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Alfred P. Sloan School of Management

Center for Information Systems Research

Statement of Purpose, Structure and Research Goals

REPORT CISR-1

SLOAN WP 749-74

November 1, 1974

Center for Information Systems Research
Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts 02139

NOV 20 '74

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Statement of Purpose, Structure and Research Goals

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PURPOSE

Introduction

The M.I.T. Alfred P. Sloan School of Management has recently established a Center for Information Systems Research. This research organization will conduct studies, at the university and in the larger community, on the effective use of computer-based information systems, and in particular concern itself with helping managers deal with questions of information system effectiveness.

The purpose of C.I.S.R.

The entire history of electronic computers used in information systems spans little more than 20 years. That period has seen an explosive growth of computer-based information systems, in terms of raw numbers of systems, in terms of industries affected, in terms of sizes of enterprises affected, and in terms of applications performed. The explosive growth has been accompanied by increasingly complex choices for managers who have to deal with questions concerning the acquisition or use of computer-based information systems, and accompanied by many instances of oversell and underperformance. The complex choices deal with hardware selection, selecting many layers of software, interdependent and subtly incompatible, selecting providers of communications facilities support services, etc.. For each item that has to be chosen, the evaluation criteria are not well understood, and chances are substantial that whatever choice is made, unanticipated consequences will follow. The unanticipated consequences are sometimes positive, but more frequently negative, and disappointing. The result of this virtually universally experienced disappointment on the part of everyone who has dealt with the computer is the emergence of a healthy skepticism with respect to all aspects of computers and their use.

C.I.S.R. takes a definite stance with respect to the phenomenon of burgeoning choice which characterizes the adoption and use of computer-based information systems. That stance is that more research attention must be focused on understanding the reasons for past and present disappointment and malaise. Equipped with explanations or solutions in the context of present technology, managers of enterprises which use, or propose to use computer-based information systems, will have better insights into potential problems (technical as well as organizational/managerial) than the insights provided by offerers of equipment, services, or inventions. C.I.S.R.'s focus is on present, existing technology and the

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problems associated with absorbing and managing it. This focus does not mean that C.I.S.R. will not seek to extend technology; it will push the technology forward where a need for extension is found. In a subsequent section, entitled Corporate Sponsors, a description of one means for identifying the need for technology extension is described.

Computer Research at M.I.T.

M.I.T. has a long history of contributing to basic computer technology, as well as in demonstrating the feasibility of new applications of computer technology. Frequently while researching new applications, the need for new technologies has been formulated, prototyped, and shown to be valuable; in other cases, new technologies gave rise to new applications.

Technology-motivated computer application research, and application-motivated basic computer technology research continues at M.I.T., in many of the departments of the institute, in furtherance of the educational and research goals of those departments. The primary motivation for C.I.S.R. research efforts will be to help management, and the technical consultants to management, understand how to use present computer technology in an effective manner. The primary reasons why the effective use of computer technology is a problem, and will probably continue to be a problem, will be discussed in the following sections.

Industry characterized by rapid growth

The rapid acceptance of computers and growth in the number of computers - both cause and result of the revolution in basic technology and manufacturing technology - is reflected in frequent increases in processing speed at a given price. There has been at least a hundred-fold increase in the power available from computers at a given sum over 20 years, before allowance for inflation.

Clearly, however, the rapid spread of computers was not achieved by reduced cost alone. Most of today's applications of computers were not thought of 20 years ago; others were seen to be possible, but impractical (or unworthy!) from the cost of processing viewpoint, or cost-to-get-ready viewpoint. Each successive application area has gone through a short cycle of:

- conceptualization
- experimental demonstration of feasibility
- pioneering adoption in quasi-operational settings
- generalization for suitable application in large organizations
- subsequently, generalization for use in small organizations
- logical and actual integration with other applications (already mechanized), into application systems.

The motivating forces which brought about the rapid growth of successful computer applications are legion; among them were defense needs, reducing the cost of doing business, crisis management in non-military settings, the difficulty of managing ever more complex enterprises in both the private and public sector, occasionally even the mere existence of a given computer technology.

