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ABSTRACT

NCHEMS, National Center for Higher Management Systems, is a separate division of WICHE. Under the direction of a Board of Directors, who represent various sectors of postsecondary education, the NCHEMS staff works with a series of task forces and representatives of national associations to develop products for planners and managers. This document is intended for use in training seminars in support of discussions concerning NCHEMS organization approaches to planning and management systems, products, and activities. (Author/KE)

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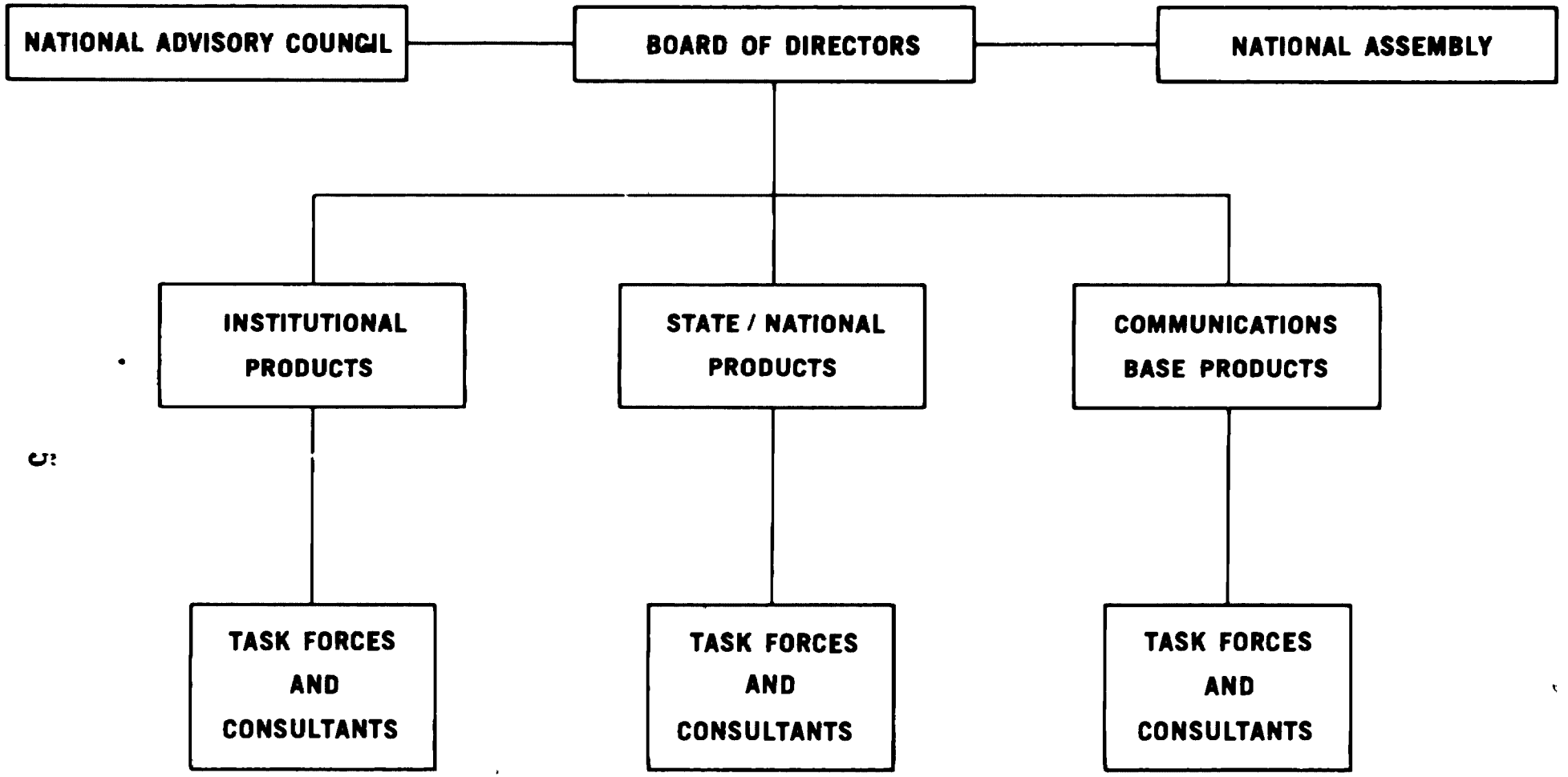
INTRODUCTION

This document is intended for use in training seminars in support of discussion concerning:

- NCHEMS Organization
- NCHEMS's Approaches to Planning and Management Systems
- NCHEMS's Products and Activities

This document is intended to be spoken to, rather than merely read. For that reason, the visuals and accompanying narrative are intentionally brief.

NCHEMS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NATIONAL ASSEMBLY
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STATE / NATIONAL PRODUCTS
COMMUNICATIONS BASE PRODUCTS
TASK FORCES AND CONSULTANTS
TASK FORCES AND CONSULTANTS
TASK FORCES AND CONSULTANTS

NCHEMS ORGANIZATION

NCHEMS is a separate division of WICHE, the Western Interstate Commission for Higher Education, located in Boulder, Colorado. Under the direction of a Board of Directors, representing various sectors of postsecondary education the NCHEMS staff works with a series of task forces and representatives of national associations (the National Advisory Council) to develop products for planners and managers. The funding for NCHEMS (approximately 1.7 million dollars), coming primarily from the National Institute of Education (NIE), is allocated across three primary units, Institutional products, State/National products, and Communications Base products. NCHEMS currently employs 37 professional staff members.

Currently there are 538 participating institutions and agencies and 673 institutions and agencies that subscribe to NCHEMS publications.

Relying on these participants and subscribers, as well as task forces, consultants, the National Advisory Council, and the Board of Directors, for general review has helped NCHEMS to develop products under conditions of broad consensus. Thus, the review process has served to enhance both the utility and acceptability of products.

PLANNING AND MANAGEMENT ENVIRONMENT

- NEW ROLES OF POSTSECONDARY EDUCATION DECISION MAKERS
  - -IDENTIFYING AND UNDERSTANDING EDUCATIONAL OUTCOMES
  - -ACQUIRING AND ALLOCATING RESOURCES MORE EFFECTIVELY
  - -COMPETING SUCCESSFULLY FOR PUBLIC AND PRIVATE FUNDS
  - -RESPONDING TO DEMANDS FOR PROGRAM COST/BUDGET/OUTCOME INFORMATION
  - -RESPONDING TO MORE CONSTITUENCIES (ACCOUNTABILITY)

- NEW NATURE OF INFORMATION NEEDS
  - -PROGRAM ORIENTED
  - -STANDARDIZED/COMPARABLE
  - -COMPREHENSIVE
  - -MORE USEFUL/APPLICABLE

