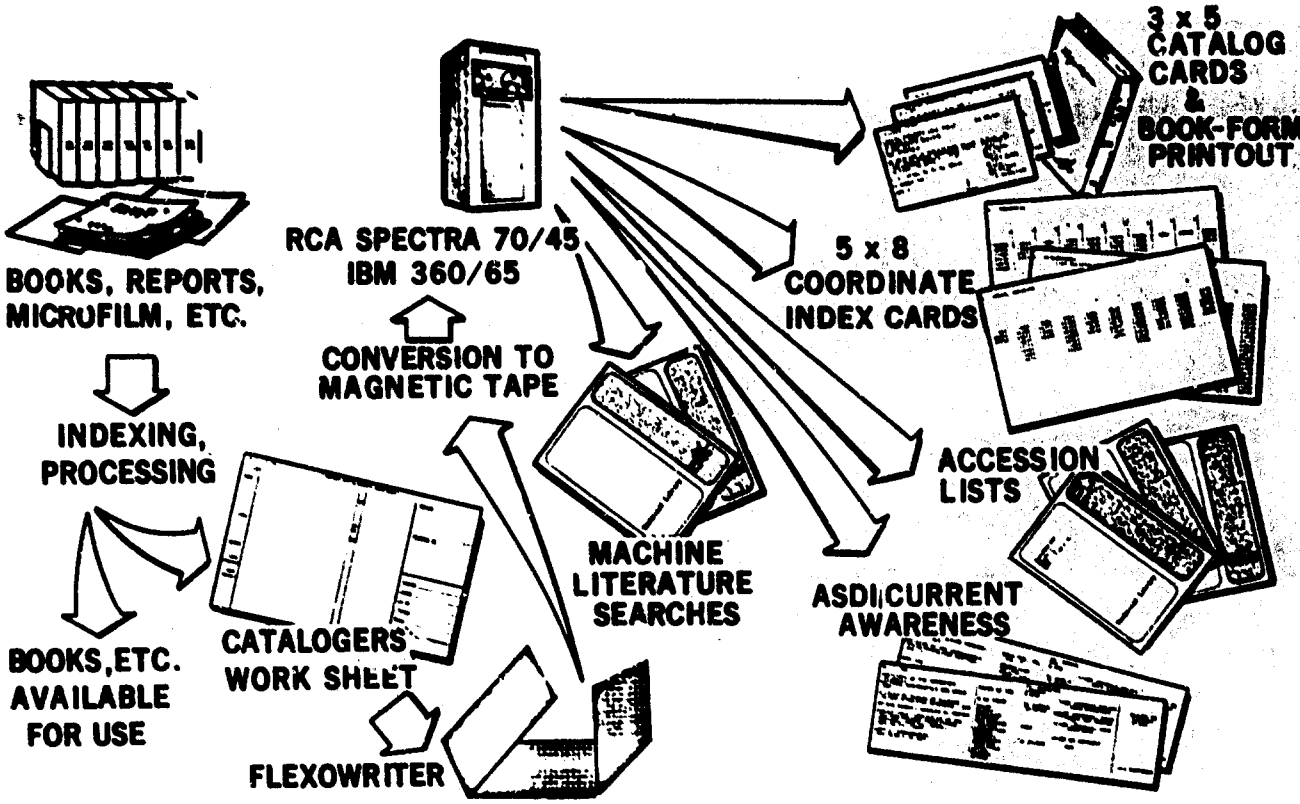


Figure 3. Mechanized Library Information System

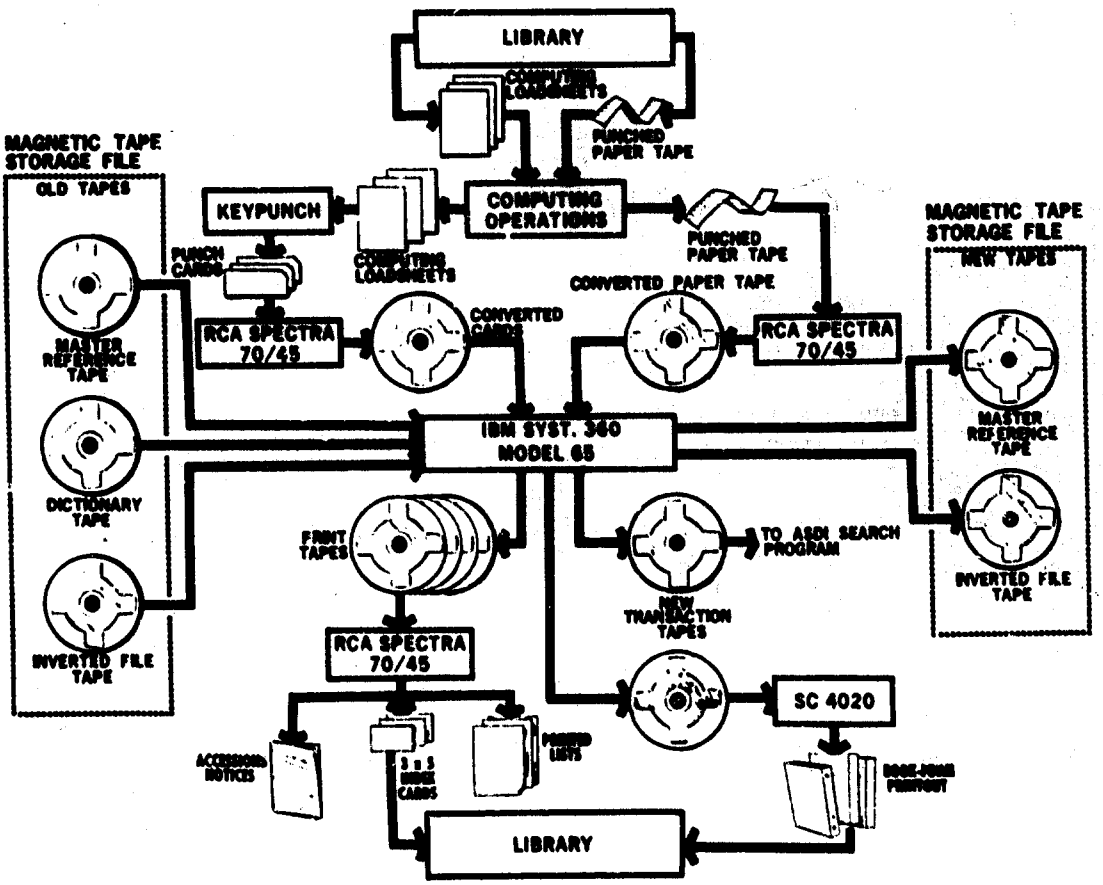


Figure 4. Mechanized Information System

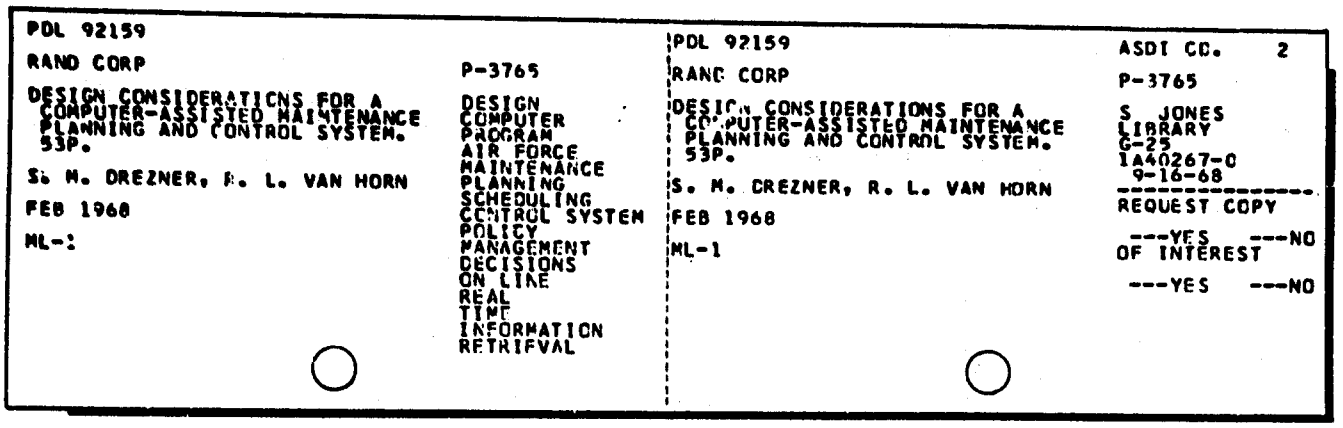


**Figure 5. Literature Search/ASDI Response Card**

of being able to retain the card's left-hand section was favorably commented upon by many personnel, during evaluation of the Information Awareness Pilot Program.

Both literature search and ASDI are based on descriptors or subjects, which can be defined in several ways. A term can be pre-coordinated, weighted, or indicated as "required" or "not desired." Scope can be controlled by date limitation, accession number limitation, quantity limitation, or library location. A search may be performed any time the necessary priority is secured; otherwise, searches are batch-processed once a week.

As anyone who has dealt with a mechanized system is well aware, strange things sometimes occur when material is input to a computer. System computer printouts allow determination of what the computer has done to the input. The printout notices include the number of items accepted, number of items not accepted due to input errors (and what those errors are), number of items replaced, a gap list of numbers not used, and a list of spelling errors, prepared in a loadsheet format so that the notice itself can be used for input correction.