Tools

An important contribution to the rapid spread of computers into new applications and new enterprises has been made by new tools for computer applications analysis, specification and implementation. Frequently computer-based themselves, these tools have increased the productivity of a computer system implementor by more than one order of magnitude in 20 years. Increasingly powerful, these tools have made it possible to perform the necessary customizing and local adaptation required to move applications from one kind of machine to others, one organization to another of a similar size and complexity, and from large well-financed enterprises to small poorly supported enterprises. Unfortunately, a substantial portion of the order-of-magnitude increase in productivity brought about by these tools is hidden by increased complexity of systems, applications, and indeed by the complexity of the tools themselves.

Widespread disaffection

Despite the generally satisfactory state of affairs with respect to the pace and scope of acceptance of computer-based information systems implied by the numbers cited above, many nagging questions persist. These questions can generally be described as promises unfulfilled, credibility in question, a shortfall of performance as compared to expectations. An example is the powerful tools referred to above. Virtually without exception, the inventors and later the marketers of these tools have been long on claims of powerful universality, short on appreciation for and candor about cost of adoption or cost of use. Missed delivery dates and ballooning cost of implementation as well as use are also a frequent characteristic of application implementation tools.

Other examples of malaise generated by computer-based information systems are:

- applications adopted with little attention to measuring their effectiveness once operational
- too-frequent basic hardware and software changes, suspected of being more nearly geared to the manufacturer's strategic plan than the user's needs or capacity for absorption;
- vigorous competition in many hardware and software sectors, making for a bewildering number of claims and choices to be sorted out and understood;

- the emergence and Parkinsonian growth of the Data Processing Professional clique, both in-house and external, apparently essential for dealing with the complexity of computers, most definitely expensive to deal with, difficult to measure the effectiveness of, and difficult to manage.

C.I.S.R. STRUCTURE

Introduction

While the Center will be located and managed in the Sloan School, it is expected that faculty, staff and students from other departments at the Institute who are interested in the problems being attacked in the Center will become involved in the work of the Center. Within the Sloan School the Center will be a component of the Management Science Group, an interdisciplinary organization. C.I.S.R. will try to involve the computer industry and computer users from industry and government, in the identification and work on projects. The mechanism by which project relevance is assured, and the continuous involvement of industry obtained, is the new (for M.I.T.) concept of Corporate Sponsors, described subsequently.

Cohesion and complementarity

Traditionally, much of the research in a university is done by the individual faculty member and his graduate students. Although this approach is excellent for many topics, it does not provide critical mass and continuity for research on large, complex problems. The Center is intended to provide cohesion between faculty members through the motivation derived from individual interest in various aspects of a complex problem, as well as the motivation derived from competent full time staff and pooled solicitation for research funding. The Center can consciously invest in appropriate faculty and staff that are required to solve real world problems, as these change with the passage of time.

Full time staff

In order to get qualified research staff who can complement the technical skills of the faculty and graduate students, and in order to provide the manpower and continuity required to see projects through to a timely conclusion, full time staff will be hired. Many of the full time staff will be recent graduates of M.I.T.; they will work for the Center at generally competitive salaries. The Center simplifies the hiring of competent research staff, and in particular their management. Career

development of the research staff will become a complementary activity to the development of the research program through time.

Linkage to Corporate Sponsors

A key task of the Center will be to provide strong linkages to the information system managers and professionals in the sponsoring organizations. One way in which this will be done is to recommend to sponsoring organizations that C.I.S.R. support be found within operational budgets for the information systems operation, as contrasted to, say, the corporate budget for gifts to education.

Another way in which this will be done is through the C.I.S.R. Fellows. (See C.I.S.R. Corporate Sponsors, below). These individuals from the sponsoring organizations will work with Center staff on specific projects, mutually chosen. The Fellows will provide the Center with excellent support in selecting the most significant and relevant problems; they will be a good source of organizational or operational data for research; where operational data does not exist, they can suggest ways in which experiments can be set up in external organizations; and they will provide additional resources to perform the research work. From another point of view, the Fellows will allow the Corporate Sponsors to gain a return, both in terms of greater understanding on part of the employee of the problem worked on, and in terms of employee development.

While the C.I.S.R. Fellows are resident at M.I.T., the Institute will provide office space, secretarial support, local computer time, etc.; the Fellow will either be appointed a Guest of the Institute, or a Visiting Scientist, or some other appropriate title. With the official status that follows with such an appointment, the Fellow can attend many M.I.T. functions, can use the Institute Libraries, and can qualify for use of the athletic facilities through payment of the customary Athletic Fee. Also, since M.I.T. has exchange agreements with Harvard University and Wellesley College, educational and social activities at those institutions are open to the C.I.S.R. Fellow. On the other hand, personal travel and living expenses, medical insurance, and salary and other benefits will continue to be the responsibility of the Fellow's parent organization.

