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Phase II Objectives and Time Schedule of the WICHE Management Information Systems Program, June, 1969 - May, 1972.

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In 1968, the Western Interstate Commission for Higher Education (WICHE) initiated a 5-year management information systems project to encourage systematic data collection and utilization for the effective allocation of resources at institutions of higher education. This report describes Phase II of the project, a developmental phase scheduled for the period between June, 1969 and May, 1972, during which management information systems will be developed and tested at selected agencies and institutions of higher education. A primary objective is to develop models of instructional function, resource requirement prediction and student flow, and to develop glossaries of compatible data elements and procedures for producing and comparing cost data from several institutions. Other primary objectives involve the development of management information systems in cooperation with regional and national organizations, and the sharing of project results with agencies in states not participating in the program. The report also contains a project time schedule which outlines primary and supplementary program and management objectives. (WM)

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# Phase II Objectives and Time Schedule of the WICHE Management Information Systems Program

June, 1969 - May, 1972

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE  
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Management Information Systems Program  
Western Interstate Commission for Higher Education

HE 001 034

PHASE II OBJECTIVES AND TIME SCHEDULE  
OF THE  
WICHE MANAGEMENT INFORMATION SYSTEMS PROGRAM

June, 1969 - May, 1972

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Western Interstate Commission for Higher Education  
University East Campus Boulder, Colorado 80302

May, 1969

PHASE II OBJECTIVES, JUNE 1969 - MAY 1972  
THE WICHE MANAGEMENT INFORMATION SYSTEMS PROGRAM

During Phase II of the program, the developmental phase, common sets of compatible data elements will be developed and agreed upon by participating agencies and institutions for use in the development and maintenance of their respective management information systems. These common data elements will be tested and used in the management information systems of the respective institutions.

Beginning with data required to derive cost of instructional programs by level of student and course and field of study, a limited number of information systems in selected institutions will be developed and tested. This initial effort will be expanded as rapidly as possible to concern itself with all types of management information and to include as many institutions as are capable and willing to participate. The program operation is more completely described in terms of the following objectives:

Primary Objective I

At the completion of Phase II, many institutions in the participating states will have developed and implemented information systems pertaining to the instructional function, including common sets of compatible data elements.

This objective requires that a number of difficult tasks be performed. Some will, of course, be done simultaneously, and others will be conducted in sequence, depending on existing developments pertaining to the task or the complexity involved in carrying out the task. The tasks are, to some degree, mutually dependent and, consequently, liaison in carrying out the various tasks is important.

Tasks

- 1.0 Develop analytical models relating to the instructional function. These analytical models will assist in understanding the instructional function. They should facilitate the development of acceptable and appropriate procedures for producing and comparing information as specified under Objective I.3.0. They will also provide useful guidelines in determining the data elements to be included in the common data bases. It is also true that the data elements that are available in the data bases will place constraints upon the analytical models and information exchange procedures to be developed.

- 1.1 Continue identification of common analytical problems (begun in Phase I) -- and propose an array of appropriate models for their solution.
- 1.2 Conceptualize models as identified by Phase I, Analytical Task Force or under Task Unit 1.1 above, such as:
  - 1.21 a resource requirements prediction model -- a model that will assist in the prediction of resources required to provide instructional services for projected enrollments assuming given relationships for faculty, facilities, support staff, equipment, etc.

The inputs to this model would be numbers of students by level and discipline. The outputs would be:

    - a. personnel required;
    - b. physical facilities required;
    - c. operating budget in all the usual categories.
  - 1.22 A student flow model -- this model should enable the analysis of the flow of students between high school and college, among colleges, and between college and various forms of employment. It should contribute to the understanding of factors affecting student attrition and persistence.
  - 1.23 An analytical model of the general instructional function -- a model that will provide for the examination of a large array of alternative approaches to the provision of instructional services. It should predict the consequences of changes in the relationships between the various inputs (faculty, facilities, support staff, etc.) in the instructional process. It would be different than the resource requirements prediction model in that it could accept much larger changes in relationships between input factors.
- 1.3 Specify data elements required to operate models and refer to Task Unit 2.0.
- 1.4 Reduce models to computer processes.
- 1.5 Test models.
- 1.6 Develop preliminary manuals.