POSTSECONDARY EDUCATION PLANNING AND MANAGEMENT ENVIRONMENT

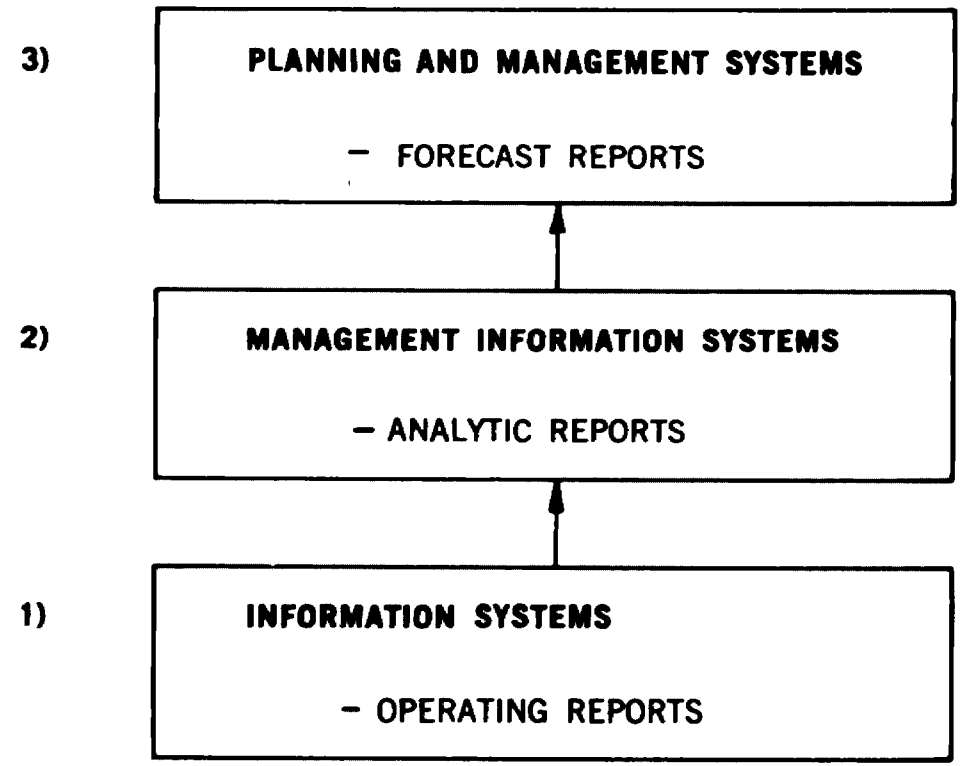
Postsecondary education administrators are increasingly finding themselves expected to:

- Identify and understand educational outcomes (not only of instruction, but also of research and public service).
- Develop and utilize more effective strategies for acquiring and allocating resources.
- Compete successfully for public and private funds.
- Respond to increasing demands for program cost/budget/outcome information.
- Respond to new constituencies (e.g., new kinds of students, legislators, coordinating commissions).

Not only is the role of the administrator changing, but the nature and use of information to support decision making also is becoming more pronounced. The "new information" is expected to be:

- program oriented
- standardized/comparable
- comprehensive
- more useful/applicable

HIERARCHY OF INFORMATION SYSTEMS *



*Sheehan, Bernard S., Report One-Western Canadian Universities Task Force on Information Needs and Systems, University of Calgary, Alberta, Canada, November, 1972.

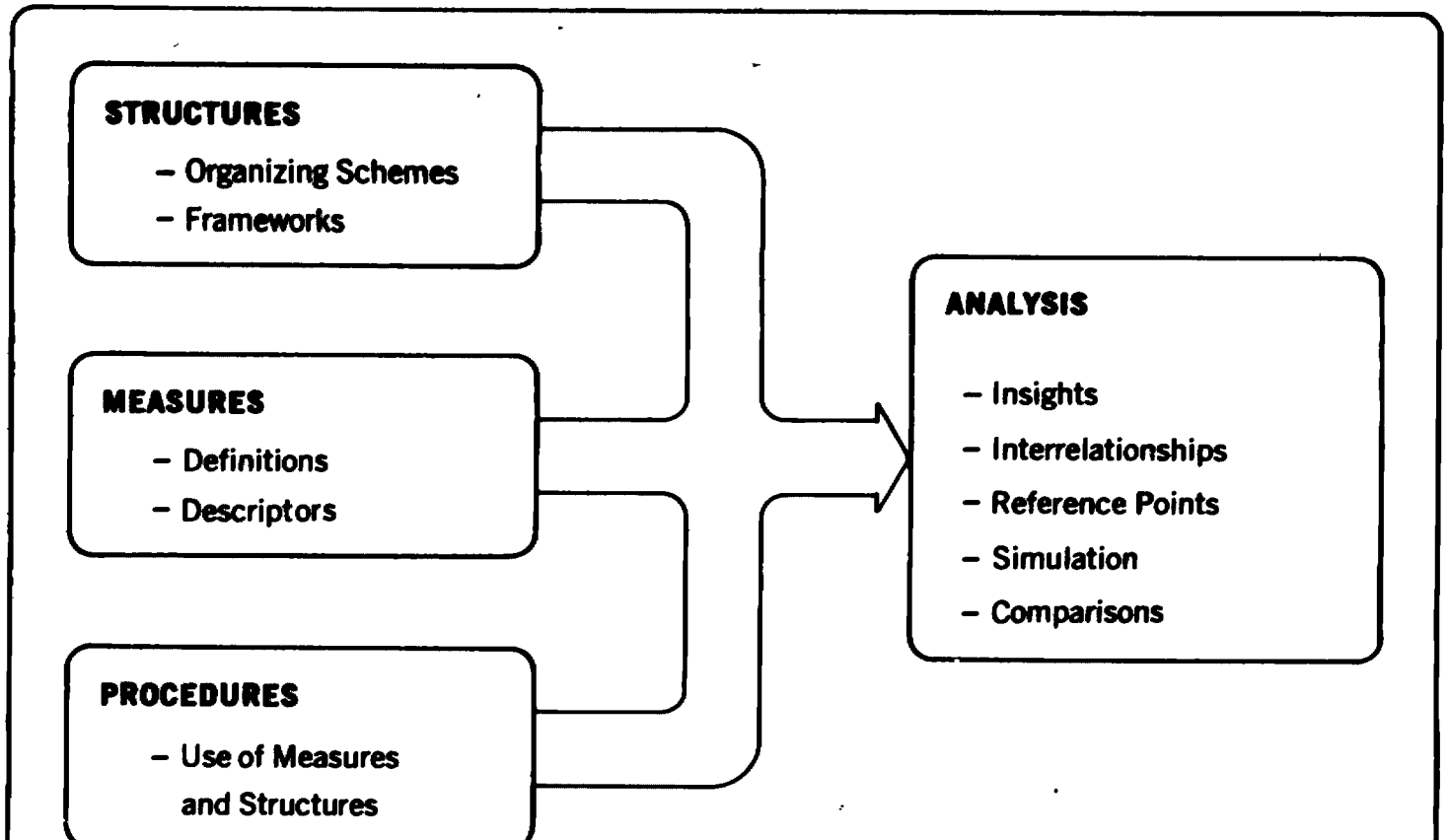
HIERARCHY OF INFORMATION SYSTEMS

Information systems can be categorized into three hierarchical levels. The first provides the basic control and operating reports for current activities. These systems, which may be automated, describe financial transactions, enrollments, grade reports, personnel information, and so forth.

The second level of information systems, frequently called Management Information Systems (MIS), produces a series of analytical reports based on the first-level information system. These historical studies of resource utilization, organizational interrelationships, and enrollment patterns are intended to provide planners and managers with an improved understanding of the institution.

Information systems of the third type, Planning and Management Systems (PMS), are intended to provide assistance when plans are developed. Planning and Management Systems utilize historical data modified by judgment and other information to assess the implications of different planning policy decisions in order that future directions might be analyzed.

