



SHARE SESSION REPORT

Table with 4 columns: SHARE NO., SESSION NO., SESSION TITLE, ATTENDANCE. Row 1: 61, M372, The Information Center - A Review of the Concept, 175. Row 2: Information Center, Vikki Heath, KSC. Row 3: PROJECT, SESSION CHAIRMAN, INST. CODE. Row 4: Kinney Service Corp., 1023 State St., Lemoyne, PA 17043 (717) 763-5495. Row 5: SESSION CHAIRMAN'S COMPANY, ADDRESS, AND PHONE NUMBER.

The speaker, D.H. Vanek, IBM, was introduced. Attached is a copy of his presentation.

Due to the availability of seating, this session was repeated at 6:00.

THE INFORMATION CENTER-A Review of The Concept

Document Number SHARE 61-Session M372

August 22, 1983

D. H. Vanek

IBM Business Professional Center
10401 Fernwood Road
Bethesda, Maryland
20817

ABSTRACT

The Information Center is an organizational approach that enables productivity gains by effectively supporting end user computing. Such an organization provides data access, education and assistance to end users in the use of products which to improve the effectiveness and productivity of managers and staff professionals.

Permission is granted to SHARE Inc to publish this presentation paper in the SHARE 61 Proceedings. IBM retains its right to distribute copies of this paper to whomever it chooses.

CONTENTS

Table with 2 columns: Topic, Page Number. Topics include INTRODUCTION (1), THE PROBLEM-A DEMAND SIDE VIEW (2), THE PROBLEM -A SUPPLY SIDE VIEW (10), THE INFORMATION CENTER-A Supply-Side Response (11), MISSION (11), OBJECTIVE (11), FUNCTIONS AND SERVICES (11), Data Needs (12), End User Data Concerns (12), Extract Files (12), Organizing To Support The End User (13), Staffing The Information Center (13), A Case Study (13), THE VALUE OF AN INFORMATION CENTER (15).

INTRODUCTION

The delivery of computer power to the non-data processing user has been a problem for most companies and government units. However, in the last few years there has been significant activity to effectively address the problem with an in-house solution. By giving users a "do-it-yourself" capability, considerable benefits can be realized in the areas of productivity, decision support, traditional application development, and in application maintenance. The organizational aspect of the solution is most often called the Information Center. Why this particular solution at this particular time? The answer lies in the nature of the problems.

THE PROBLEM-A DEMAND SIDE VIEW

A CLIMATE OF TURBULENCE

The decision making process of any organization is built upon a complex relationship among operational, functional, and executive management levels. This hierarchical structure is fundamental to business and government. Never before have the pressures on this structure been as great as they are today.

In his latest book, Alvin Toffler¹ creates a vivid image of civilization in turmoil.

"A powerful tide is surging across much of the world today, creating a new, often bizarre, environment in which to work, play, marry, raise children, or retire. In this bewildering context, businessmen swim against highly erratic economic currents, politicians see their ratings bob wildly up and down; universities, hospitals, and other institutions battle desperately against inflation. Value systems splinter and crash, while the lifeboats of family, church, and state are hurled madly about."

Peter Drucker² has a much more concise but just as powerful way of describing the times:

"Some time during the 1970s, the longest period of continuity in economic history come to an end. At some time during the last ten years we moved into turbulence."

And a third author, John Naisbitt³ writes:

"As a society, we have been moving from the old to the new. And we are still in motion. Caught between eras, we experience turbulence."

What Toffler, Drucker, and Naisbitt are telling us is that we are feeling the impact of pressures which are much more severe and much more chaotic than we know. And it is the resulting stresses on our business, family, and social lives with which we are dealing. Institutional survival keyed to our ability to handle these stresses by making the right decisions in time enough to prevent the damage or in time to seize the opportunity.

INCREASED NUMBERS OF BUSINESS PROFESSIONALS

Management at every level has had to call upon an ever increasing population of business professionals to do an over growing amount of staff work in order to support their decision making processes. As economic continuity disappeared as an under-pinning of fiscal planning, more and better "staffwork" has been needed.