To conclude discussion of the System, the work sheet used by the cataloging staff is now described. This work sheet, shown in Figure 6, contains the processing history of a document. Items shown are self-explanatory, but of particular interest is the fact that listings are created for each marginal entry under company and title. All authors up to five are treated as individual entries, as are all report numbers appearing opposite the company field. Since the work sheet possesses maximum flexibility regarding characters and lines available, it is easily adapted for employment in the Capability Profile Pilot Program (see Figure 15).

| | | | | |
|---|---|---|---|---|
| ABSTRACT PDL NO: | 3527 | | | CHARGE TO: |
| COMPANY: | air force office of scientific research<br>westat research analysts, inc. | | afosr 66-171<br><br>ad 628 191 | |
| | | | | PERM RET TO: |
| TITLE: | some theoretical aspects of the improvement of document screening by associative transformations. 48p. | DES | documentation<br>screening<br>information<br>storage<br>retrieval | |
| AUTHOR: | e. c. bryant, d. t. searls, r. h. shumway | | | CHECKED<br>LOGGED<br>CAT BY<br>PROCESSED BY<br>FLEXED<br>PROOFREAD<br>REFLEX |
| DATE (PERIOD) | 30 november 1965 | | | |
| COPY # (NOTES) | c.1 | | | ORDER NO:<br>PRICE |

FORM 60-900 (REV. 7-63)

Figure 6. Work Sheet

## INFORMATION AWARENESS PILOT PROGRAM

An awareness of current information is one of the most meaningful and effective services a library information system can provide to its users. With the great mass of information available today, it is mandatory that the information awareness be selective in nature. The ASDI Subsystem has provided selective information awareness for six and one-half years. To expand the information base for this selective information awareness, West Coast locations of the McDonnell Douglas Corporation initiated the Information Awareness Pilot Program, which augments standard ASDI notification with the appropriate portion of the Defense Documentation Center's (DDC's) Technical Abstract Bulletin (TAB).

A representative sample of 65, from the approximately 350 recipients of ASDI notification, was selected to participate in the Pilot Program. They were selected so that each location and most TAB fields and groups were included.

