

NCHEMS ORIGINS

BACKGROUND

In 1965 some members of the Western Interstate Commission on Higher Education (WICHE) began to discuss the costly duplication of effort in the development and implementation of their individual management information systems. In December 1966 representatives of a number of state coordinating agencies in the WICHE constituency met with WICHE staff in San Francisco to discuss the interstate exchange of higher education data. In May 1966 WICHE convened a second meeting to consider whether several western states might conduct simultaneous cost studies using definitions and procedures developed in California. The participants concluded that an interstate effort to develop compatible exchange data on costs and some outcomes analysis was both feasible and desirable. A Design Committee was named to recommend research and development approaches for a central staff to be housed at WICHE headquarters in Boulder, Colorado. John Minter of the WICHE staff developed a proposal in 1967.

In March 1968 the Design Committee submitted a proposal to the U.S. Office of Education for a WICHE Management Information Systems (MIS) program. This proposal was funded for one year for slightly over one million dollars. In October 1968 the WICHE Commissioners appointed an ad hoc Steering Committee and John Minter was named acting director of the WICHE MIS Program. The initial goals were to develop a Data Element Dictionary (DED) and a Program Classification Structure (PCS), and to design a Resource Requirements Prediction Model (RRPM). The new WICHE MIS Program was broadly conceived to deal with both planning and management information. The Design Committee reasoned that if substantial progress was to be made in one year this first effort at interstate cooperation should be kept essential regional in scope. However, the University of Illinois and the State University of New York were invited to participate, and both agreed.

The first staff members of the WICHE MIS Program were appointed in early 1969 to start in Boulder, Colorado July 1, 1969. They were G. Ben Lawrence from the Oregon Coordinating Council for Higher Education as Program Director; Charles R. Thomas from the University of Illinois as Program Associate for Information Systems; and Warren Gulko from the University of Minnesota as Program Associate for Analytical Studies. Later Robert Huff from the University of Oregon would be appointed as Program Associate for Training. The first secretary for the organization was Clara Roberts. The Steering Committee also began building an advisory structure by appointing a National Advisory Panel.

Through close liaison with the National Center for Educational Statistics (NCES) the WICHE MIS Program attracted national and international attention, so in April 1969 a national seminar on the state of the art of management information systems was convened at the Watergate Hotel in Washington, DC. Participants from nearly all of the states and several foreign countries attended this meeting to hear and discuss papers presented by many experts in higher education management information systems, including: *Evaluating the Performance and Effectiveness of University Management Information Systems*, by George Baughman and Ronald Brady from Ohio State University; *The Data Base Approach to a Management Information System*, by John Gwynn from Stanford University; *Data Management and Interrelated Data Systems for Higher Education*, by John F. Chaney and Charles R. Thomas from the University of Illinois; *A System Model for Management, Planning, and Resource Allocation*, by Herman E. Loenig; *Systems*

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Analysis for Efficient Resource Allocation in Higher Education: A Report on the Development and Implementation of CAMPUS Techniques, by Richard W. Judy from the University of Toronto; *The Implementation of CAMPUS Simulation Models for University Planning*, by Jack B. Levine; *The Use of Production Functions to Evaluate Educational Technology*, by Lewis J. Perl from the University of California; *Higher Education Objectives: Measures of Performance and Effectiveness*, by John Keller of the University of California; and *Advanced Applied Management Information Systems in Higher Education: Three Case Studies*, by Leo L. Kornfeld,. Two publications resulted from this seminar: *Focus on MIS* and *Management Information Systems: Their Development and Use in the Administration of Higher Education*.

One of the first publications of the WICHE MIS Program was a “field review edition” of a Data Element Dictionary for Higher Education authored by Charles R. Thomas working with a Task Force. The National Advisory Panel recommended that this technical report be distributed nationally. It generated considerable interest throughout the country and WICHE received many requests to participate in the MIS Program from other regions.

It soon became apparent that an immediate need existed for a research and development center serving a national clientele, so in December 1969 the WICHE Commissioners approved a Steering Committee proposal to change the name of the program to the WICHE Planning and Management Systems (PMS) program. This program was open to participation nationally and six goals were established:

To initiate and maintain extensive communication between the WICHE PMS project staff and all educational organizations, institutions, and agencies who might wish to participate in the undertaking.

To establish mechanisms for national review and feedback on the various procedures, manuals, definitions, and models developed at WICHE.

To organize an advisory structure which would allow the participating institutions across the nation to give advice and reach consensus on the concepts, principles, definitions, and methods underlying the developmental work being done at WICHE.

To develop training programs which would serve the larger audience resulting from the expansion of the program to a national scope.

To seek extended funding for additional personnel, communications, task force meetings, and travel in order to be prepared to serve the broadened base of institutional and agency participation.

To plan program activities more comprehensively and further ahead in view of the long-range implications of PMS products for higher education across the nation.

In June 1970 representatives of several agencies in the Office of Education visited Boulder to evaluate the WICHE Planning and Management Systems program. This group of agencies later constituted the Federal Interagency Group on Higher Education (FICHE) Management Systems group. Following this site visit the agencies pooled resources to fund the WICHE PMS program for an additional year. In July 1970 The Ford Foundation provided a grant to establish a PMS

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Research Unit. Participation in the PMS program increased steadily, and by the end of 1970, 650 institutions and agencies had signed participation agreements. In addition, more than 800 individuals attended the 27 training seminars conducted by the PMS staff during 1970,

In February 1971 and Office of Education Site Visit Committee again reviewed the WICHE PMS program and its progress. This committee recommended that the Office of Education fund the program in an institutional mode rather than on a project grant basis. The committee also recommend an appropriate name change, so the WICHE PMS program became the National Center for Higher Education Management Systems (NCHEMS) at WICHE. An inside story on this choice of name was interesting. While a staff committee was considering all of the options for an appropriate name, Robert Huff, the Director of Training mentioned that he had just ordered 200 three-ring binders with “National Center for Higher Education Management Systems” stenciled on the front. The committee wisely decided to go with that name, and the WICHE commissioners and the Office of Education agreed with the committee.