- 1.7 Field test models.
  - 1.8 Modify models, revise manuals.
- 2.0 Develop glossaries of compatible data elements as identified under Task Unit 1.3 for the following general files:
- 2.1 Students.
  - 2.2 Personnel -- faculty, support staff.
  - 2.3 Physical facilities.
  - 2.4 Major supporting equipment.
  - 2.5 Finance.
  - 2.6 Curricular components -- e.g., courses, degree programs.
- 3.0 Develop and put into operation in selected institutions procedures for producing and comparing comparable cost data from institutions of higher education. These comparisons should permit the understanding of the relationships between the information components that produce a given cost. Cost data to be exchanged shall include but not be limited to:
- a. Cost by level of student.
  - b. Cost by level of course.
  - c. Cost by field of study.
  - d. Cost per unit of output -- e.g., certificate or degree winners or specified blocks of credit hours.
- This task will require:
- 3.1 Determination of agreed upon definitions for commonly used derived data including but not limited to:
- a. Full-time equivalent student.
  - b. Prescribed levels of students.
  - c. Prescribed levels of courses.
  - d. Full-time equivalent faculty member.
  - e. Student credit hour.
  - f. Student contact hour.

- 3.2 Determination of component cost data to be included in the comparative cost data.
- 3.3 Identification of significant relationships that affect the comparative cost data.
- 3.4 Description of the procedures to be used in producing the comparative cost data.
- 3.5 Description of the procedures to be used in identifying the variable relationships that may account for the differences in the respective costs when shared by the institutions.
- 4.0 Simultaneously with Task Unit 1.0, begin development of procedures or techniques for determination of relationship between costs and benefits of the instructional functions:
  - 4.1 Identify factors determining quality of student on admission.
  - 4.2 Identify factors determining quality of student on completion of program.
  - 4.3 Relate difference between "a" and "b" to the inputs in the instructional function.
  - 4.4 Identify factors affecting student attrition and persistence.
- 5.0 Ensure that the procedures, models and data elements developed in Task Units 1.0 through 4.0 are compatible with the other information requirements of the institutions and agencies.
- 6.0 Extend use of compatible data sets, the analytical models of the instructional function, and the exchange of comparable data to other institutions and agencies in the participating states as they become capable and willing to participate.

### Primary Objective II

Begin expansion of common sets of compatible data elements to include the other two major higher education programs: research and external services.

#### Tasks

- 1.0 Develop analytical models of the research function:
  - 1.1 Identify common analytical problems and propose an array of appropriate models for their solution.

- 1.2 Conceptualize models as identified by Task Unit 1.1.
- 1.3 Specify data elements required to operate models and refer to Task Unit 2.0.
- 2.0 Develop draft glossary of compatible data elements needed to describe the models as identified under Task Unit 1.3.
- 3.0 Develop analytical models of the external service functions.
  - 3.1 Identify common analytical problems and propose an array of appropriate models for their solution.
  - 3.2 Conceptualize models as identified by Task Unit 3.1.
  - 3.3 Specify data elements required to operate models and refer to Task Unit 4.0.
- 4.0 Develop draft glossary of compatible data elements needed to describe models as identified under Task Unit 3.3.

### Primary Objective III

In cooperation with local, regional and national organizations, encourage the appropriate and feasible development of management information systems. For the purposes of this project, it is useful to provide two categories of administrators and staff<sup>1</sup>.

#### Tasks

- 1.0 Develop training programs to prepare administrators and staff in the development, operation and use of MIS systems.
  - 1.1 Determine training needs for users of management information systems at various levels within

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<sup>1</sup>1 -- Users -- Presidents and other administrative officers at various levels who are responsible for decision making.