The Pilot Program's mechanics of operation, which are described by Figure 7, were made as simple as possible. Each user's ASDI profile was converted into the proper subject fields and groups of TAB, by using Reference 4. Once the profiles were converted, the number of copies needed for each field and group within TAB was determined. Segmentation of TAB was accomplished by separating its pages, and marking the required number of copies on each page. The loose pages were sent to the reproduction department, and were returned usually within 24 hours. Then sections were assembled by field and group, marked with a user's code number, and repackaged for distribution.

An additional benefit of segmentation was introduced when TAB became classified as CONFIDENTIAL: although the total compilation of announcements is CONFIDENTIAL, the individual fields and groups are unclassified. This not only makes segments more readily available to a user, but also decreases handling cost by eliminating security accountability requirements.

Figure 8 presents the cost of the Pilot Program, based upon a standard rate of $6 per hour. Although computer production of this notification from DDC magnetic tapes would facilitate an expansion to many more users, manual production appears to be feasible for 100-150 users.

Six months following inception of the Pilot Program, a segmentation of TAB by field and group became available to the System, through participation of McDonnell Douglas Corporation in the experimental Advanced Services and Products (ASP) Program of DDC. Reference 5 describes the ASP Program. That segmentation of TAB, called Group Announcement Bulletins (GAB's), was then utilized for notification augmentation in the

- SIMPLE CONVERSION OF USER PROFILE TO COSATI FIELDS AND GROUPS

- EASY SEGMENTATION, REPRODUCTION, AND RE-PACKAGING OF TAB

- EXPEDITED DISTRIBUTION THROUGH ELIMINATION OF RESTRICTIVE CLASSIFICATION

Figure 7. Mechanics of Operation

| | |
|---|---|
| • PROFILE CONVERSION | $126.00 |
| • TAB SEGMENTATION PER ISSUE | $ 24.00 |
| • SEGMENT REPRODUCTION PER ISSUE | $ 47.00 |
| • SEGMENT REPACKAGING PER ISSUE | $ 66.00 |
| • SEGMENT DISTRIBUTION PER ISSUE | $ 9.00 |

Figure 8. Cost for 65 Users

Pilot Program. However, an evaluation of the Pilot Program was performed prior to the change.

The evaluation was accomplished by a short questionnaire, which was completed during an interview with the user. This questionnaire covered importance of notifications from both ASDI and TAB-augmented ASDI to a user's general information base, and frequency of use of notifications from both ASDI and TAB-augmented ASDI in a user's general information base. In addition, the user's highest degree and voluntary comments were recorded. Response to the questionnaire is summarized in Figure 9.

Many of the users were pleased at the prospect of commenting upon the System to a System representative. Several significant discussions also resulted from these interviews, once again underscoring the need for personal communication between the information user and the information system which serves him.

Figure 10 describes Pilot Program effectiveness. Both ASDI and TAB-augmented ASDI notifications were rated "quite helpful" by almost three-fifths of the users, although TAB-augmented ASDI notification was rated somewhat less helpful than ASDI notification. This probably reflects the difference between a tailored and a general profile. The two forms of notification were used for acquisition less frequently than anticipated, with TAB-augmented ASDI notification being used somewhat less frequently than ASDI notification. An examination of this effect indicated that both acquisition procedure and acquisition time had influenced the responses.

A significant conclusion, substantiated by voluntary comments as well as the above results, is that a library information system must couple an improvement in information awareness with a corresponding improvement in information acquisition, if it is to be effective. Information awareness in the absence of quick and easy information acquisition produces a frustrated and unsatisfied user. Accordingly, this significant conclusion is summarized in Figure 11 by a new acronym, ASADI: *AUTOMATIC SELECTIVE ACQUISITION AND DISSEMINATION OF INFORMATION.*

| | ASDI (%) | TAB-AUGMENTED ASDI (%) |
|---|---|---|
| IMPORTANCE OF NOTIFICATIONS | | |
| ABSOLUTELY ESSENTIAL | 15 | 9 |
| QUITE HELPFUL | 60 | 58 |
| SOMEWHAT HELPFUL | 25 | 31 |
| NOT HELPFUL AT ALL | 0 | 2 |
| FREQUENCY OF USE | | |
| 0.75 TO 1.00 | 20 | 13 |
| 0.50 TO 0.74 | 29 | 20 |
| 0.25 TO 0.49 | 40 | 34 |
| 0 TO 0.24 | 11 | 33 |

