

IAIMS Implementation and Administration at the University of Utah

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The Integrated Academic Information Management System (IAIMS) concept provides a framework for the incorporation of information management technologies in the health sciences. At the University of Utah, IAIMS has accelerated the application of new technologies and has resulted in new administrative structure and outlooks

INTRODUCTION

The introduction of the IAIMS concept in 1982 by Matheson and Cooper¹ set the agenda for information management in health sciences for the next decade. At the University of Utah, IAIMS development has been successful in drawing support from federal, institutional and corporate sources. However, the crucial element in the success of IAIMS has been, and will continue to be, the broad-based involvement of administration, faculty, staff and students in the IAIMS effort.

BACKGROUND

With the establishment of the Department of Biophysics and Bioengineering in 1962, the health sciences at the University of Utah began to develop the critical mass that would ultimately result in the current IAIMS effort. The department is noted for its development of the HELP hospital information system which provides comprehensive management of patient information. In addition, the system incorporates a medical decision logic component that is invoked automatically in response to clinical data. While development of the HELP system has been the focus of attention for the department, it has also made a very significant contribution by providing the university with a cadre of professionals with experience in automated information management.

By the time the IAIMS report was published, the health sciences community at the university was developing a variety of independent automation efforts. These systems ranged from a large machine-intensive database in genetics, to a very successful local area network in orthopedics. Instructional applications were emerging in the Colleges of Nursing, Pharmacy and Health. In the library, computer applications had developed as discrete solutions to specific problems. For example, separate systems were used to manage the catalog, circulation and the publication of MEDOC: An Index to U.S. Government Publications in the Health Sciences. In the fall of 1982, the library began planning a large integrated computer system. To assist in this planning effort, the Deans and the Hospital Administrator appointed faculty and staff members to an Integrated Library System Planning Committee.

As the Planning Committee was beginning its efforts, the National Library of Medicine issued a request for proposals for an "Integrated Academic Information Management System (IAIMS) Strategic Planning - Phase I" contract. This initiative by the National Library of Medicine was the catalyst needed for the University of Utah to take an institution-wide view. To reflect its expanding vision, the Planning Committee became the IAIMS Task Force. While a response was submitted to the National Library of Medicine, it was clear that, even if the contract was not awarded, development of information management resources was essential. The University was awarded a planning contract and an initial plan was completed in June 1985. Currently, the University is involved in a three-year IAIMS development project.

ADMINISTRATION

While it is all too easy to be enthralled by the technology, the crucial element in the success of IAIMS at the University of Utah has been the concerted effort made at broad-based participation by all the colleges on the Health Sciences campus. The Chairman of the Task Force and principal investigator of the IAIMS grant was appointed by the Vice President for Health Sciences as his Assistant for Information Management. This has provided an efficient structure for planning and policy development.

The preeminent example of the participatory approach to IAIMS is the structure developed by the IAIMS Task Force for the installation of the HELP Hospital Information System at the University Hospital. Pre-IAIMS, the hospital information system would have been viewed as a single system, designed to meet the clinical information needs of the hospital. In an IAIMS context, the hospital information system becomes much more. It is viewed as an invaluable health sciences information resource to support research and instruction. As a result, three different committees were appointed to direct the implementation of the system.

The Information Steering Committee is chaired by the Vice President for Health Sciences and consists of the Deans of the Colleges of Pharmacy, Nursing, Health and the School of Medicine; the Assistant Vice President for Health Sciences, the Hospital Administrator, the Director of the Library, the Vice President's Assistant for Information Management and the Director of Hospital Information Systems. This committee is responsible for policy and planning.

The second committee, the Clinical Computing Control Committee, is chaired by the Hospital Administrator and consists of five department chairmen in the School of

Medicine, the University Hospital Administrator, the Director of Hospital Information Systems, the director of nursing for the hospital, and the chairman of the department of Medical Informatics. This committee reviews and approves clinical projects involving the use of patient data, reviews and approves additions to the expert component of the hospital information system and certifies computer programs and other clinical knowledge bases as to their suitability and performance characteristics prior to using them in a live clinical environment. In addition, it advises the Hospital Administrator regarding priorities for installation of clinical services.

The final committee is the HELP Implementation and Coordination Committee. This committee is chaired by the Director of Hospital Information Systems and includes the Data Base Administrator, representatives from Nursing, Ambulatory Services, Pharmacy, the Clinical Laboratories, Medical Records, Radiology Services, the Hospital Controller and the Associate Dean for Finances. Its responsibility is to coordinate system access, data exchange, database profile, standards and conventions. In addition, it reviews enhancements, interfaces with ancillary systems and serves as a clearing house for locally developed software and reporting capabilities.