- 2 -- Developers -- Two kinds of developers can be identified:
  - a. Those responsible for identification and analysis of management problems and for obtaining information necessary to their solution -- sometimes referred to as directors of analytical studies, directors of institutional research, administrative analysts or management analysts.
  - b. Those responsible for the development and operation of the processes by which information is collected, stored, retrieved, processed and reported.

institutions and agencies participating in the WICHE MIS Program.

- 1.2 Determine training needs for developers of management information systems at various levels within institutions and agencies participating in the WICHE MIS Program.
- 1.3 Determine methods of training or providing the training, such as:
  - 1.31 Short term in-service type programs.
  - 1.32 Self-instructional package.
  - 1.33 Internship programs.
  - 1.34 Graduate fellowship programs.
  - 1.35 Degree program majors.
  - 1.36 Other.
- 1.4 Determine logistics for implementation of training programs.
- 1.5 Implement programs.
- 1.6 Evaluate programs.
- 2.0 Develop appropriate didactic materials and seminars through which the latest developments may be communicated to developers and users.
- 3.0 Provide means whereby key developers may exchange information and stimulate each other's work.
- 4.0 Develop procedural guidelines for development of management information systems in institutions and agencies participating at Level II.
  - 4.1 Determine criteria for identifying objectives.
  - 4.2 Determine criteria for selection of collection, retrieval, processing and reporting techniques and systems.
  - 4.3 Determine criteria for identifying staff, equipment and financial resources.
  - 4.4 Determine criteria for selecting administrative control of the system.
- 5.0 Encourage adequate financial support for development of management information systems at all levels.

#### Primary Objective IV

Develop a specific plan for sharing the results of the WICHE Management Information Systems Program with institutions and agencies in states not participating in the program.

##### Tasks

- 1.0 Identify and define objectives.
- 2.0 Develop plan to fulfill objectives.
- 3.0 Determine logistics for implementation.
- 4.0 Prepare proposal to seek resources.

#### Supplementary Program Objectives

While the central purpose of the Management Information Systems Program will be accomplished through the primary program objectives, the project is expected to contribute to other activities in higher education. Among supplementary objectives that can be identified, the program will undertake to accomplish the following:

##### Supplementary Program Objective I

In cooperation with the National Center for Educational Statistics, develop and produce manuals that will assist institutions and state agencies in collecting, analyzing, and reporting information required by state and federal governments.

##### Tasks

- 1.0 Determine reporting requirements.
- 2.0 Analyze reporting requirements to determine:
  - a. Areas to be covered by respective manuals.
  - b. Data elements required.
  - c. Analysis required.
- 3.0 Develop draft manuals in respective areas.
- 4.0 Field test manuals.
- 5.0 Modify manuals.
- 6.0 Produce manuals for general use.

### Supplementary Program Objective II

In cooperation with other agencies, encourage the development of generalized software programs suitable for use by institutions and agencies of higher education in the operation of management information systems.

#### Tasks

- 1.0 Develop, in cooperation with other agencies, specifications for generalized software programs suitable for use by institutions and agencies of higher education in the operation of management information systems.
- 2.0 Identify means of getting generalized software programs written and available to institutions at reasonable cost.
- 3.0 Encourage exchange of software programs among institutions.

### Management Objectives

During all parts of Phase II, undertake activities to maintain enthusiastic cooperation, to disseminate project results and coordinate with national developments.

### Management Objective I

To encourage and maintain the enthusiastic cooperation of the participating institutions and agencies.

#### Tasks

- 1.0 Develop and maintain regular two-way communications on all aspects of the project with:
  - 1.1 The steering committee and advisory panels and committees.
  - 1.2 The institutions and agencies.
  - 1.3 Key developers.
  - 1.4 Key users of management systems.
- 2.0 Ensure that the program is in keeping with the needs of the participating institutions and agencies.

### Management Objective II

To encourage and maintain two-way communications with management information developers and users at the national and international levels.