Among the most important of the decision support functions of business professionals has been planning. The loss of economic continuity has had it's effects on the planning function. Drucker says;²

"In the twenty-five years after World War II, planning became fashionable. But planning, as commonly practiced, assumes a high degree of continuity.

¹ Toffler, Alvin. The Third Wave, New York: Bantam Books, 1981.

² Drucker, Peter F. Managing In Turbulent Times, New York: Harper & Row, 1980.

³ Naisbitt, John Megatrends New York, Warner Books, 1982.

Planning starts out, as a rule, with the trends of yesterday and projects them into the future-- using a different "mix" perhaps, but with very much the same elements in the same configuration. This is no longer going to work" (emphasis mine).

Drucker continues by pointing out that planning today must rely largely on anticipating the "unique event" which can change the plan. This means multiple plans. Different "what if" scenarios must be analyzed to give management a better quality of decision making inputs. Staff recommendations today must examine many alternatives, to many levels of detail. And, staff professionals are being pressured to do their work faster to keep pace with the rapidity of change. More, better, faster - the knowledge worker's stress makers.

TECHNOLOGICAL AWARENESS

At the same time as the ranks of the business professional have been swelling and driving up the cost of doing business, the cost of technology has dropped at an extreme rate. From 1953 to 1978 the cost to performance ratio of computing dropped by a factor of 180. According to the Sloan School of Management⁴ computer logic costs are currently dropping at a rate of 25% per year, memory costs by 40% and communication costs by 11%.

Of course, managers and staff professionals are all very well aware of the lower cost and the utility of technology - they want it. One large corporation found that 70% of its business professionals had, at one time or another, coded at least one computer program! Computer literacy is widespread, computing availability has been the problem.

⁴ Alloway, Robert M. User Manager's System Needs. Center For Information Systems Research (CISR) Working Paper #56 Sloan School of Management, Massachusetts Institute of Technology, May 1980.

USERS, WHO ARE THEY?

Engineers, Scientists, and the academic community have long been users of computers. What is new is the demand from the "business professional". Some of their titles are shown in the following figure.

Accountants	Financial Analysts
Marketing Analysts	Marketing Management
Personnel Specialists	Traffic Managers
Purchasing Agents	Buyers
Economists	Insurance Agents/Brokers
Real Estate Agents/Brokers	Marketing Representatives
Governmental Administrators	Hospital Administrators
Stock Brokers	Bank Managers
Actuaries	Administrative Assistants
Executives	General Foremen
Expeditors	Advertising Agents
Business School Professors	School Administrators
Facilities Managers	Building Engineers
Building Inspectors	Police/Security Administrators
Auditors	Training Managers
Product Planners	Business Planners
Forecasters	Public Relations Specialists
Underwriters	Social Workers
Consultants	Media Circulation Managers
Project Managers	Financial Advisors
Portfolio Managers	Budget Planners

Figure 1. Examples of Business Professional Occupations.

WHERE ARE BUSINESS PROFESSIONALS?

Business professionals are found throughout every organization. A list of functional areas that most Business Professionals are to be found in is shown in Figure 2

Accounting Department	Finance Department
Revenue	Tax Department
Business Planning	Market Research and Analysis
Marketing/Sales	Personnel/Human Resources
Labor Relations	Public Relations
Purchasing	Quality Control
Auditing	General Services
Security	Product Support
Program Management	Production Control Department
Claims Analysis	Trust Department
Loan Department	Investment
Money Management	Credit Department
Comptroller	Controller
Legal Department	Contracts Department
Actuarial Department	Traffic Department
Scheduling Department	Training/Education

Figure 2. Some Functional Areas For Business Professionals

CHARACTERISTICS OF THE BUSINESS PROFESSIONAL

The key characteristics of importance are that business professionals are:

- Decision makers and influencers of business decisions
- Computer aware, but not DP trained
- Demanding
- Use of workstations is discretionary

USER NEEDS - THE NATURE OF THE DEMAND

In the final report of the CISR work at the Sloan School⁴ it is shown that applications were identified by their survey which were not known to the the DP organization. As the following table shows, this invisible backlog is five times as large as the known backlog. The important finding, however, is that the **very nature of the backlog has changed.** as compared to the total systems installed in the survey sample.