Center organization

The human resources of the Center will consist of:

a) The Director. The Director will be a senior faculty member, who will spend at least half time on the Center, and all of his personal research will be Center research.

b) Project Leaders, typically Sloan School and other Faculty. Each faculty member will be working on specific projects, either as project leader or as member of a team.

c) Research Staff -- reporting to the project leaders.
Full time -- recent M.I.T. graduates, and others.
Part time -- present M.I.T. students, graduate and undergraduate.
Center Fellows -- full time while in residence, working on a specific project, with the project leader.

d) Sponsors Board -- an advisory body which will provide direction and feedback to the Center's management on the quality and relevance of the work being undertaken. This board, which will meet once a year, or more often if necessary, will consist of:

The Director of C.I.S.R.

The Dean of Sloan School of Management

One senior person from each C.I.S.P. Corporate Sponsor.

Two M.I.T. faculty members, not receiving support from C.I.S.R. Corporate Sponsors.

Funding of C.I.S.R. - directed research

C.I.S.R. will from time to time solicit, or accept, contracts for research. The sponsors of such research - from the private or public sector - will negotiate terms of the contract through M.I.T.'s Office of Sponsored Programs. While C.I.S.R. may accept requirements for confidentiality of designated data or results, a clear requirement is that the existence of such a contractual relationship cannot itself be kept confidential, nor can the general nature of the research be kept confidential. Theses and research papers resulting from involvement in directed research of this nature will continue to have normal M.I.T. quality control and ownership regulations apply to them, but can be submitted to the sponsoring organizations for verification that confidential material covered by the contract has been properly safeguarded.

The motivation for undertaking directed research through C.I.S.R. will be that the work itself is too specific, or too costly to undertake, to qualify for undirected - C.I.S.R. Corporate Sponsorship - support; the project, however, should support other or subsequent C.I.S.R. research efforts by permitting the acquisition of special equipment, or by the building of special skills and experience, broadly applicable.

C.I.S.R. Corporate Sponsors

A major source of C.I.S.R. research support will come from C.I.S.R. Corporate Sponsors. The support will be important in both financial

and intellectual terms. A C.I.S.R. Corporate Sponsor is an organization (Corporation) which is a substantial user of computer-based information systems, and which is in sympathy with the research philosophy and general research program of the Center. A small number of such organizations are requested to each contribute a modest amount, presently $20,000 per year, for unrestricted support of C.I.S.R. work in the general fields described in any given year. They are encouraged to send a Fellow (one of their employees) to C.I.S.R. to participate in one of the on-going research efforts, or possibly to start a new one under the supervision of a C.I.S.R. faculty member. Results of work undertaken with Corporate Sponsor funds will be in the public domain, but as in the case of directed research, agreements to keep certain data in confidence can be made.

At the end of each academic year, a joint C.I.S.R./Sponsor determination will be made as to whether both aspects of the relationship were fruitful. If the determination is positive, the Sponsor may elect to continue to support C.I.S.R.; if not, the Sponsor is free to stop support of C.I.S.R.. While normal M.I.T. accounting procedures will apply to the C.I.S.R. Corporate Sponsor grants, there will be no individual accounting to the Corporate Sponsors for disposition of their particular contribution. As a part of the annual Sponsors Board meeting, a summary accounting for the disposition of all the Corporate Sponsor contributions, treated as one grant, will be made.

There are a number of advantages to the Corporate Sponsors of this arrangement. First of all, through their financial contributions, they get an opportunity to indicate support of the general research thrust, without undertaking the entire sponsorship of that research alone. Second, through the Fellows mechanism, Corporate Sponsors have an additional opportunity to try and influence the research to their particular liking or needs. Thirdly, through the Fellows, a listening post for all the research in C.I.S.R. can be established. There can be definite employee development benefits derived by appointing employees deemed deserving of special recognition as Fellows. And there is the opportunity to observe the student staff members of C.I.S.R. at close range, with an eye towards their possible future employment in the Sponsor organization.