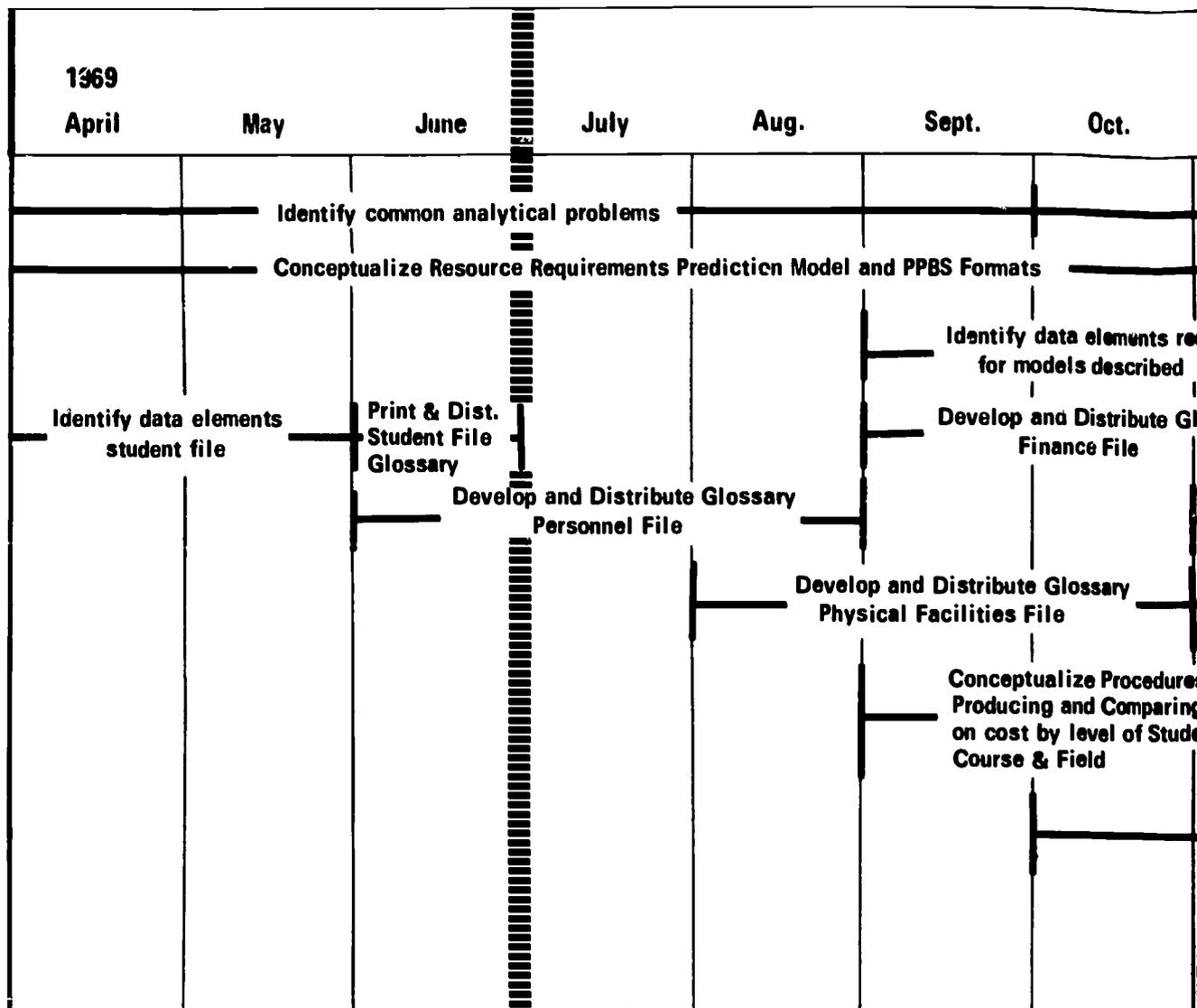
**Tasks**

- 1.0 Regular publication and distribution of progress and technical reports.
- 2.0 Consultation with appropriate national and international consultants.