| HIGHEST DEGREE | (%) |
|---|---|
| DOCTORATES | 16 |
| MASTERS | 35 |
| BACHELORS | 47 |
| NONE | 2 |

Figure 9. Evaluation of the Information Awareness Pilot Program

- BOTH ASDI AND TAB-AUGMENTED ASDI NOTIFICATIONS RATED AS "QUITE HELPFUL" BY ALMOST 3/5 OF THE USERS

- TAB-AUGMENTED ASDI NOTIFICATION RATED SOMEWHAT LESS HELPFUL THAN ASDI NOTIFICATION

- BOTH ASDI AND TAB-AUGMENTED ASDI NOTIFICATIONS USED FOR ACQUISITION LESS THAN 50% OF THE TIME BY OVER 1/2 OF THE USERS

- TAB-AUGMENTED ASDI NOTIFICATION USED FOR ACQUISITION SOMEWHAT LESS FREQUENTLY THAN ASDI NOTIFICATION

Figure 10. Effectiveness

- THE EFFECTIVE LIBRARY INFORMATION SYSTEM MUST COUPLE AWARENESS IMPROVEMENT WITH ACQUISITION IMPROVEMENT THROUGH ASADI:

  AUTOMATIC SELECTIVE ACQUISITION AND DISSEMINATION OF INFORMATION

Figure 11. ASADI

One finding of the investigation mentioned above (Reference 1), which supports the challenge and its goals, is that scientists and engineers first searched for information within their local work environment, 80 percent of the time. As used here, local work environment extends only as far from the scientist or engineer as an internal organization consultant. It does not extend as far from him as his organization's library. The goal of expanding the information system to include expert personnel in general, and this finding in particular, motivated the Capability Profile Pilot Program.

The Program focuses upon personnel in the Western Division of McDonnell Douglas Astronautics Company that possess capability in probability, statistics, operations analysis, and related computation. Each of them was surveyed to ascertain his level of competence in areas within the disciplines, as exhibited by Figure 12.

The responses to the survey were reviewed and revised by a committee of senior specialists, to superimpose a uniform professional assessment upon the collection of individual assessments. Then the revision was submitted to each participant for comments.

Operational definitions of competent and expert, employed in the Pilot Program, are:

- Competent: has used methods of the disciplinary area on several projects, has a general notion of the role which techniques of the area play in typical aerospace applications, and has contributed to or authored substantial reports which involve the area.

- Expert: has been working actively in the disciplinary area for several years, has become aware of the major theoretical and applied developments within the area, and has achieved professional recognition of his work in the area by external publication or presentation.

Competent means less experience than expert within a given area, but competent in one area does not necessarily mean the same level of experience as competent in another area, and expert in one area does not necessarily mean the same level of experience as expert in another area. Although more experience may imply greater expectation of results, it does not necessarily guarantee better or quicker results.

The resulting Probability, Statistics, Operations Analysis, and Related Computation Capability Profile and Roster is being incorporated into the library's Literature Search Subsystem, so that personnel requesting information on areas within the disciplines will