From M.I.T.'s point of view, the "vote" cast by the Corporate Sponsors is an excellent indication whether the research program is of high interest and relevance. Continued support will indicate good quality of research results as well. Again, the presence of the Fellows will provide an on-going confirmation of the relevance of the work. The Fellows will also provide a convenient way of discovering and obtaining valuable data series from their parent organizations. Because of their insights into operational issues, they can suggest proper settings for experiments in industries and organizations with which they are familiar.

C.I.S.R. RESEARCH

Introduction

C.I.S.R. research activities, actual and proposed, will obviously change as time passes, as the makeup of the staff changes, and as the interests of the faculty and Sponsors change.

What follows are brief descriptions of the present research portfolio; all possible research interests of the present C.I.S.R. staff are not presented, only those which appear to be most relevant at the moment, given the Center stance on research.

Center for Information Systems Research
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Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts, 02139
(617) 253-1000

RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: Distributed Data Base Systems using Mini-Computers (1)
Microcode Exploitation in Mini-Computers (2)

Principal Investigator: Norman L. Rasmussen E53-313 3-3372

Name/Title	Office Location	Extension
John F. Rockart Senior Lecturer	E53-325	3-6608

Objective, Long-Term: (A Sentence or Two)
1) Implementation of a distributed processing, distributed data base system in the context of an on-campus network of computers, each with diverse roles to play in processing transactions and inquiries against a distributed data base.

2) Experimental investigation of the use of mini computer microcode to enhance the manipulation and protection of data items and data fields. Primatives would be postulated, implemented, and measured for their effectiveness and compared to present, purely software-based alternative approaches.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

The hardware and operating system of the CISR/Sloan School Mini-Computer facility, featuring a PRIME 300 computer, has most of the basic features required to provide the base for this work. Until funding is received, voluntary student work on designing and implementing additional required features will be used. (Fall 1974-1975).

Funding: (Actual or proposed source of support, not amount of money required.)

Source Corporate Sponsor - not yet available for this work.

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

Continued presence of high-speed links from Sloan Computer facility to main computer site.

High speed modems.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

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RESEARCH SUMMARY

[X] ON-GOING

[ ] PROPOSED

Name of Project: Distributed Processing

Principal Investigator:	John F. Rockart	E53-325	3-6608
Name/Title		Office Location	Extension
	Norman Rasmussen	E53-313	3-3372
	Ada Demb (Technical Assistant)	E53-315	3-4932

Objective, Long-Term: (A Sentence or Two)

To develop a model of the variables involved in the decision process concerning the extent of distributed processing (decentralization of computing power, data bases, etc.) that should be performed in an organization. Variables to be included in the model (which will be quantified to as great an extent as possible) will include technical, managerial, and human considerations.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

Activities

1) Survey questionnaire (25 company sample) to ascertain extent of distributed processing now being performed 9/1/74 - 1/30/75.

2) In-depth investigation of human, managerial effects of centralization of computing and data bases in 2-4 sites

a) questionnaire development 9/1 - 11/30/74
b) study 11/1 - 6/30/75

3) Development of technical model of relative efficiency of maxi/midi/mini computers for major types of jobs (job streams) 12/15/74 - 6/30/75.

4) Specific industry studies (2-4) of application types and relative advantages of running jobs on centralized vs distributed basis. Degree of decentralization of computing, data base, personnel, etc. to be considered. 9/11/74 - 5/30/75.

Funding: (Actual or proposed source of support, not amount of money required.)

Source Corporate Sponsors

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

not totally "beyond control" - but uncertain at present

- sufficient personnel (masters thesis students, doctoral students)
- other faculty collaboration on technical considerations.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Not yet defined.

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RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: Data Base Design

Principal Investigator:

Name/Title	Office Location	Extension
Peter Chen Assistant Professor	E53-329	3-6606

Others
(f
Any)

Objective, Long-Term: (A Sentence or Two)

Develop the methodology and tools for designing data bases. The data base designed should have a simple and logical interface to the user and should also achieve good performance/cost ratio.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

- Investigate the logical view of data (study the differences among Codd's model, DBTG model, Senko's model, etc.) so that the users can have a better understanding of his information.
- Develop a simulation or analytical model of data base management systems to study the tradeoff between performance and cost.

Funding: (Actual or proposed source of support, not amount of money required.)

