ISI® 's *SCISEARCH*™ Time-Shared System
Trades Time for Money--
But Are You Ready For This?

October 4, 1972

Abraham Lincoln once said that "A lawyer's most valuable commodity is time." Many scientists still cling to a life style in which this fundamental management concept is avoided. Quite often, scientific research still entails the sacrifice of countless hours cleaning test tubes or performing other routine tasks. While this anachronistic atmosphere is changing, the availability of students and post-doc's as low-paid vassals slows the process.

Some time ago, when Congressional committees were anxious to justify *more* research funding, I surveyed *Current Contents*® readers with grants in order to convince the government that individual investigators could save valuable time if they could purchase information services out of grant funds. Incredibly many scientists, who separately claimed they could not afford personalized information services, refused such help. When and if they wanted information, they expected it to be provided free of charge. Furthermore, they assuméd that they alone should perform information retrieval tasks no matter how time consuming the effort.

Today, scientific research, though heavily supported, is not funded with the same enthusiasm and generosity formerly displayed by Congressman Fogarty. One consequence, has been the forced realization that time is money. Many scientists must now allocate time for teaching and other revenue-producing activities. It is paradoxical that research poverty should produce this effect when it is in fact the heavily endowed scientist who can best afford the cost of introducing

efficiencies. But even the affluent, and usually older investigator may be almost irrational once he becomes time-wise.

This time-consciousness is fostered by information scientists, among others, who are presently preoccupied with on-line, time-shared and even "real-time" computers. Ironically, certain administrators, shocked by a $50 literature-search fee, are prepared to install expensive time-sharing consoles which provide "instantaneous" access to the literature at a cost that is orders of magnitude greater. The same time-conscious administrator would be unwilling to spend 30 seconds using a printed index that is three to six months more current than the on-line data base. This becomes more comprehensible when you learn that the less timely but more expensive time-sharing system is paid for by someone else! The number of business failures in the time-sharing industry indicates that many people are not yet prepared to pay for such services if the full costs are not hidden. Computational applications are popular but time-shared computers are still relatively expensive for information retrieval. To-date, there has never been a scientific information time-shared service that could recover all its costs without some sort of direct or indirect subsidy.

It is depressing when I think of the hundreds of millions of dollars that governments have poured into time-shared networks and other computerized services. In one case, $10 million per year has provided access to a file smaller than one week of *Current*

Contents! For that same $10 million, ISI could process over 2 million articles per year and deliver to every research library printed indexes updated daily, if necessary, a "real-time" IR service.

A powerful argument in favor of some "experimental" government-subsidized enterprises is the need to educate users. Eventually the individual user will be expected to pay for the newer technologies. One by-product of these experiments is greater information consciousness. New "traditional" (sic!) tools like *CC®'s Weekly Subject Indexes* become more dramatic when a brief search is completed even before one can dial up the computer.

In applications like airline reservations heavy traffic for a small data file justifies the high storage costs. But with government subsidy to stimulate heavy traffic it remains to be seen whether scientists and librarians are able or ready to pay the full price of such services. For the small number who are, let them do so in full recognition that it is not the computer that has made the information instantaneously available but rather the proper design of a quick response system.

In order to improve the timeliness of *Science Citation Indexes®*, ISI has recently implemented an interesting experiment in the United Kingdom. *SCISEARCH*™ provides "instant" access to 30,000 articles most recently processed for the *SCI®*. To conduct a search, one simply telephones the computer and enters his retrieval terms through an acoustically coupled teletypewriter which also prints out the list of retrieved articles.

SCISEARCH is not yet a real-time system. Nor is response time really instantaneous. This depends upon question complexity and other factors. In systems like missile guidance, real-time access is necessary for instant correction of any deviation from a prescribed course. For scientific information real-time response is absurd, especially if one considers the time-lapse in publication of papers.

But rapid response is often desirable. Frequently, if the answer to a speculative question or conjecture isn't immediately available, the "idle" question is dropped. An immediate answer might justify further thought, but with significant delay one forgets the reason for the question.

Recognizing that instant response is rarely necessary and that the completely impersonal nature of computer systems can be both annoying and expensive, ISI is also experimenting in Philadelphia with a variant of *SCISEARCH*. Designed for scientists and librarians who aren't ready—mentally or financially—for the servo-mechanistic responsiveness of missile guidance, we've retained some human intermediaries.

For *SCISEARCH* in Philadelphia you won't have to learn a computer language. When you dial us a live human voice will respond. You state your question and the information scientist who answers will provide the answer from a completely up-to-date base quicker than 99% of the most advanced time-shared computer installations can deliver it. Depending upon how rapidly you actually need the information, a surprising volume of data can be transmitted to you either by telephone, which you can store on a tape recorder, or, if you have a teletype console the information scientist will print-out the answer for you "instantaneously". If you prefer, of course, we can simply place the information in the mail. After all —it's your telephone bill.

I admit to some ambivalence on these questions. My engineering instincts always caution me to be leery of complex and costly systems. My marketing instincts tell me to be prepared for what the customer wants— not what I think he ought to want. In most cases, the demand for "instant access" represents a curious machinomorphism in contrast to our usual anthropomorphic conceptions. It is a rare scientist who can or wants to react in nanoseconds to some piece of information. As the hip dialect puts it: Are you ready for this?