NCHEMS DEVELOPMENTAL APPROACH



NCHEMS DEVELOPMENTAL APPROACH

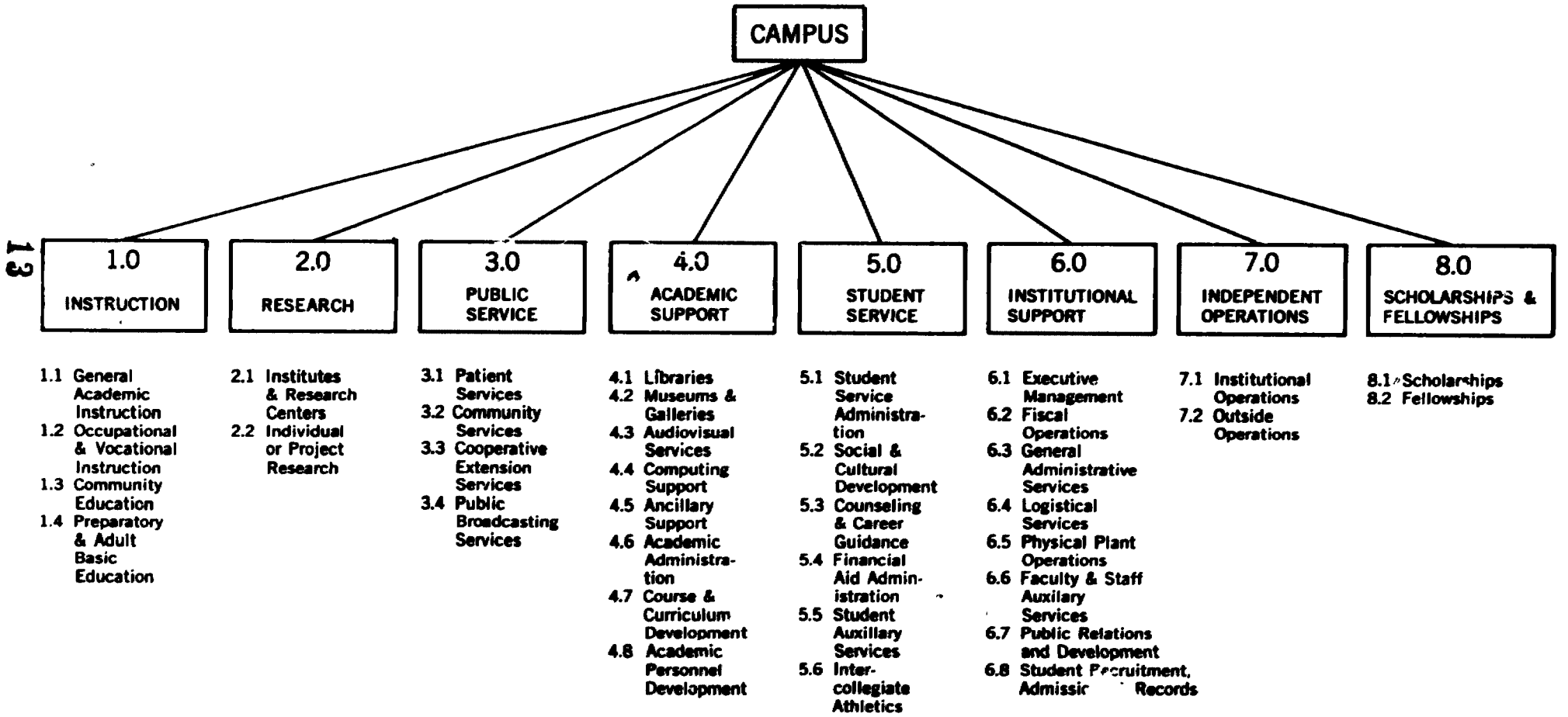
The usefulness of each kind of information system is dependent upon:

- the data elements it includes
- the way in which the data are organized
- the way in which the data are collected and used.

NCHEMS projects focus on each of these. That is, NCHEMS develops, tests, and revises:

- Measures--the basic definitions and descriptors of data elements.
- Structures--ways for organizing measures.
- Procedures--ways to collect the measures and move them around in the structure(s).
- Analysis--procedures for gaining insights, determining and understanding interrelationships, fixing reference points, performing simulations, or making meaningful comparisons.

PROGRAM CLASSIFICATION STRUCTURE (PCS)



PROGRAM CLASSIFICATION STRUCTURE (PCS)

Perhaps one of the best known and most widely used of the NCHEMS products is the Program Classification Structure (PCS). The PCS is a standard structure for organizing measures related to post-secondary education. Not designed to replace institutional organizational schemes, the PCS is intended to be used primarily as a standard structure into which specialized institutional information could be transferred for purposes of analysis, comparison, or reporting.

The PCS has the following characteristics:

- It is hierarchical and is useful for categorizing information from the program level (e.g., all Public Service activities) down to the level of individual courses or research projects.
- It is comprehensive in that it describes in standard format the entire range of postsecondary education programs, from instruction to academic support to independent operations.
- Its instructional categories are based on disciplines rather than student degree programs.

RELEVANT NCHEMS DOCUMENTS:

TR#27 Program Classification Structure, First Edition, Warren W. Gulko, January 1972.

TR#63 Information Exchange Procedures Activity Structure, Edward M. Myers and James R. Topping, 1975.

MEASURE DEFINITION / DESCRIPTION

THE DATA ELEMENT DICTIONARY (DED)

STUDENT | FINANCE | FACILITIES | STAFF | COURSE

STATEWIDE MEASURES INVENTORY (SWM)

PROGRAM MEASURES (PM)

Measures / P.C.S.	Resource Measures	Financial Measures	Beneficiary Group Measures	Target Group Measures	Activity Measures	Outcome Measures
1.0 Instruction 2.0 Research • • • •						

MEASURE DEFINITION/DESCRIPTION

The NCHEMS Data Element Dictionary (DED) describes five kinds of data elements from which basic operational data files can be created:

- Student data elements
- Finance data elements
- Facilities data elements
- Staff data elements
- Course data elements

The Statewide Measures Inventory is an extension of the Data Element Dictionary targeted to state-level personnel.

Program measures are designed to describe programs as completely as possible. Thus, program measures, some of which are basic data elements (such as those in DED) and others of which are derived (total weekly student hours), are used to support management information and planning and management systems. The primary categories of program measures are:

- Resource measures
- Financial measures
- Beneficiary group measures
- Target group measures
- Activity measures
- Outcome measures

RELEVANT NCHEMS DOCUMENTS:

TR #35 Program Measures, James R. Topping and Glenn K. Miyataki, February 1973.

TR #68A Statewide Measures Inventory, Katherine A. Allman, Paul Wing, and James N. McLaughlin, 1975.

TR #68B An Overview and Guide to the Use of the Statewide Measures Inventory, Paul Wing, James N. Mclaughlin, and Katherine A. Allman, 1975.

TR #51 Data Element Dictionary, Second Edition, Suzette Goddard, James S. Martin, and Leonard Romney, 1974.

FINANCE

- **JOINT ACCOUNTING GROUP (JAG)**
  - AICPA, NACUBO, NCHEMS
  - Revenue / Expenditure Transaction Categories
- **HIGHER EDUCATION FINANCE MANUAL (HEFM)**
  - Columnar / Layered Balance Sheet
  - Flow of Funds
  - Source / Use Matrix
- **COST ANALYSIS MANUAL (CAM)**
  - Expenditure Definitions
  - Unit Costing
  - Direct and Full Costing Procedures

FINANCE

NCHEMS has addressed the topic of financial measures and procedures by three different projects:

The Joint Accounting Group (JAG) report, the result of a joint effort among AICPA, NACUBO, and NCHEMS, defines categories of revenue/expenditure transactions.

The Higher Education Finance Manual (HEFM) describes definitions and procedures recommended for use in HEGIS for reporting institutional financial information in a comparable way.

The Cost Analysis Manual(CAM) produced by the Cost Finding Principles project defines categories of expenditures, procedures for distributing institutional expenditures into the appropriate activity centers of the PCS, and procedures for allocating costs of supporting activities to primary activities in order to determine full costs.

RELEVANT NCHEMS DOCUMENTS:

TR #45 Cost Analysis Manual, Field Review Edition, James Topping, 1974.

TR #69 Higher Education Finance Manual, Doug Collier, 1975.

TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1975.

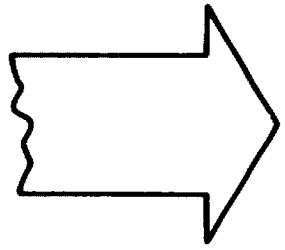
TR #57 Account Crossover Module Reference Manual, Mike Haight and Ron Martin, 1975.