Source CISR, Sloan School, NSF

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

- Computer time to implement the simulation or analytical model
- A Research Assistant will be helpful.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

- Analytical Model -- "Optimal File Allocation in Multi-level Storage Systems," Proc. of 1973 National Computer Conference, June 1973, N.Y.C.

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RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: IBM/MIT Joint Study

Principal Investigator:

Name/Title	Office Location	Extension
Donovan, Associate Professor	E53-317	7156

Objective, Long-Term: (A Sentence or Two)

Produce tools to build information systems quickly and effectively. Particular focus has been given to information systems that have changing needs, that need to be built quickly and inexpensively. Also, that have complex data handling requirements, e.g., data verification, large data files, production requirements.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

- Define an information system generation facility (this work was done 1973/74.)
- Implement this facility on top of XRAM.
- Apply this facility to building an information system for the energy policymaker in New England.

Funding: (Actual or proposed source of support, not amount of money required.)

Source IBM and Institute funds.

Contact IBM: Dr. Stuart Greenberg
MIT: Dr. Al Hill

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

NONE

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Don't know yet.

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RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: Selection of Information Systems

Principal Investigator:

Name/Title	Office Location	Extension
Peter Chen Assistant Professor	E53-329	3-6606

thers
f
ny)

Objective, Long-Term: (A Sentence or Two)

Develop the methodology and tools to aid the management in selecting the best information system for his environment under a cost constraint (his budget).

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

- Develop a tool for selecting interactive computing systems.
- Develop a methodology to evaluate a commercially available information management systems.

Funding: (Actual or proposed source of support, not amount of money required.)

Source CISR, Sloan School, NSF

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

- Computer time for implementing the tools.
- A Research assistant will be helpful.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

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RESEARCH SUMMARY

[X] ON-GOING

[ ] PROPOSED

Name of Project: AADC System Design Project

Principal Investigator:

Name/Title	Office Location	Extension
John J. Donovan	E53-317	x3-7156
(Others If Any) Stuart E. Madnick	E53-333	x3-6671

Objective, Long-Term: (A Sentence or Two)

Development and testing of techniques for designing, generating, and maintaining a modular family of stofware systems to last for 20 years or more. The particular example under study is the family of operating systems to be used on the government's All-Application Digital Computers (AADC).

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

Oct. 1973 -- July 1974: Problem formulation and background study with modest funding.

July 1974: Substantial funding begings, project plan developed.

Aug. 1974 -- Nov. 1974: Field and literature study of existing government software facilities, development techniques, and operational environment.

Nov. 1974 -- Jan. 1975: Overall recommendations for system design and evaluation of related projects (CS-4 language and AADC hardware).

Jan. 1975 -- Sept. 1975: Detailed design of system concepts and techniques along with supporting theory.

Sept. 1975 -- July 1976: Prototype implementation and testing of a sample system.

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RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: A Data Management Facility as Applied to Energy

Principal Investigator:

Name/Title	Office Location	Extension
Jacoby, Professor	E53-318	6609
Donovan, Associate Professor	E53-317	7156

Objective, Long-Term: (A Sentence or Two)

Long term (beyond even the proposed contract) -- develop a very flexible and powerful data base and modeling facility. Demonstrate its applicability to energy.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

The joint proposal with the Energy Lab and NBER (National Bureau of Economic Research) specifically proposes to produce a data management facility based on relational concepts extended to include capabilities for protection and validation of data. Further, we propose that the system store and maintain available energy data series from FEA and MIT.

Funding: (Actual or proposed source of support, not amount of money required.)

Source Naval Electronics Laboratory Center (NELC)
through office of Naval Research (ONR)

Contact
Warren Loper (NELC); Marvin Denicoff (ONR)

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

For testing purposes, an AADC test environment is needed. We will either use the one developed by NADC -- if adequate -- or develop our own.

In order to accomplish a complete facilities orientation of current and future navy practices and requirements, several more trip visits will be needed.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Several publications are expected, none have been scheduled at this time.

Funding: (Actual or proposed source of support, not amount of money required.)

Source NSF

Contact Professor Shan Kuo

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

NONE

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Don't know yet.

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RESEARCH SUMMARY

☐ ON-GOING

☐ PROPOSED

Name of Project: An Exploratory Study of DSS

Principal Investigator:

Name/Title	Office Location	Extension
Peter Keen Assistant Professor	E52-580	3-6079

Objective, Long-Term: (A Sentence or Two)

Development of descriptive conceptual models for surveying DSS within and across organizations, prescriptive generalizations for planning and design.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

1) Case studies

2) Steve Alter's field research

Funding: (Actual or proposed source of support, not amount of money required.)