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**Primary Objective I**

- 1.1
- 1.21
- 1.3
- 2.0
- 3.0
- 4.0
- 1.22
- 1.23



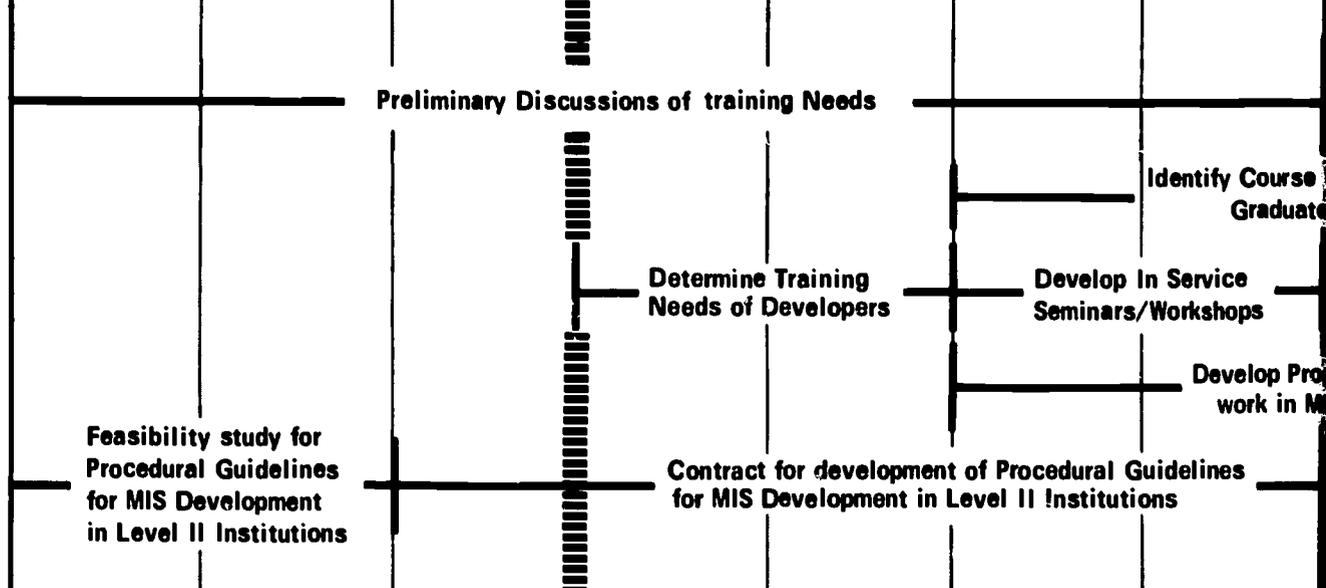