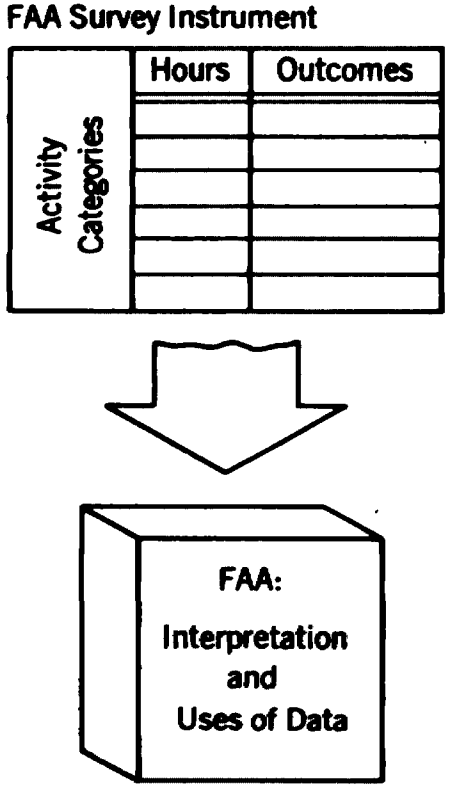
Report of the Joint Accounting Group, March 1974.

PERSONNEL

- **BUDGETING AND ACCOUNTING FOR MANPOWER RESOURCES (BAMR)**
  - Categories of Personnel
  - Data Collection Procedures
  - Possible Uses

- **FACULTY ACTIVITY ANALYSIS PROJECT (FAA)**
  - Structure
  - Measures
  - Procedures
  - Analysis
    - Case Studies
    - Analysis Illustrations
    - Problem Areas





PERSONNEL

Two projects have focused on personnel concerns:

- The Higher Education Budgeting and Accounting for Manpower Resources (BAMR) project
- The Faculty Activity Analysis (FAA) project

The Higher Education Budgeting and Accounting for Manpower Resources Manual, written to address the personnel portions of HEGIS, describes procedures for assessing the availability of various kinds of manpower resources and for estimating the distribution of these manpower resources to programs. Thus BAMR defines the full range of personnel resources whereas the following project (FAA) addresses in detail one type of personnel--faculty.

The FAA project addresses analysis as well as structures, measures, and procedures. The Faculty Activity Analysis: Procedures Manual describes:

- A structure of faculty activity categories that can be crossed over to PCS categories,
- Measures of faculty activities in average hours per week,
- Procedures including a survey instrument and instructions for collecting faculty activity data.

The Faculty Activity Analysis: Interpretation and Uses of Data manual describes analytical techniques for using the data that result from the FAA instrument. Case studies, illustrations, and data display formats all are contained in the document.

RELEVANT NCHEMS DOCUMENTS:

TR #24 Faculty Activity Analysis: Overview and Major Issues, Leonard Romney, December 1971.
TR #44 Faculty Activity Analysis: Procedures Manual, Charles Manning and Leonard Romney, 1973.
TR #54 Faculty Activity Analysis: Interpretation and Uses of Data, Leonard Romney and Charles Manning, 1974.
TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1974.
TR #58 Faculty Activity Module Manual, Gary Gamso, Mike Haight, Ron Martin, Bill Collard, 1975.
TR #59 Personnel Data Module Reference Manual, Mike Haight and Ron Martin, 1975.
TR #67 A Manual For Budgeting and Accounting For Manpower Resources In Postsecondary Education, Dennis P. Jones and Theodore H. Drews, 1975.

FACILITIES

- **FACILITIES INVENTORY AND CLASSIFICATION MANUAL (FICM)**
  - Standard Room Use Categories
  - Standard Codes
  - Possible Reports and Uses

- **FACILITIES PLANNING AND MANGEMENT MANUALS (FPMM)**

CLASSROOMS

LABORATORIES

OFFICES

LIBRARIES

- Determine Current Capacity
- Needs Projection
- Facilitates Planning and Master Planning

FACILITIES

NCHEMS efforts pertaining to facilities measures and procedures have resulted in two products:

The Higher Education Facilities Inventory and Classification Manual (FICM) is used to develop and report space inventory information to HEGIS. The FICM manual defines the room use codes, includes the PCS as the organizing structure, and discusses possible uses of the information.

The Higher Education Facilities Planning and Management Manuals (FPMM) assess:

- capacity of existing facilities
- projected needs for facilities on new compuses
- projected needs for additional facilities on existing campuses

The manuals also describe procedures for collecting information needed for a facilities planning effort. These same kinds of data are needed for other planning efforts as well. Thus, considerable text is devoted to describing an entire planning process, of which facilities planning is only a part. Facilities planning at the state level is described also.

RELEVANT NCHEMS DOCUMENTS:

TR #36 Higher Education Facilities Inventory and Classification Manual, Leonard Romney, December 1972.

TR #17-1 through TR #17-7 Higher Education Facilities Planning and Management Manuals, Harold Dahnke, Dennis Jones, Thomas Mason, and Leonard Romney, May 1971.

OUTCOMES OF POSTSECONDARY EDUCATION

WHAT IS POSSIBLE?

- **INVENTORIES**
  - INVENTORY OF HIGHER EDUCATION OUTCOME VARIABLES AND MEASURES
  - INVENTORY OF INSTITUTIONAL ENVIRONMENT VARIABLES AND MEASURES
  - OUTCOMES CLASSIFICATION STRUCTURE

WHAT IS WANTED?

- **OUTCOMES MEASURES IDENTIFICATION STUDY (OMIS)**
  - MAIL SURVEY
  - COLLEGE ADMINISTRATION
  - STATE-LEVEL DECISION MAKERS

WHAT IS FEASIBLE?

- **OUTCOME MEASURES AND PROCEDURES MANUAL (OMPM)**
  - MEASURES AND ACQUISITION PROCEDURES

OUTCOMES

The Outcomes project is developing both measures and procedures for collecting and analyzing outcomes data. Three of its products should be highlighted:

Outcome Variables and Measures Inventory is a list of outcome measures across the range of programs. Three categories of outcome measures are:

- Student Growth and Development Outcomes
- New Knowledge and Art Forms Outcomes
- Community Impact Outcomes

Outcome Measures Identification Study (OMIS) reports the results of a survey of decision makers to assess:

- Which Outcome Measures were needed
- Which Outcome Measures were available

Outcome Measures and Procedures Manual (OMPM) describes data definitions and collection procedures for the most frequently needed measures identified in the OMIS.

RELEVANT NCHEMS DOCUMENTS:

TR #40 An Introduction to the Identification and Uses of Higher Education Outcome Information, Robert Wallhaus and Sid Micek, 1973.

TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1974.

TR #61 Student Outcomes Module Reference Manual, Mike Haight and Ron Martin, 1975.

TR #66 Information Exchange Procedures Outcome Study Procedures, Maureen Byers, 1975.

TR #70 Outcome Measures and Procedures Manual, Sid Micek, 1975.

Outcome Measures Identification Study, Sid Micek and W. R. Arney, 1974.