Source Corporate

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

1) Access to many sites
2) Survey of organizations and systems
3) Students (masters) for case study research

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

None yet

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50 Memorial Drive
Cambridge, Massachusetts, 02139
(617) 253-1000

RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: Decision Systems: Impact and Evaluation

Principal Investigator:

	Name/Title	Office Location	Extension
	Peter Keen Assistant Professor	E52-580	3-6679
(Others If Any)	Charles Stabell	(Stanford)	

Objective, Long-Term: (A Sentence or Two)

The development of specific techniques for planning and evaluating DSS. In particular, in relation to qualitative impact on the decision-making process rather than quantifiable benefits.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

1) Build contacts in 4 cites; FNBB, B of A, San Francisco, and two multi-product corporations.
2) Refine the theoretical models.
3) Collect descriptive data in FNBB, B of A.
4) Identify projects in which the model can be tested as a management tool in the multi-product corporations.

Funding: (Actual or proposed source of support, not amount of money required.)

Source Corporate Sponsors

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

1) Access to the preferred sites.

2) My completion of the theoretical presentation.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Implementation Conference, CISR April 1975

SMIS Conference, September 1975.

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RESEARCH SUMMARY Date: 9/10/74

☒ ON-GOING

☐ PROPOSED

Name of Project: A Study of Computer Aided Decision Making in Organizations

Principal Investigator: Steven Alter

Name/Title	Office Location	Extension
Steven Alter, Ph.D. Candidate	E53-314	3-6607
Peter Keen, Assistant Professor (Advisor)	E52-568	3-6679

Objective, Long-Term: (A Sentence or Two)

The purpose of this project is to generate and analyze empirical data which will lead to a better understanding of computer aided decision making in organizations. The findings (data, analysis, and conclusions) should be helpful to both implementors and researchers.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

Major Activities:

(1) A series of 8 case studies is in progress. One has been cleared, 4 require minor revisions, and 3 require major extensions or revisions. Completion Date: January, 1975.

(2) A descriptive "theory" of computer aided decision making in organizations is being developed as the theoretical framework for a field study which will produce 30 structured case studies as the basis for further analysis.

(3) The interview form for the field study is ready. The field work will occur during Sept.-Dec., 1974. The analysis of the data will extend into 1975.

Funding: (Actual or proposed source of support, not amount of money required.)

Source C.I.S.R. Corporate Sponsor ???

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

1. Concurrence of three thesis advisors
2. Logistics of contacting and obtaining field sites (introductions are needed)
3. Travel Money

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

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RESEARCH SUMMARY

Date: 9/10/74

☒ ON-GOING

☐ PROPOSED

Name of Project: Managing the Implementation Process: An Approach to the Development of Decision Support Systems

Principal Investigator:

Name/Title	Office Location	Extension
Michael J. Ginzberg, Ph.D. Candidate	E53-	
Peter G. W. Keen, Assistant Professor (Advisor)	E52-568	3-6679

Objective, Long-Term: (A Sentence or Two)

Demonstrate the usefulness of a process perspective for understanding decision support system implementation. Develop a methodology useful for studying DSS implementation from this perspective. Show how this perspective and methodology provide better bases for controlling the implementation process than do the more commonly suggested perspectives.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

Questionnaire development (on-going)	9/30/74
Intensive Case Study (Mass. Dept. of A&F) (on-going)	12/31/74
Survey Data Collection	10/1/74 - 11/30/74
Data Analysis and Selection of Sub-Sample of cases for further data gathering and analysis	12/1/74 - 12/31/74
Case Data Collection	1/1/75 - 2/15/75
Thesis Writing	2/16/75 - 4/30/75

Funding: (Actual or proposed source of support, not amount of money required.)

Source C.I.S.R. Corporate Sponsors

Contact

Dependencies:

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1) Finding a suitable sample of projects in external organizations; I would see a number of our sponsors as possibilities (particularly Martin-Marietta or ALCOA), but have not yet made satisfactory arrangements. I hope to have this settled by early October at the latest.

2) Approval of my thesis committee of this design.