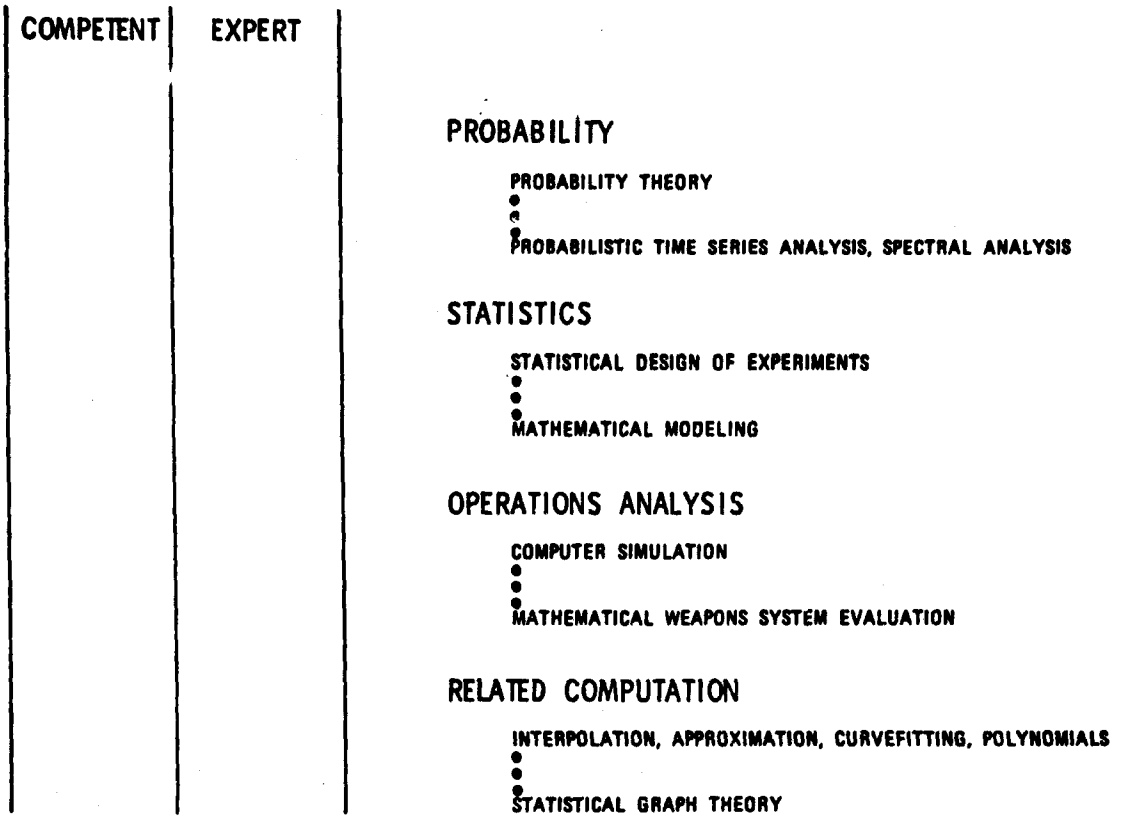


**Figure 12. Capability Profile Questionnaire**

receive a list of qualified personnel, as well as a list of pertinent documents. In addition, the Capability Profile and Roster is being circulated to selected management in the Western Division of McDonnell Douglas Astronautics Company. Figures 13 and 14 depict sample pages in the Capability Profile and Roster, and Figure 15 indicates how personnel are described on the System work sheet.

This Capability Profile and Roster provides management with a meaningful aid in identifying qualified personnel to meet statistical needs, forming technical panels to perform both internal and external statistical projects, focusing attention on the statistical diversity and strength (and when appropriate, their lack) in the Division, reviewing those portions of a technical paper which involve statistical methodology, and amplifying each statistician's capability with expert consultation from his professional colleagues. It may be introduced into task performance, in either of the following three ways:

- By management, upon assignment of a task or upon request of an engineer or scientist for information.
- By the library, upon request of an engineer or scientist for information.
- By an internal consultant, upon request of an engineer or scientist for information.