INSTRUCTIONAL WORK LOAD MATRIX (IWLM)

STUDENT CATEGORIES

INSTRUCTIONAL UNITS

	MATH.	CHEM.	PSY.	ACCT.	UNDECLARED	TOTALS
ENGLISH DISCIPLINE	200	100	500	300	1,800	2,900
CHEMISTRY DISCIPLINE	800	1,500	200	0	600	3,100
BUSINESS DISCIPLINE	100	400	100	700	1,200	2,500
TOTALS	1,100	2,000	800	1,000	3,600	8,500

INSTRUCTIONAL WORK LOAD MATRIX (IWLM)

One of the procedures that has been popularized by NCHEMS is the Instructional Work Load Matrix (IWLM). The Instructional Work Load Matrix (IWLM) is one of the foundation blocks for cost simulation, historical costing, and analysis of student enrollment patterns. It is a procedure for linking two kinds of structures:

- A Discipline Structure (portions of the PCS)
- A Student Category Structure

This form of the IWLM displays the total number of units contributed by each discipline and which students in each category "consumed" those units. It can be expanded to include:

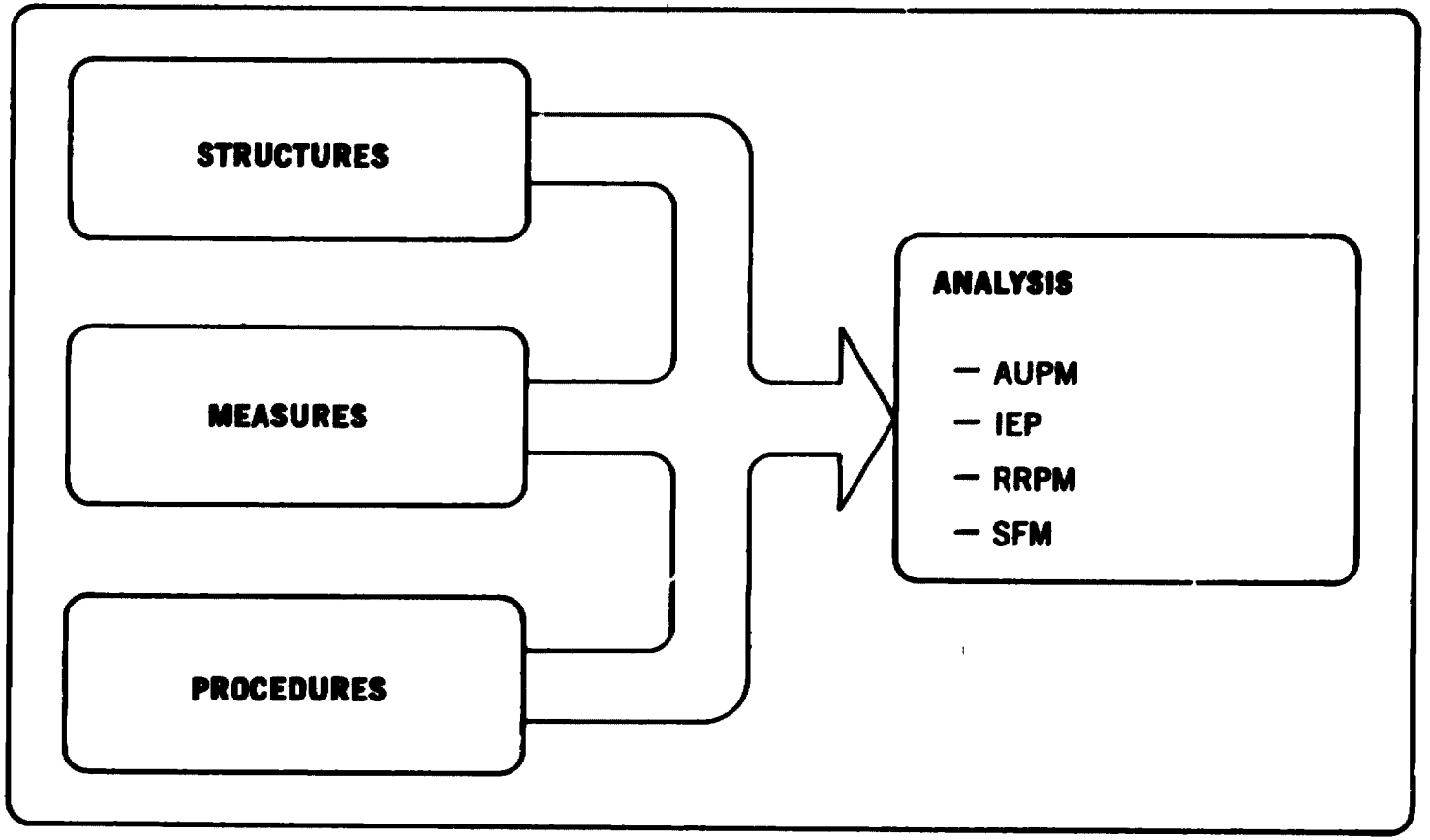
- Course levels
- Student levels

RELEVANT NCHEMS DOCUMENTS:

TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1975.

TR #60 Student Data Module Reference Manual, Mike Haight and Ron Martin, 1975.

ANALYTIC PROCEDURES



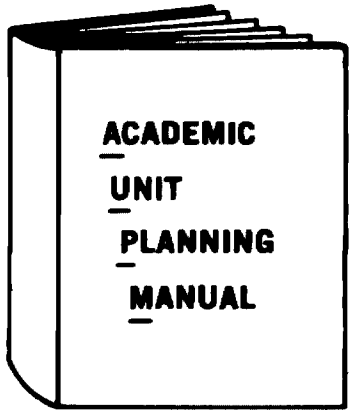
ANALYTIC PROCEDURES

Previous discussions have focused on information and have been devoted to the development of different kinds of measures, structures, and procedures to support the creation and use of different levels of information systems. Attention now will be focused on the use of this information.

Analytical aids, techniques, and tools are designed to use information to provide planners and managers with:

- Insights
- Reference Points
- Comparisons
- Interrelationships
- Simulation Capabilities

ACADEMIC UNIT PLANNING MANUAL (AUPM)



- **ASSISTS IN EXAMINING THE INTERNAL OPERATIONS OF A DEPARTMENT / DIVISION**
  - Focuses on Major Tasks Facing the Administrator
  - Interrelates Departmental Planning with Overall Institutional Process
- **CONSISTS OF WORKSHEETS AND PROCEDURES**
  - Identify, Organize, and Analyze Information About a Unit's Functions, Demands, Resources, and Outcomes.
  - Investigate Alternative Resource Allocations

ACADEMIC UNIT PLANNING MANUAL (AUPM)

The Intra-Institutional Planning and Management (IIPM) project has developed a document, the Academic Unit Planning Manual (AUPM), which is designed to provide department, school, and college-level administrators with systematic, comprehensive planning and management tools that are consistent and integrated with tools being developed at the institutional level.

The manual, which is in pilot-test stages, stresses the importance of identifying the kinds of constraints, societal as well as institutional, under which most units operate and their effect on the planning and management process at that level.

The AUPM manual:

- Describes procedures for creating an academic unit structure that lists the functions to be performed by that unit
- Provides a method for assessing the amount of demand for the functions as generated by students, faculty, and/or other constituencies.
- Describes procedures for identifying available resources (e.g., how many faculty) and for allocating resources (faculty, dollars, equipment) to functions so they may be conducted.
- Describes procedures for translating goals into measurable outcomes and comparing planned outcomes with those achieved.

RELEVANT NCHEMS DOCUMENT:

TR #72 Academic Unit Planning Manual, Glenn Miyataki, 1975.

INFORMATION EXCHANGE PROCEDURES (IEP)

A METHOD OF FORMALIZING AND EASING THE PROCESS OF ACQUIRING COMPARABLE INFORMATION

- STRUCTURE
  - PROGRAM CLASSIFICATION STRUCTURE
- MEASURES
  - GENERAL INSTITUTIONAL CHARACTERISTICS
  - OUTCOMES OF INSTRUCTIONAL PROGRAMS
  - COSTS OF DISCIPLINES AND DEGREE PROGRAMS
- PROCEDURES
  - RECOMMENDED CONVENTIONS AND GUIDELINES
- ANALYSIS
  - CASE STUDIES
  - EXCHANGE
  - SINGLE-INSTITUTION USE
  - MULTIPLE-INSTITUTION USE

INFORMATION EXCHANGE PROCEDURES (IEP)

The Information Exchange Procedures (IEP) project represents the combination of many projects at NCHEMS for one primary purpose--comparative analysis to support institutional planning and management.