The quick evolution to the status of a National Center spurred the staff to maximum efforts to identify the needs of its growing constituency and to launch research and development projects to meet the most pressing needs quickly and effectively. Through meetings of participants, publications, and word of mouth, NCHEMS gained recognition rapidly. This new visibility properly raised questions about the actual impact of its programs and projects, so NCHEMS arranged for an objective evaluation. In 1972 the Business Research Division of the Graduate School of Business Administration at the University of Colorado conducted an impact study among more than one hundred institutions and agencies in higher education. They determined that 90 percent were familiar with the NCHEMS Data Element dictionary, the Program Classification Structure, and the resource Requirements Prediction Model. NCHEMS was viewed favorably by its users, and many said the NCHEMS training and products had prompted change in their management methods. Further evidence of NCHEMS good standing came in September 1972 when the NCHEMS National Assembly in Denver attracted more than 700 participants.

When the National Institute of Education (NIE) was established in 1972 it assumed all U.S. Office of Education laboratory and center contracts and at the same time adopted a new “product purchase” approach to funding. This process resulted in a three-year contract beginning in December 1972 for the development of specific planning and management products. At that time research, development, and implementation activity at NCHEMS was been organized in terms of project components. The projects were integrated and interdependent, but each was assigned specific product or support goals and the staff of each project was responsible for meeting progress milestone schedules.

ADVISORY STRUCTURE

The NCHEMS Advisory Structure always had a very strong role in the governance and direction of the program, and the Executive Committee developed into a powerful and knowledgeable group. In December 1972 the committee name was change to the NCHEMS Board of Directors to more accurately reflect its relationship to the Center. The Board of Directors also formalized an effective and efficient committee structure to deal with the various aspects of the NCHEMS programs and projects. At the same time a National Advisory Panel consisting of representatives

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of many professional associations and agencies. Both of these groups met regularly and provided advise and direction for NCHEMS activities.

At the outset there were two important Task Forces who met regularly with the WICHE MIS staff; the Data Element Task Force and the Analytical Task Force. The members of these two advisory groups were “practitioner experts” chosen from leading institutions for their expertise in the application of technology to higher education management.

The Data Element Task Force worked with Charles R. Thomas, Program Associate for Information Systems to review the early drafts of the NCHEMS Data Element Dictionary, while the Analytical Task Force worked with Warren Gulko, Program Associate for Analytical Studies on the design of the Resource Requirements Prediction Model. All NCHEMS staff members met regularly with both Task Forces and participated in the NCHEMS products.

DATA ELEMENT DICTIONARY (DED)

Data elements, their definitions and coding structures were gathered from about 20 leading institutions by Charles R. Thomas, Program Associate for Information Technology. The staff was assisted by a Data Element Task Force consisted of the following practitioner experts:

Spencer Carlson, University of Oregon;
Roger Emanuel, University of California System;
James Farmer, California State University System;
F. Parker Fowler, Jr., Colorado Commission on Higher Education;
Keith Martin, University of Washington;
David Nyman, Illinois Board of Higher Education;
Keith Smith, Illinois Board of Higher Education;
George Turner, University of California System.

The Field Review Edition of the NCHEMS Data Element Dictionary was crafted by distilling the information to a common set of data elements divided into major administrative areas; Student, Human Resources, Alumni, Courses, Financial, and Facilities. The total number of data elements included numbered approximately 250, of which about 65% were identified as “institutionally determined”. National standards were identified for the other 35% of the data elements. It was the publication and distribution of this document that prompted the U.S. Office of Education to change NCHEMS from a regional program at WICHE to the status of a National Laboratory.

RESOURCE REQUIREMENTS PREDICTION MODEL (RRPM)

The original model was based on three similar institutional models currently in use. The University of Illinois and the University of Washington had each independently developed what was titled a “Crossover Study,” and the University of California at Berkeley had developed a similar model called the “Induced Course Load Matrix”. All three of these models used historical data to predict future academic and administrative departmental resource requirements for a specific mix of students by major. The east coast firm of *Mathmatica* was contracted to produce the initial computer program for the RRPM. The NCHEMS staff led by Warren Gulko, Program Associate for Analytical Studies then worked with the Analytical Task Force to refine the coding

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and documentation for the final published version. The members of the Analytical Task Force were:

Robert Adams, University of California at Santa Cruz;
James Farmer, California State University System;
John Keller, University of California at Berkeley;
Thomas Mason, University of Colorado;
Charles McIntyre, California Coordinating Commission for Higher Education'
Gordon Osborn, State University of New York System;
Garland Peed, State Center Junior College at Fresno'
James Ryan, University of Washington;
Robert Wallhaus, University of Illinois;
George Weathersby, University of California at Berkeley;
Martin Ziegler, University of Illinois.

NCHEMS TRAINING SEMINARS

Under the direction of Robert Huff, Program Associate for Training, NCHEMS conducted dozens of seminars around the country to explain the NCHEMS products to institutions and agencies. As a result of these seminars, many institutions began to refer to their individual efforts as "NCHEMS Compatible". Some state higher education governing or coordinating agencies also began to require institutions to be "NCHEMS Compatible" in their administrative systems.

NCHEMS PUBLICATIONS

The NCHEMS Publications unit printed and distributed many copies of the Data Element Dictionary and the RRPM Manual, as well as other papers written by the staff and members of the advisory structure. Other publications printed and distributed included relevant papers written by NCHEMS staff members and members of the advisory structure.