This administrative structure reflects the complexity of the burgeoning information environment. The committees address the challenges of policy and planning; clinical, research and instructional applications; and the technical aspects of system implementation.

PILOT PROJECTS

Under IAIMS support, four expert systems are being developed as prototypes for this kind of activity on the medical campus. In the College of Nursing, we are building a system for advising nurses regarding pain management in specific clinical circumstances. Nurses at the LDS Hospital have been working for several years on computer-based nurse-care plans and pain management is an important component of this effort. The College of Nursing has faculty who are experts in this field and now actively work with students and faculty from Medical Informatics to build HELP sectors (knowledge frames) to improve the quality of pain-management decisions. Faculty from the School of Pharmacy are building a decision support system with HELP to facilitate better management of patients requiring antibiotics.

In the School of Medicine, we are building an expert system for Hematology, starting with decisions involving hemolytic anemia. In addition, the Department of Orthopedics is involved in structuring a knowledge base which will reflect the best thinking of specialists in this field regarding certain therapy decisions commonly faced by clinicians, and building a system which will provide this knowledge on-line to those who need it.

As these projects develop, new tools are being built to make it easier for medical subject matter experts to express their knowledge in a form for computer use on the one hand, and on the other, to make it easier for a user of such a system to understand the underlying logic and even to access the source (literature reference where appropriate). To accomplish this, we are building relational files that link the medical subject to the literature source, the expert, a patient database (if knowledge was derived from analysis of past cases), and to the HELP sectors themselves.

IMPACT

IAIMS has focused the attention of the institution on the challenges and opportunities in information management. The role of the National Library of Medicine has been central to this effort. The IAIMS initiative required participation from the highest levels of University administration. The appointment of an Assistant for Information Management was a critical organization response, brought about in part by the response to the National Library of Medicine and in part by the recognition of the necessity for such a position. Subsequent funding by the National Library of Medicine for the planning contract and for the development grant substantially enhanced the credibility of IAIMS. This support has attracted additional funding from corporations and private contributors to the institution.

The speed of change within the institution has accelerated as a result of the IAIMS initiative. In October 1985, the Department of Medical Biophysics and Computing of the School of Medicine (since 1974) became the Department of Medical Informatics. This change in name was institutional recognition of an expanded role for the department. The department now has nine tenured faculty and 26 graduate students. Many of these students are supported through other departments of the medical school and provide the intellectual "glue" that assures that interdepartmental projects move ahead on a day-to-day basis. About two thirds of these students will complete their training at the Masters level and the rest go on to a PhD in Medical Informatics.

Two major information resources, the hospital information system and the integrated library system, are nearing completion. The hospital information system (HELP) was developed over the last 20 years at the LDS Hospital in Salt Lake City, Utah by the university's Department of Medical Informatics, and is now being installed at University Hospital by a commercial vendor (Control Data Corporation) on a TANDEM computer system. A second TANDEM has been installed by the School of Medicine in the offices for the Department of Medical Informatics specifically for use of the HELP system for teaching and research. The systems are fully compatible and permit use not only of the HELP programs, but also the very large patient database from LDS and University Hospitals after names have been changed to protect patient privacy. Programs funded by a grant from the National Library of Medicine are being developed to optimize the use of this powerful resource for teaching and research.

The ILS installation at Eccles Medical Library on the medical campus has been a joint effort during the past year by OCLC and library staff. The library was closed mornings during the summer to complete the installation and file development for the catalog. Expanded services to begin in October 1986 will include full access to the status of each book in our inventory.

In addition to these two major developments, new faculty are being appointed in the health sciences that have specific information management responsibilities. New local area networks are being installed in the Colleges of Nursing and Health to support instructional computing and, many departments and administrative units of the medical school already have operational local area networks. The Departments of Pathology and Anatomy are combining computer-assisted instruction with videodisc technology to provide teaching and testing facilities. The Eccles library has a grant to support the development of a system which will provide computer-based

library service for health professionals throughout the intermountain region using portable microprocessors.

CONCLUSION

Superficially, the challenge of IAIMS is the coordinated implementation of a dynamic new technology. In fact, the success of IAIMS is dependent on new social, psychological and administrative structures that are capable of responding to this new information environment. Rather than focus on the communication links themselves, we have chosen to try to define what we wish to communicate, and then build our networks to fill these needs. This is not always possible since many do not yet know explicitly how they want to use this new technology. We have chosen to start with those few who do know and let the others learn from watching them.

ACKNOWLEDGEMENTS

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REFERENCE

1. Matheson, N.W. and Cooper, J.A.D. "Academic Information in the Academic Health Sciences Center: Roles for the Library in Information Management." J Med Educ Suppl, Oct 1982.