## STATISTICS

- STATISTICAL DESIGN OF EXPERIMENTS

| | LOCATION | PHONE | |
|---|---|---|---|
| • DINETZ, JAMES W. | A-271 | 4076 | EXPERT |
| • HOLMES, DONALD T. | C1-531 | 5110 | |
| • CASTLER, WILLIAM B. | A2-623 | 2344 | COMPETENT |
| • GORDON, ALLAN | A-705 | 2001 | |
| * • MEENAN, CHARLES P. | A3-593 | 4639 | |
| • QUINN, CLINTON W. | A3-593 | 5357 | |
| • THORNE, DAVID M. | C1-920 | 7225 | |

*SHOULD BE UTILIZED AS THE INITIAL POINT OF CONTACT FOR COMPETENT

Figure 13. Capability Profile

- JENKINS, GEORGE P., A-388; EXTENSION 4336
  - PROBABILITY THEORY
  - RELIABILITY AND MAINTAINABILITY STATISTICS
  - COMPUTER SIMULATION
  - MONTE CARLO TECHNIQUES
  - COMBINATORIAL ANALYSIS
  - STATISTICAL ALGORITHMS

  } COMPETENT

- JOHNS, FRANK E., A3-590; EXTENSION 3225
  - COMBINATORIAL ANALYSIS
  - STATISTICAL ALGORITHMS

  } EXPERT

- KAISER, JAMES S., A3-593; EXTENSION 9436
  - PROBABILITY THEORY
  - RELIABILITY AND MAINTAINABILITY STATISTICS
  - STATISTICAL ALGORITHMS

  } COMPETENT

Figure 14. Capability Roster

| | | | |
|---|---|---|---|
| G NO.: | 10002 | | |
| COMPANY: | McDONNELL DOUGLAS ASTRONAUTICS CO. | EMP NO. | 40267 |
| TITLE: | PROBABILITY<br>STATISTICS<br>RELATED COMPUTATION | DESC | PROBABILITY<br>THEORY<br>RELIABILITY<br>MAINTAINABILITY<br>STATISTICAL<br>ALGORITHMS |
| AUTHOR: | JAMES S. KAISER | | |
| DATE:<br>(PERIOD) | 9 SEPT 1968 | | |
| LOCATION:<br>(PHONE) | A3-593, EXT 9436 | | |

**Figure 15. Capability Profile Work Sheet**

One may contact any expert for advice on which specific disciplinary area to consult regarding a task.

A flow diagram of the Pilot Program is presented in Figure 16. Those who utilize the internal consultation capability will be requested to complete the Capability Profile Pilot Program Evaluation Questionnaire (see Figure 17), and return it to the Program Monitor. In addition, voluntary comments will be solicited from management.

Obtaining an awareness of, as well as utilizing, internal consultation capability has traditionally been an informal and unstructured process. As such, it has functioned within the informal information system, and has employed personal information contacts. The objective of this Pilot Program is to introduce an awareness of internal consultation capability into the formal information system. Although the primary responsibility of each potential consultant is to his own organization, requested consultation will be provided, to an extent that is feasible and on a mutually agreeable basis. It is anticipated that the Program will certainly lead to a decrease in time spent obtaining capability awareness, and probably lead to an increase in capability utilization.