	TOTAL	PERCENT MIX BY SYSTEM TYPE			
		Monitor	Exception	Query	Analysis
Currently Installed	3193	63%	16%	12%	9%
Known Backlog	255	41%	17%	24%	19%
Invisible Backlog	1277	22%	17%	33%	28%

Source: User Managers' System Needs, CISR Working Paper #86
Robert M. Alloway, Center for Information Systems
Research (CISR) Alfred P. Sloan School of Management, MIT
April 1982.

Figure 3. Nature of Installed Systems versus Backlog.

The study categorizes the systems requested by user management into four types:

- **Monitor:** Transaction processing systems that monitor daily detail activity, production standard reports on a fixed schedule.
- **Exception:** The same kinds of systems as above, but producing exception reports based on fixed definitions of exception conditions.
- **Inquiry:** A system that provides a flexible inquiry capability, enabling managers to design and change their own reports.
- **Analysis:** A system providing powerful data analysis capability (e.g., modeling, simulation, optimization, or statistical routines) and the appropriate data base to support managerial decision making.

As indicated in the table, the nature of user needs has changed significantly from traditional transaction processing systems to demand processing systems. The invisible backlog is 33% query and 28% analysis systems. A total of 61% versus 43% of the currently installed base.

Demand Processing

In the main, demand processing consists of data query, analysis, data presentation. Demand processing (versus transaction processing) often uses private as well as organizational data. Demand processing also includes business communications and personal support. Such things as electronic mail, sending and receiving notes and memos, calendars, facilities scheduling, and activity tracking are all part of the demand processing support needs of the professional. But how

The question one of how can these demand processing needs be effectively supported, given that nearly 80% of the cumulative experience of the data processing professional is invested in developing, maintaining and operating transaction processing systems? Does DP have the skills and technology, not to mention the resource, to implement Query and Analysis systems to the extent required to meet end user demands?

In examining the activities and requirements of business professionals, three kinds of support requirements become apparent:

- Decision support systems that directly support management decision making and the decision making process of the organization.
- Personal support that provides individual job support tools and functions.
- Business Communications support that meets the need for document handling, notes, messages, memoranda, conferencing, etc.

DECISION SUPPORT SYSTEMS

In their book⁵ "Decision Support Systems: An Organizational Perspective," Peter Keen and Michael Scott-Morton clarify what Decision support systems are and what they are not.

Although these systems are used for Managers, they are not necessarily used directly by them. The concept does not imply a terminal on every manager's desk.

The systems support managerial judgement, but do not replace it. They can be used to identify and describe alternatives as an aid to decision making, or perhaps only to validate a decision once more.

Such systems "will be able to focus either on a recurrent problem of concern or a particularly critical one-time problem." For example, a decision support system can be used against operating cost data for periodic profitability analysis; or to analyze the impact of a company dropping its own charge account system and turning customer billing over to major credit cards.

Finally, these systems are designed not so much to save management time, but rather to improve the quality of the decision making process - to improve management effectiveness. Alvin Toffler¹ cites a recent survey that shows that 80% of the manager's time is spent in between 150 and 300 information transactions daily. To be effective, a manager needs access to all the information that bears on the problem at hand, and analytical tools to access the significance of the information.

Decision support systems tend to display the following characteristics:

- **Process:** They are less structured than operational systems. Often, the data examined are self-defining, prompting an iterative process where a question provides an answer that leads to another question, another answer, etc. As a chief executive officer has put it, "I don't know what I want, but I'll recognize it when I see it." A decision support system must assist management investigation of complex situations involving many interrelated factors. A rather flexible organization of data is required so that data elements can be freely associated as different hypotheses are tried out: "let's try a different cut at the data."
- **Cycle:** Decision support activities are often unscheduled, exercised on demand, the same chief executive officer who stated "I don't know what I want but I'll recognize it when I see it," also added: "and I want it on my desk by 10 o'clock tomorrow morning." There are critical situations that arise within a corporation that call for a rapid response capability, anything from a rise in the prime rate to a complete plant shutdown.
- **Life:** Such tasks are quite unpredictable and often ad hoc, one-time requests: "That's my position on the issue. Now find the data to back it

⁵ Keen, Peter G. W. and Scott-Morton, Michael, Decision Support Systems: An Organizational Perspective. Massachusetts: Addison-Wesley, 1978

up." On the other hand, they may become regular activities if found to be useful and to meet a continuing need.