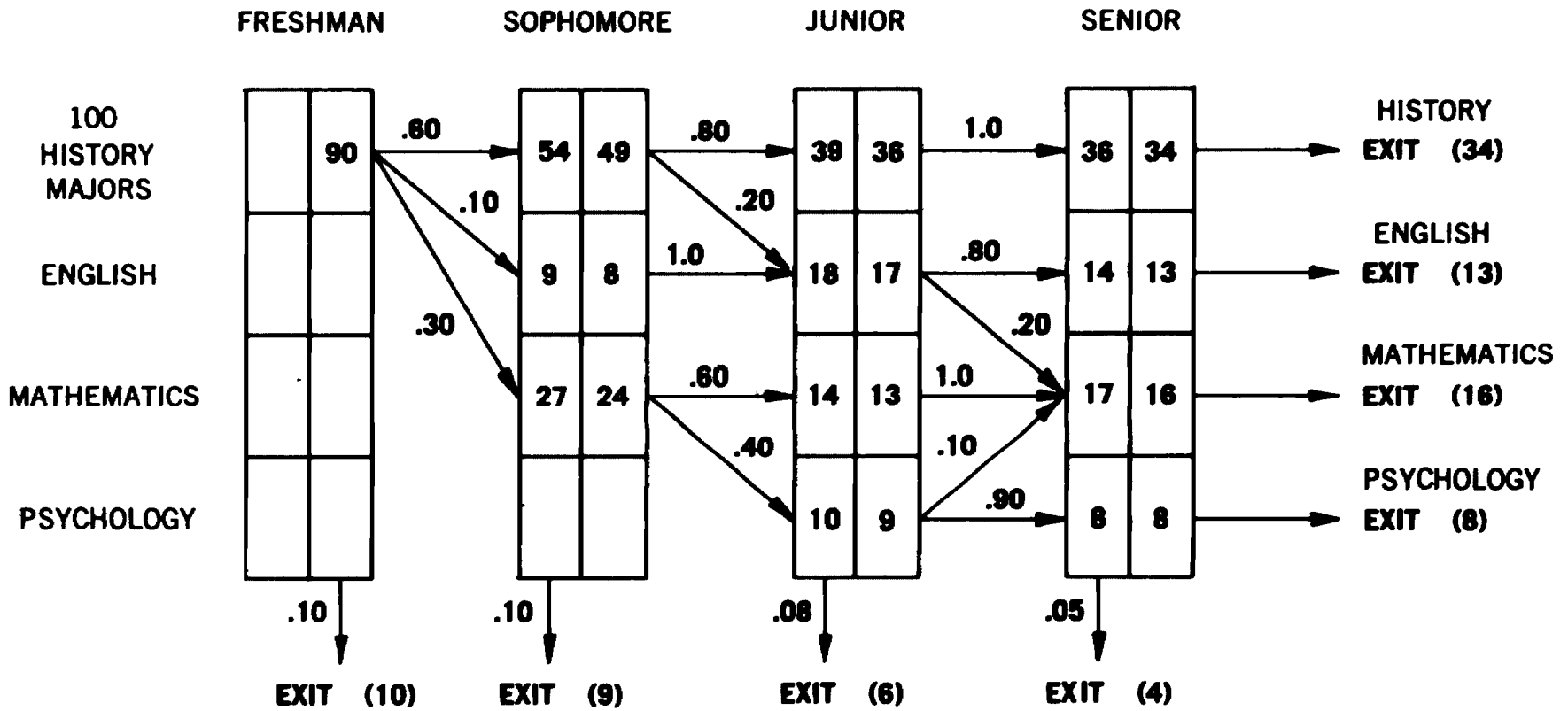
The IEP project consists of several supporting documents being developed to describe and illustrate uses of comparable data to address specific types of institutional problems.

RELEVANT NCHEMS DOCUMENTS:

TR #28 Information Exchange Procedures: Overview and General Approach, Leonard Romney, September, 1972.
TR #36 Higher Education Facilities Inventory and Classification Manual, Leonard Romney, December 1972.
TR #44 Faculty Activity Analysis: Procedures Manual, Charles Manning and Leonard Romney, 1973.
TR #45 Cost Analysis Manual (Field Review Edition), James Topping, 1974.
TR #46 Information Exchange Procedures Manual (Field Review Edition): A Synopsis, Leonard Romney, 1973.
TR #53 Higher Education Finance Manual (Field Review Edition), Doug Collier, 1974.
TR #54 Faculty Activity Analysis: Interpretation and Uses of Data, Leonard Romney and Charles Manning, 1974.
TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1975.
TR #63 Information Exchange Procedures Activity Structure, Edward M. Myers and James R. Topping, 1975.
Outcome Measures Identification Study, Sid Micek and W. R. Arney, 1974.
TR #65 Information Exchange Procedures: Cost Study Procedures, Richard S. Johnson and Robert A. Huff, 1975.

STUDENT FLOW MODEL (SFM)

EXAMPLE OF STUDENT FLOW FOR HISTORY MAJORS



STUDENT FLOW MODEL (SFM)

A student flow model may take different forms. The NCHEMS approach uses transitional probabilities to forecast the flow of students between categories from one term to the next.

Obviously, good predictions from this model are dependent on valid and reliable transition probabilities.

An advantage of this type of student flow model is its flexibility. The flow of various student categories (male, female, minority groups) may be examined individually. The attrition rates of different categories may be compared. The effect of changing admission policies related to certain types of students can be examined and analyzed.

RELEVANT NCHEMS DOCUMENTS:

TR #25 Student Flow Models: A Review and Conceptualization, C. C. Lovell, 1971.

TR #41A Student Flow Model SFM-IA: Introduction, Dick Johnson, May 1974.

TR #41B Student Flow Model SFM-IA: Systems Documentation, Dick Johnson, May 1974.

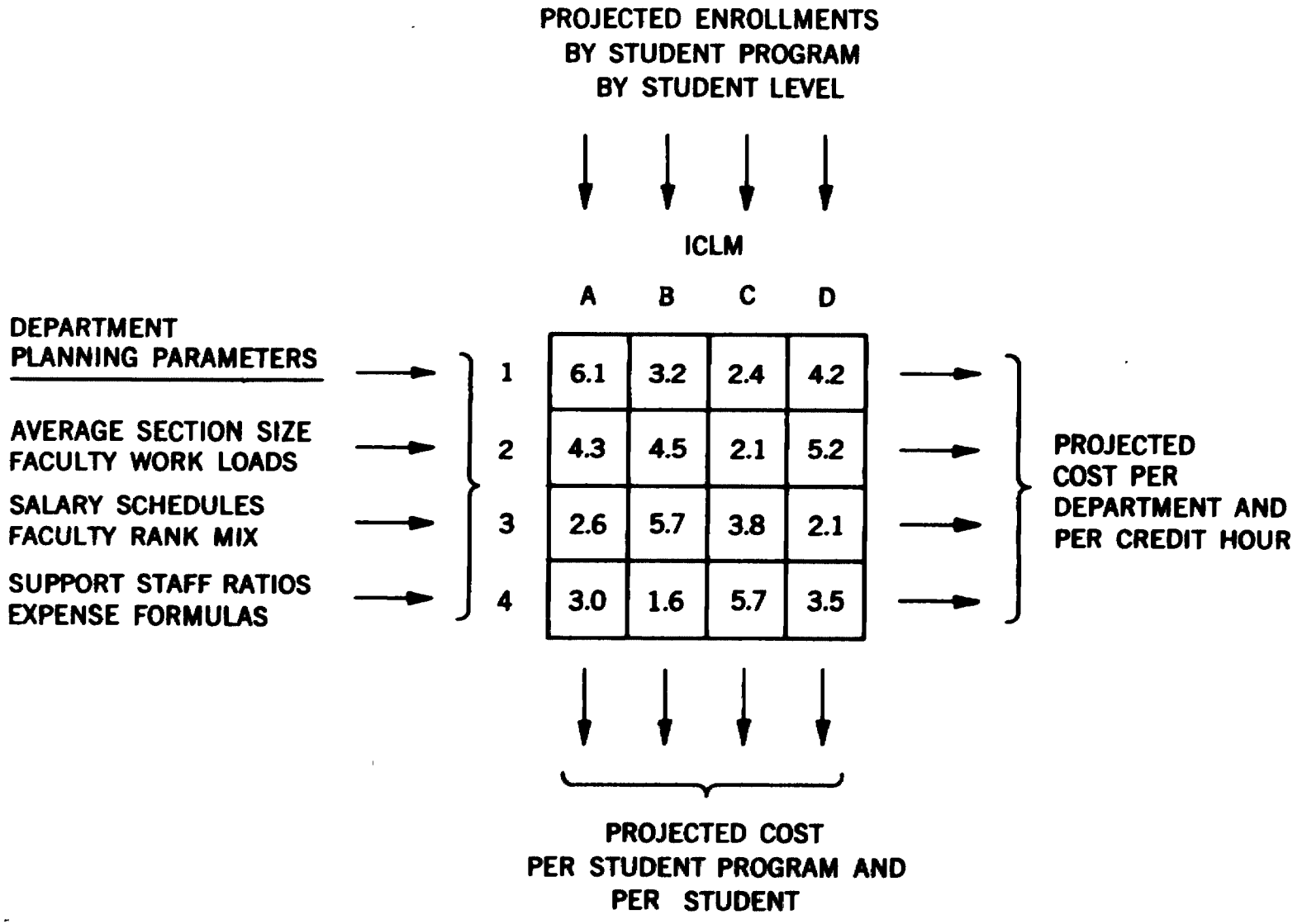
TR #42 Student Flow Model SFM-IA: Reports, Dick Johnson, May 1974.