3) Money for travel, computer time, etc.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

"An On-Line Budget Tracking System for Massachusetts", SSM Working Paper (forthcoming), with J. D. C. Little and Scudder Smith -- describes progress to date in the intensive case study of the Mass. Dept. of Administration and Finance.

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RESEARCH SUMMARY

[X] ON-GOING

[ ] PROPOSED

Name of Project: Computer-aided authority identification

Principal Investigator:

Name/Title	Office Location	Extension
Jeffrey A. Meldman Assistant Professor of Management Science	E53-323 NE43-306	3-7160 3-3446

Objective, Long-Term: (A Sentence or Two)

Development of relational data bases sufficiently knowledgeable about human activities to be able to look at a given situation, to recognize known problem areas, and to direct the user to sources of authoritative analysis of these problems. In particular, computer-aided legal analysis and research.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.).

I am currently finishing the design of a simple prototype system for computer-aided legal analysis (current Ph.D. thesis). I hope to have portions of the system operating by the end of the 74-75 academic year.

Funding: (Actual or proposed source of support, not amount of money required.)

Source 1974-75: 100% SSM

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

The operation of my prototype system will become possible as the OWL system (W. A. Martin) comes up, which is expected to be during the 74-75 academic year.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

My thesis probably will be issued as a Project MAC Technical Report sometime this winter.

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RESEARCH SUMMARY

☐ ON-GOING

☒ PROPOSED

Name of Project: Privacy/security modeling for personal-data-base systems.

Principal Investigator:

Name/Title	Office Location	Extension
Jeffrey A. Meldman Assistant Professor of Management Science	E53-323 NE43-306	3-7160 3-3446

Objective, Long-Term: (A Sentence or Two)

None currently defined.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

Funding: (Actual or proposed source of support, not amount of money required.)

Source

Contact

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

I will present a talk, "Information Systems, Privacy, and the Law," at an MIT Industrial Liaison Program Symposium, September 24, 1974.

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RESEARCH SUMMARY

☒ ON-GOING

☐ PROPOSED

Name of Project: Leading Indicators for Energy Sufficiency

Principal Investigator:

Name/Title	Office Location	Extension
Jacoby, Professor	E53-318	6609
Donovan, Associate Professor	E53-317	7156

Objective, Long-Term: (A Sentence or Two)

Multiple objectives -- the contribution of CISR will be in the application of relational concepts to produce a computer based information system for leading indicators.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

- Produce 3 working papers:
  - survey of indicators
  - survey of FEA data
  - thoughts in energy indicators
- Produce a list of energy indicators
- Produce a working prototype of an information system for indicators

Funding: (Actual or proposed source of support, not amount of money required.)

Source FEA

Contact Mr. Gil Rogers

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

NONE

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

- Working papers.

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RESEARCH SUMMARY

[X] ON-GOING

[ ] PROPOSED

Name of Project: New England Energy Management Information System

Principal Investigator:

Name/Title	Office Location	Extension
Jacoby, Professor	E53-318	6609
Donovan, Associate Professor	E53-317	7156

Objective, Long-Term: (A Sentence or Two)

1. Develop tools and concepts for building crisis management information systems.
2. Demonstrate the use of these concepts in building an energy information system for New England.

Objectives, Short-Term:

(For active projects, give brief description of beginning and end of major activities, such as tool or questionnaire preparation, experiment start-up and end, analysis of data ends, etc.; for proposed projects omit dates but present a brief description of the unfolding of events once funding is assured, experimental subject or setting secured, staff is hired, etc.)

Produce a design of an information system for New England by November 1974.

Funding: (Actual or proposed source of support, not amount of money required.)

Source New England Regional Commission

Contact Mr. Robert Keating

Dependencies:

(List resources or events beyond your control upon which you are dependent in order for your project to reach a conclusion. Examples are: Access to a micro-programmable computer; an experiment in a given external setting; a particular resource person, a kind of resource person; prior satisfactory results in some present research project of yours, or someone else, etc.)

Nothing. However, there are a number of events that would make the completion of the goals of the project more difficult. For example:

1. IBM agreement is not yet signed.
2. No additional funding.

External Relations:

(List workshops, conferences, and publications where this is scheduled to be described, with dates.)

Proposed
- Bell Systems Journal of Economics
- Harvard Business Review

Accepted
- National Governors' Conference, September 1974
- FEA Conference at Purdue, October 1974
- NCC '75, May 1975
- New England Conference of Business and Finance