- **Justification:** In many cases, the justification for the development of a decision support system will not be found in any cost comparison, but rather in an analysis of the new activities that it makes possible. It might delineate new business opportunities that may expand revenue, as was the case with one customer who termed such a system "our corporate competitive edge." Such systems may generate substantial productivity gains in terms of time savings in the user community. Peter Keen⁶ at the Sloan School of Management finds that in many cases, management will sponsor a decision support system based on perceived value at a reasonable cost. In his survey of 400 users of interactive planning tools, he found that while 30% had hard data on value, only 13% did a cost-benefit study. In a very real sense, such systems enable better informed decision making - and that becomes their ultimate justification.
- **Horizon:** Decision support systems do not need an "up to the instant" snapshot of current status. Rather, they enable management to learn from the past and relate it to the present situation, but as a basis for projecting the future for planning purposes.
- **Data:** Such systems need to keep access to historical data so that management can identify trends and examine changing relationships. They are more interested in "framed" or aggregated data, summarized so that they can compare the current reporting period to the same period last month or last year.
- **Emphasis:** The systems must be accessible, implying the availability of terminals that are easily signed on to the decision support system. To these non-DP trained users, the interface often is the system. Any obstacle or inhibitor tends to frustrate them, so these systems must be comfortable and easy to use. Given the demands of management decision making, they must also be highly responsive, providing quick answers in an iterative mode so that alternatives can be developed modified, and compared.

Personal Support

Personal support needs are met through such functions as Time Management (calendar, appointments), Activity Tracking ("to-do" lists, projects), electronic reminders, and on-line interactive training sessions.

Business Communications

Marked by functions like electronic mail, computer assisted conferencing facilities scheduling, and notes and messages, the business communications area is rapidly being integrated with the decision support functions to form a complete demand processing support system for professionals. The business communications area of support also includes the complete range of document handling; creation, editing and mark-up, filing, retrieval, printing, and transmission over networks.

⁶ Keen, Peter G. W., Value Analysis: Justifying Decision Support Systems. Sloan School, September, 1980.

THE NET OF THE DEMAND SIDE VIEW

Bottom line, users want three things:

- Free and easy access to data.
- Easy to use tools to analyze, manipulate, and present the data.
- Help.

THE PROBLEM -A SUPPLY SIDE VIEW

DATA PROCESSING UNDER PRESSURE

The two external forces, loss of economic continuity and low cost technology, have been working together in a way which has produced devastating results on the traditional Information Systems organization. An economy in turbulence forces business executives to change the ways in which their companies operate. This, in turn, tends to increase the number and significance of the changes required of the installed information systems applications. And this, in turn, increases the maintenance load which takes resources away from new application development.

Technological advances have had another impact which has caused problems for data processing organizations. The boom in small, powerful computers reflects the widespread visibility of the low cost of technology. The phenomenon is quite like that of the automobile. In the early days of the "internal combustion engine", a sociologist's prediction was that only two million automobiles would every be manufactured--because only two million people would be willing to be chauffeurs. That prediction lost out to the unanticipated events brought on by Henry Ford. Those events brought the automobile down in cost and easy enough to be used by nearly everyone--we became our own chauffeurs. Now, low cost, high function, and mass produced computer technology is available. That availability is very visible to the millions of professionals who are being pressured every day for more and more staff work.

All of this technological visibility to the professionals, managers, and executives of business and government causes them to demand that this technology be put to work on their data. "If technology costs so little, why can't I get at my data?" they ask. The attractive price-performance ratio of technology increases end user demands on data processing. Thus, the already large backlog for new applications get larger. This runs up against the increased maintenance load which has drawn away the already limited resources. The result is a low level of user satisfaction.