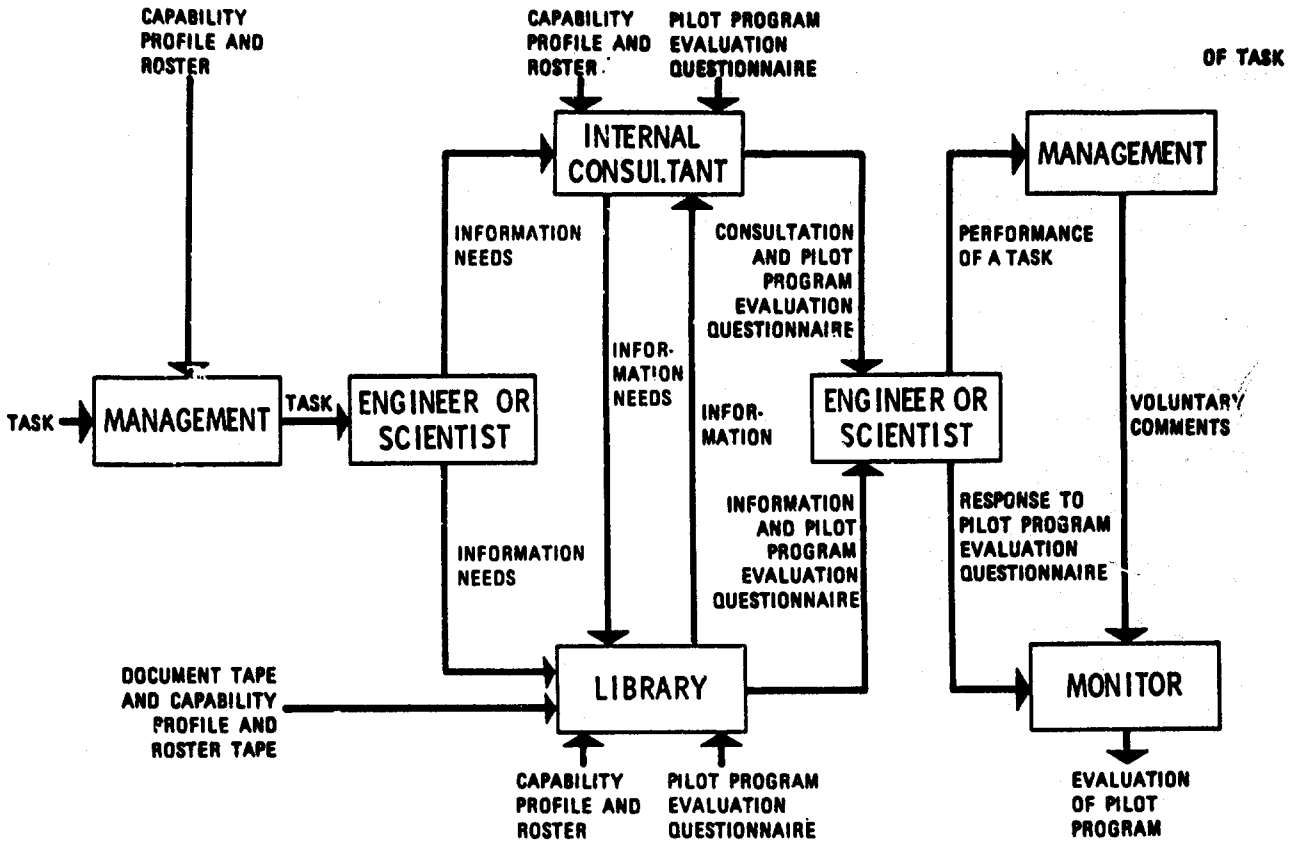


Figure 16. Capability Profile Pilot Program

1. DID YOU UTILIZE THE ASSISTANCE OF PERSONNEL WITH COMPETENCE IN PROBABILITY, STATISTICS, OPERATIONS ANALYSIS, OR RELATED COMPUTATION?
2. IF YOUR ANSWER TO QUESTION 1 IS YES, PLEASE LIST THE DISCIPLINARY AREA(S) COVERED BY THIS ASSISTANCE, AND THE INDIVIDUAL(S) WHO SUPPLIED IT.
3. HOW DID YOU BECOME AWARE OF THE AVAILABILITY OF THIS ASSISTANCE?
4. DID YOU OBTAIN ANY USEFUL ASSISTANCE?
5. WOULD YOU RATE THE IMPORTANCE OF THIS ASSISTANCE?
6. WHAT RESULT DID THIS ASSISTANCE HAVE?
7. WHAT BENEFITS CAN YOU ATTRIBUTE TO THIS ASSISTANCE?
8. WOULD YOU UTILIZE SUCH ASSISTANCE AGAIN?
9. DO YOU HAVE ANY COMMENTS OR SUGGESTIONS REGARDING SUCH ASSISTANCE OR THE PILOT PROGRAM?

Figure 17. Capability Profile Pilot Program Evaluation Questionnaire

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3. F. R. Smith and S. O. Jones. Five Years in Focus – The Douglas Aircraft Company, Inc., Mechanized Information System. Douglas Aircraft Company Paper 4027 (AD 646 030), McDonnell Douglas Corporation, October 1966.

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