Higher Education Enrollment Forecasting, A Manual for State-Level Agencies, Paul Wing, 1974.

Manual on State-Level Application and Implementation of the NCHEMS Student Flow Model-IA, James Martin and Paul Wing, 1973.

Some Models and Solution Techniques for Analyzing Student Flow Processes, Robert Gray, July 1974.

RESOURCE REQUIREMENTS PREDICTION MODEL (RRPM)



RESOURCE REQUIREMENTS PREDICTION MODEL (RRPM)

The Resource Requirements Prediction Model (RRPM) is designed to assist institutional planners and managers in simulating and projecting instructional costs. It is designed to produce:

- Projected costs per department and per credit hour.
- Projected costs per student degree program and per student.

The keystone to the RRPM is the Induced Course Load Matrix (ICLM), a variation of the IWLM. The ICLM displays the load induced in each department by the average student in each field of study.

When enrollments are multiplied down through the ICLM, the predicted credit hour demand in each department induced by all student in each field of study is known.

Summing across the matrix gives the total credit hours that a department must produce. Various planning parameters (e.g., average section size, faculty workload, salary schedules) are required to describe each department's instructional function. After the department planning parameters are established and the student enrollments are known, the projected department costs are calculated. The cost per credit hour then may be derived by dividing the total insturctional cost of each department by the total credit hours to be produced by that department.

Having determined the cost per credit hour for each department, the RRPM will distribute those costs to the various student fields of study in direct proportion to the number of credit hours drawn from each deaprtment by the average student in each field of study, the result being an average cost per student in each field of study.

RELEVANT NCHEMS DOCUMENTS:

TR #34A Introduction to the Resource Requirements Model 1.6, David Clark, et al., October 1972.

TR #34B Resource Requirements Prediction Model 1.6 Reports, David Clark, et al., 1973.

TR #38 Resource Requirements Prediction Model 1.6 Systems Documentation, William Collard and Mike Haight, 1973.

STATE-LEVEL ACTIVITIES

COMMUNICATION BASE

- STATEWIDE MEASURES (SWM)
  - INVENTORY
  - DATA SOURCES
- STRUCTURES
  - STATEWIDE PROGRAM CLASSIFICATION STRUCTURE
  - TAXONOMY
- STATE-LEVEL INFORMATION BASE (SLIB)

ANALYSIS

- ENROLLMENT FORECASTING
- STATEWIDE STUDENT FLOW
- CASE STUDIES
- STATE POSTSECONDARY EDUCATION PLANNING MODEL (SPEPM)

STATE-LEVEL ACTIVITIES

The underlying purpose of NCHEMS's activities in the statewide area is to foster improved methods of resource allocation and planning at the state level. To carry out this purpose, NCHEMS has been involved in three general types of activities:

- Identification and definition of important data (measures).
- Development of ways of organizing and presenting these data (structures).
- Development and demonstration of ways of utilizing data in the planning and management process (analysis).

RELEVANT NCHEMS DOCUMENTS:

TR #50 Applications and Extensions of the NCHEMS Program Classification Structure, Paul Wing and Leonard Romney, October 1974.

TR #68A Statewide Measures Inventory, Katherine A. Allman, Paul Wing, and James N. Mclaughlin, 1975.

TR #68B An Overview and Guide to the Use of the Statewide Measures Inventory, Paul Wing, James N. McLaughlin, and Katherine A. Allman, 1975.

Reference Guide to Postsecondary Education Data Sources, Katherine A. Allman, 1975.

A Manual on State-Level Application and Implementation of the NCHEMS Student Flow Model SFM-IA, James S. Martin and Paul Wing, 1973.

Higher Education Enrollment Forecasting, A Manual for State-Level Agencies, Paul Wing, 1975.

Report of a Survey of Current Enrollment Forecasting Practices of State Higher Education Agencies, Paul Wing and Yung-Mei Tsai, 1972.

Statewide Planning for Postsecondary Education: Conceptualization and Analysis of Relevant Information, Paul Wing, 1972.

A Discussion of the NCHEMS State Educational Planning Model, Vaughn Huckfeldt, 1974.

PRODUCT APPLICATION AREAS

	ALL CONSTITUENTS			
0. MAINTAINING RECORDS DEVELOPING A COMMUNICATION BASE	PM, PCS, FICM, HEFM, BAMR, DED, OUTCOMES, SWM, SWS, SLIB			
	INTRA-INSTITUTIONAL	INSTITUTIONAL	STATE	NATIONAL
1. NEEDS ASSESSMENT	SFM, AUPM		SWPA	
2. DETERMINING MISSION / ROLE / SCOPE	AUPM	OUTCOMES, IEP	SWPA	
3. PROGRAM PLANNING	AUPM	SFM, RRPM, OUTCOMES, IEP	SFM, SPEPM	NPM
4. RESOURCE ACQUISITION		IEP		
5. RESOURCE ALLOCATION	AUPM	FPMM, CAM, FAA, RRPM, IEP, OUTCOMES, IWLM	FPMM, SWPA SPEPM	NPM
6. PROGRAM IMPLEMENTATION	AUPM			
7. PROGRAM MONITORING / EVALUATION	AUPM	FAA, FPMM, HEFM, BAMR, CAM, IEP, OUTCOMES	FPMM	

PRODUCT APPLICATION AREAS

The purpose of the NCHEMS efforts described on the preceding pages is to aid postsecondary education decision makers in:

- Planning Decisions
- Operational Management
- Data Acquisition

This chart above illustrates the relationship between the products and the problem areas.