THE SUCCESS OF THE INFORMATION SYSTEMS FUNCTION

Pursuing this low level of user satisfaction further, The Sloan School⁷ conducted over 1000 interviews with I/S and User managers in 19 corporations. The interviews led to an analysis of 26 criteria that both the I/S and user managers felt to be factors of I/S success. The results revealed a relatively low assessment of success. This view was shared by both management groups to a surprising degree. Out of this survey, Alloway and Quillard conclude that the top priority for I/S executive attention today is responsiveness to end user needs. The second set of priorities were also devoted to end user oriented improvement areas. In contrast, the areas of traditional I/S expertise were low in priority for management attention.

⁷ Alloway, Robert M. and Quillard, Judith A. Top Priorities For the Information Systems Function CISR Working Paper #79, The Sloan School, M.I.T, Cambridge, Mass. September 1981.

THE INFORMATION CENTER-A SUPPLY-SIDE RESPONSE

The Information Center is an organization. It is not a walk-in facility of terminals, printers, and plotters. The SHARE Information Center project defines and Information Center as follows:

The Information Center is a formal organizational entity which has a manager and a staff devoted to supporting "do-it-yourself" computing.

MISSION

The mission of an Information Center is to provide easy-to-use computing tools, data access, education, consulting and assistance, to executives, managers, professionals and administrative personnel to fulfill their demand processing needs. Further, the Information Center maintains a continual awareness of the needs of its clients.

OBJECTIVE

The objective of the Information Center is to significantly increase the productivity of the organization's knowledge workers.

FUNCTIONS AND SERVICES

The major functions of an Information Center are to coordinate or perform:

- Client education and "how-to-use" consultation
- Information Center marketing and promotion
- Plans and Controls
- Administration
- Client data support services
- New service evaluation
- Technical interface to other information system functions, e.g.:
 - Data resource management
 - Data base administration
 - Systems programming
 - Application development
 - Operations
 - Communications

According to one Information Center manager, the Information Center was "the direct result of a major shift in strategy resulting from the recognition that all the information requirements of a widely varying user community could not be satisfied adequately by a central group of DP professionals."

DATA NEEDS

With respect to access to data, there are three principal types of data that end users require.

The first is private user data - data that is entered, maintained, and "owned" by the end user. Data in this category is necessary to support a specific business function but is not "vital" to the business organization as a whole.

The second type of data required by end users is public purchased data. This is generally proprietary data that can be purchased by businesses, for example, market research data, address lists or census samples. Usually, access to this type of data is made available to users on a read-only basis.

The third type of data to which end users may require access is the protected organization data contained in the corporate data base. This data is the "lifeblood" of operational systems and is usually critical to running the business.

While the major concerns relate to protected organization data, it should be recognized that one of the predominant end user needs is for private user data. H2.DP Data Concerns

With respect to protected organization data, Data Processing has some very legitimate concerns. Among them are:

- Preserving the response time for online, transaction driven systems (end user queries through transaction oriented data bases will not be efficient.)
- Maintaining the integrity of operational data bases.
- Providing security with respect to sensitive company information.

END USER DATA CONCERNS

But the end user has some concerns about data as well. Among them are:

- Stability of data - for example, to predict results to year end, I need to be able to compare the results of the model I run today to the results of the model I ran yesterday. End users generally need data fixed at a "point in time," not "as of now."
- Amount of data - of the vast amount of data sorted in the corporate data base, only a small subset is required for my application.
- Control over data - my planning cycle ends when I am satisfied with the results. Until then, I don't want the data to change or disappear.

EXTRACT FILES

Both sets of concerns can be satisfied by providing the end user with extract files. These files will contain the data subset that the end user with extract files may be produced periodically to meet recurring needs of one or more users or produced on demand to satisfy ad hoc requirements. Once extracted, the data becomes the property of the end user. As end user support organizations mature, there will be more attention to the development of automated methods of data delivery. Approaches using user driven data dictionary based processes to draw up-

on production data bases will evolve. One title which has been offered for the structuring of this area is "Information Resource Management".

ORGANIZING TO SUPPORT THE END USER

The question of where to put an Information Center organization within the corporation is related mostly to management policy than it is to technological issues. For example, consider a department of 20-30 professionals using data from public sources and from private data that they can enter themselves. Here, a small computer system pre-packaged for Decision Support applications may serve the need well. In such case, the Departmental Information Center may be very small indeed. This case leads to the conclusion that a corporation may, in fact, have many Information Centers - which is certainly well within the conceptual scope of "Information Center". However, the need for corporate data access alters the picture. Data delivery to stand-alone departmental systems would soon likely evolve into a network and to increased requirement for professionals to tie-in to a larger host. The Information Center organizational concept addresses a considerable demand-side problem. And, it offers considerable opportunity for corporate-wide productivity increases and other benefits. Also, the major resources required for maximum attainment of benefit are to be found within the I/S function. For these reasons, it is strategically sound to associate the Information Center with the I/S organization. That is not to say that "distributed" Information Center staffs are counter-strategic. Only that the major IC staff organization is logically to be associated with I/S. However, this must be accomplished without compromise to the main mission of end user services.

STAFFING THE INFORMATION CENTER

Information Centers are staffed primarily to perform the consulting and product support function. In that regard, key staff qualities such as business knowledge, patience, enthusiasm, and communication skills rather than on strong technical skills should be emphasized.

A CASE STUDY

The following material summarizes one case of an Information Center which was implemented over seven years ago.

The Problem - DP Viewpoint

- DP had a limited amount of application development resources of which 70% was devoted to maintenance.
- DP was unresponsive to user needs and losing control.

The Problem - End User's viewpoint

- Dissatisfied with the long queue for service and the lengthy development cycle.
- Felt they had no flexibility.

The Solution - Establish the Information Center

- Four people were put in place to support two end user products to provide query, report writing, and problem solving capabilities.

The results - After 7 Years

- The Information Center staff supports over 2000 users with 11 staff members.
- Five percent of the DP application development resource supports 25% of the computer application utilization.
- Program maintenance dropped from 70% to 32% of the total application development resource.
- Fifty percent of the project requests are satisfied by end user computing.
- 2-to-1 return on investment.

The Results - For the End User

- It costs less for the users to develop and maintain applications themselves than for DP to do it.
- It has improved the productivity of high-priced professionals.
- It has extended capabilities, especially in planning areas.
- End user computing is more responsive to their needs by providing faster turnaround, more flexibility, and more user control.
- When surveyed after the fact, users identified \$2 in benefits for every \$1 in cost (includes DP charge for end user computing and user cost to develop the applications.)

The results - For the DP Director

- Development and maintenance requirements are both reduced.
- Relieved of the requirement to develop and maintain user reports, DP resources are now better utilized by concentrating on defining and building the data environment.
- DP now appears responsive and has highly visibility in user areas.
- The return-on-investment is good (100%) as compared to the ROI for DP developed applications (in this case 37% with an average payback period of 30 months.)
- The ratio of DP support resource to machine utilization is in keeping with strategic objectives.
- DP has better control - "Users are going to automate one way or another. It is only a matter of whether they do it with you or within you."

The Information Center as a Productivity Solution

- Business volumes for this company are expected to grow 100% in the next five years. The company objective is to hold the growth of indirect headcount to only 20%.
- The gap is their "productivity wedge," of which approximately two thirds is the Information Center target.
- Therefore, in the words of the vice president of business systems, "The Information Center is our single most important productivity tool."

THE VALUE OF AN INFORMATION CENTER

The end user benefits from the Information Center in a number of ways. Among them are more systematic and effective decision support, information available when it is needed to solve the business problem or accomplish the task at hand, and freedom from many manual activities and the opportunity to focus more directly on business problems.

For the Data Processing Department, the Information Center strategy allows DP to be responsive to end user demand processing needs by a direct strategy for supporting end user computing. At the same time, DP resource is better utilized to develop operational systems and to structure the data environment for the user. The resulting benefit is accelerated development for both structured and non-structured applications.

The information Center offers improved productivity to both end user professionals and to DP professionals in an organization. By involving the user where appropriate in application development, more applications will be implemented sooner and the return on the organization's investment in data processing will be realized sooner.

END