Note the heavy emphasis on:

- Resource Allocation
- Program Monitoring/Evaluation
- Maintaining Records

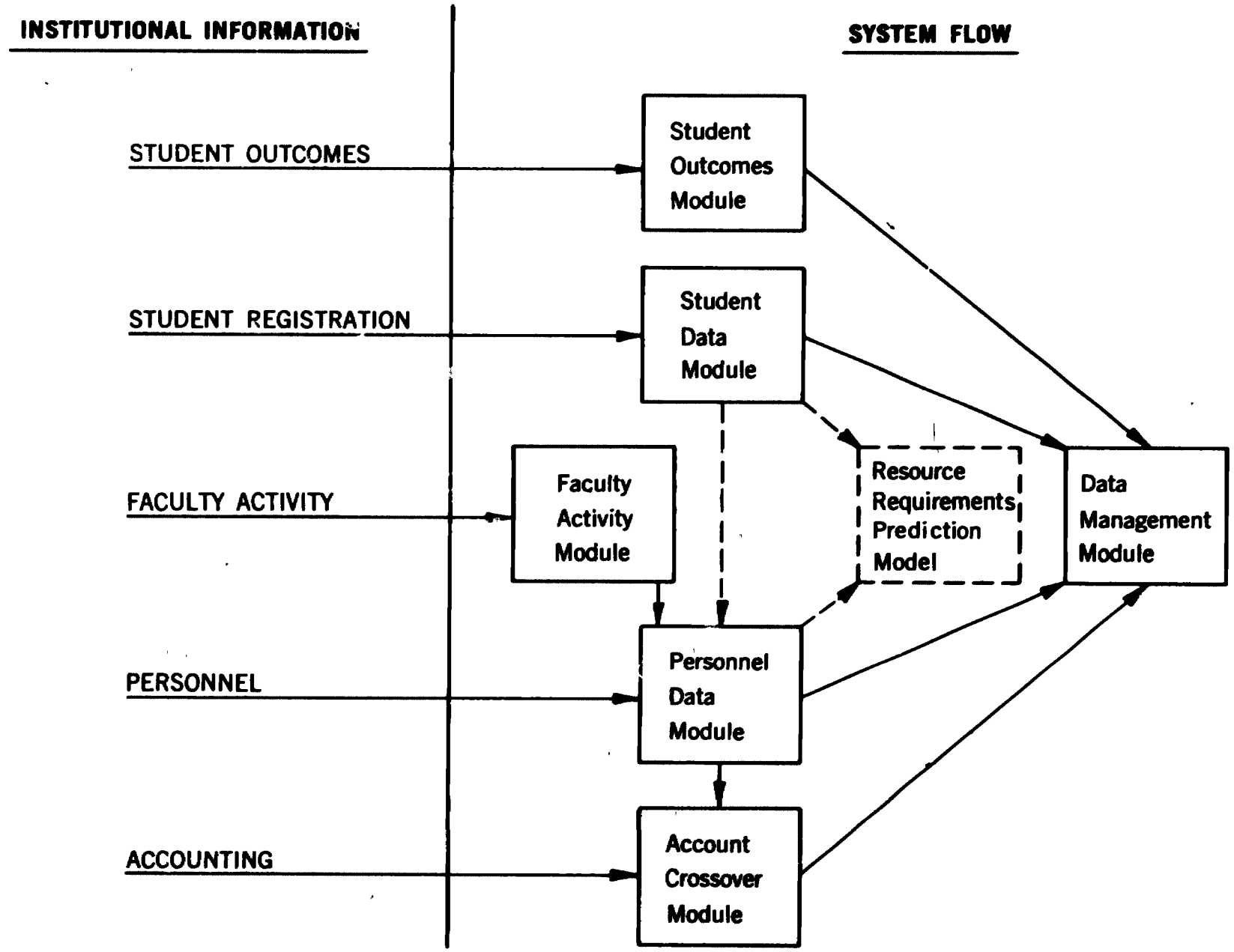
Note also the need for emphasis in:

- Needs Assessment
- Determining Mission/Role/Scope
- Program Implementation
- Resource Acquisition

ACRONYMN DEFINITION:

AUPM	Academic Unit Planning Model
BAMR	Budgeting and Accounting for Manpower Resources
CAM	Cost Analysis Manual
DED	Data Element Dictionary
FAA	Faculty Activity Analysis
FICM	Facilities Inventory and Classification Manual
FPMM	Facilities Planning and Management Manuals
HEFM	Higher Education Finance Manual
IEP	Information Exchange Procedures
IWLM	Instructional Work Load Matrix
JAG	Joint Accounting Group
NPM	National Planning Model
PCS	Program Classification Structure
PM	Program Measures
RRPM	Resource Requirements Prediction Model
SFM	Student Flow Model
SLIB	State Level Information Base
SPEPM	State Postsecondary Education Planning Model
SWM	Statewide Measures
SWPA	Statewide Planning and Analysis
SWS	Statewide Structures

COSTING AND DATA MANAGEMENT SYSTEM



COSTING AND DATA MANAGEMENT SYSTEM

The NCHEMS Costing and Data Management System is designed to assist institutions in the implementation of cost studies. There are at least two kinds of cost studies: historical cost studies that display cost-related data that reflect actual events over a specified prior time period, and predictive cost studies that forecast costs that will be incurred during some future time period. These two kinds of cost studies use different techniques:

- Historical studies require the identification and aggregation of cost-related data in terms of actual units (dollars, credit hours, and so forth).
- Predictive studies usually represent an institution in terms of historically derived parameters (such as average section size, faculty rank mix), which then are used as the basis for forecasting costs.

The NCHEMS Costing and Data Management System supports both historical and predictive cost studies--especially the cost study portion of the Information Exchange Procedures (IEP) and the Resource Requirements Prediction Model (RRPM 1.6).

RELEVANT NCHEMS DOCUMENTS:

TR #34A Introduction to the Resource Requirements Model 1.6, David Clark, et al., October 1972.
TR #34B Resource Requirements Prediction Model 1.6 Reports, David Clark, et al., 1973.
TR #55 An Introduction to the NCHEMS Costing and Data Management System, Mike Haight and Ron Martin, 1975.
TR #56 NCHEMS Costing and Data Management System--Sample Reports, Mike Haight and Ron Martin, 1975.
TR #57 Account Crossover Module Reference Manual, Mike Haight and Ron Martin, 1975.
TR #58 Faculty Activity Module Reference Manual, Gary Gamso, Mike Haight, Ron Martin, and Bill Collard, 1975.
TR #59 Personnel Data Module Reference Manual, Mike Haight and Ron Martin, 1975.
TR #60 Student Data Module Reference Manual, Mike Haight and Ron Martin, 1975.
TR #61 Student Outcomes Module Reference Manual, Mike Haight and Ron Martin, 1975.
TR #62 Data Management Module Reference Manual, Mike Haight and Ron Martin, 1975.

NCHEMS SUPPORT

- DEVELOPMENT
  - TASK FORCES
  - PILOT TESTS
- IMPLEMENTATION
  - WORKSHOPS/SEMINARS
  - DOCUMENTATION
  - COMPUTER-BASED PROCEDURES
  - TECHNICAL ASSISTANCE
  - PROCEDURAL REVIEW

NCHEMS SUPPORT

The NCHEMS support is not restricted to developed products. All during the developmental process (sometimes quite lengthy) institutions and agencies are encouraged to accept a responsible partnership involvement.

The implementation support consists of several activities. An often overlooked approach to involvement is training workshops, tailored to specific topics and groups, used as a "kickoff" motivator.

CONSIDERATIONS

- COMMITMENT
- PERSONNEL
- ORGANIZATIONAL HEALTH
- DATA ACCESSIBILITY
- TECHNICAL CAPABILITY
- IMPACT

CONSIDERATIONS

Prior to involvement with NCHEMS products, several areas should be considered:

- Commitment
  - Regardless of the reason for involvement, if there is no commitment, success is unlikely.
- Personnel
  - Expertise in several areas is needed. Specific individuals should be identified.
- Organizational Health
  - Many NCHEMS projects will involve personnel from diverse parts of the organization.
- Data Accessibility
  - It is not sufficient to have data "somewhere." Data must be accessible.
- Technical Capability
  - Some NCHEMS products require technical expertise in computer-related areas.
- Impact
  - The likelihood of success depends on implementation. Will this product actually be used?

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