**Primary Objective II**

- 1.0
- 2.0
- 3.0
- 4.0



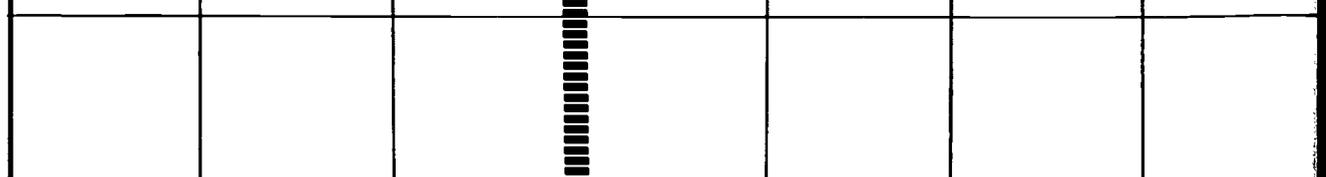
**Primary Objective III**

- 1.1
- 2.0
- 1.2
- 2.0
- 3.0
- 4.0



**Primary Objective IV**

- 1.0
- 2.0
- 3.0
- 4.0

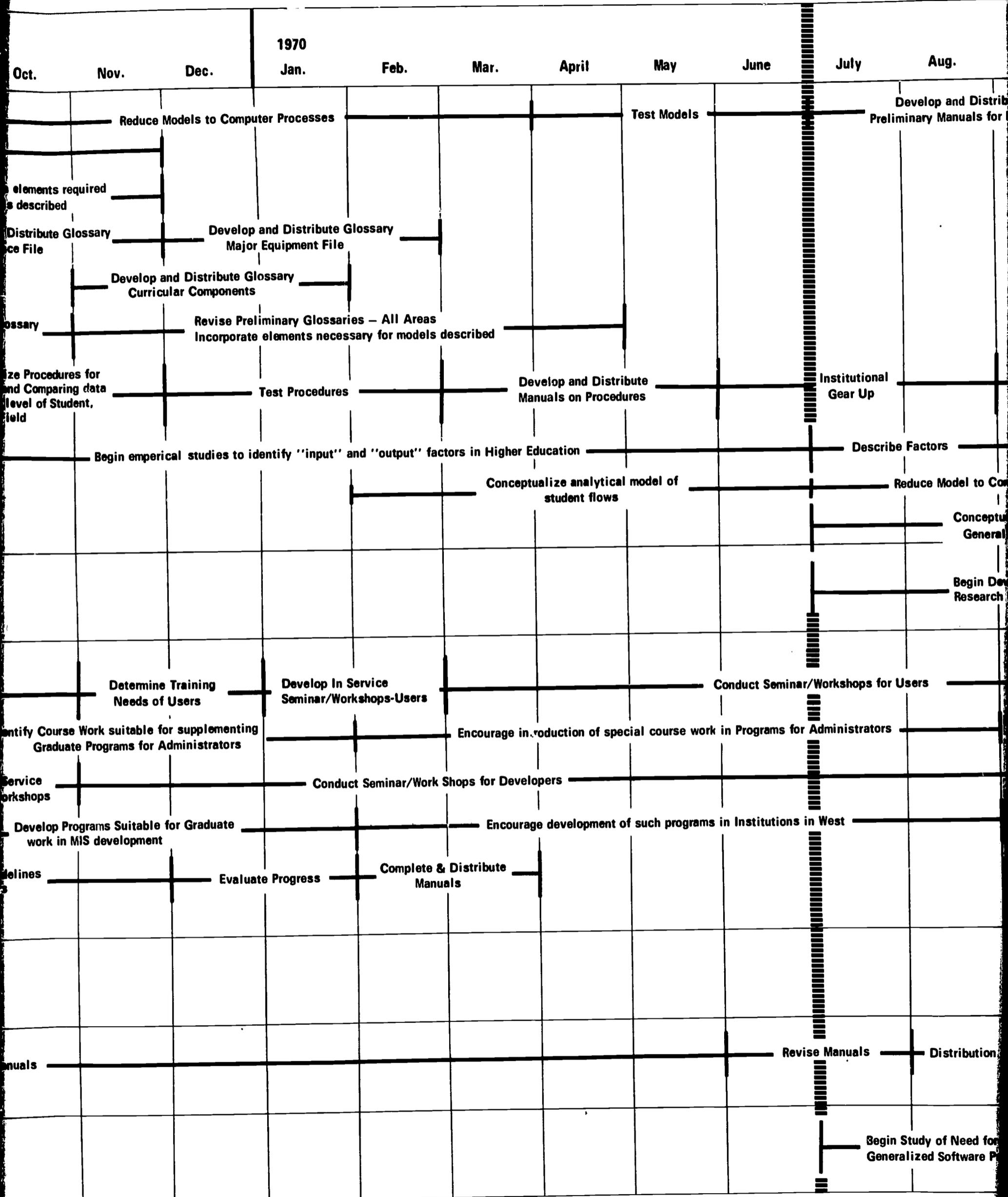


**Supplementary Objective I**



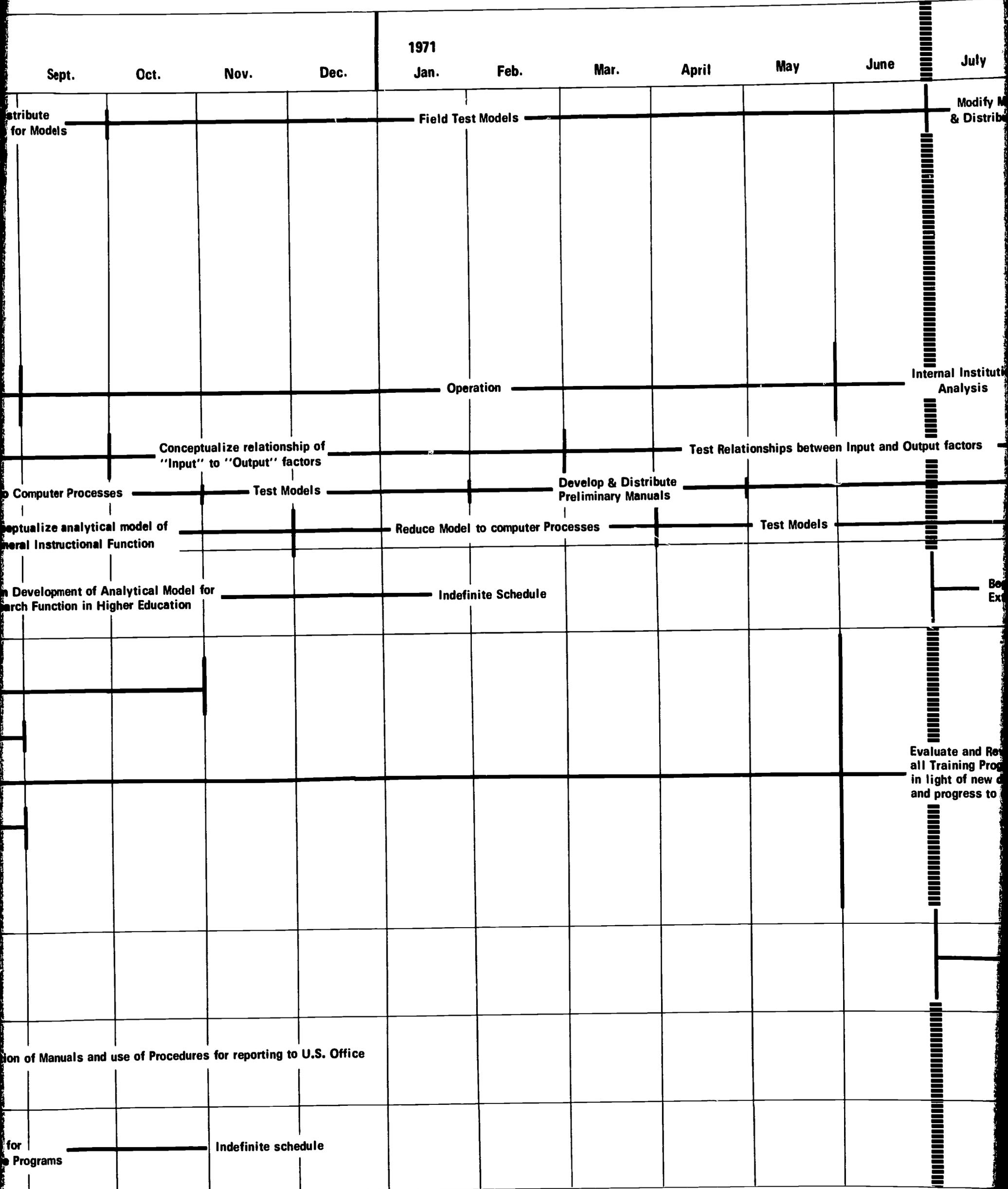
**Supplementary Objective II**

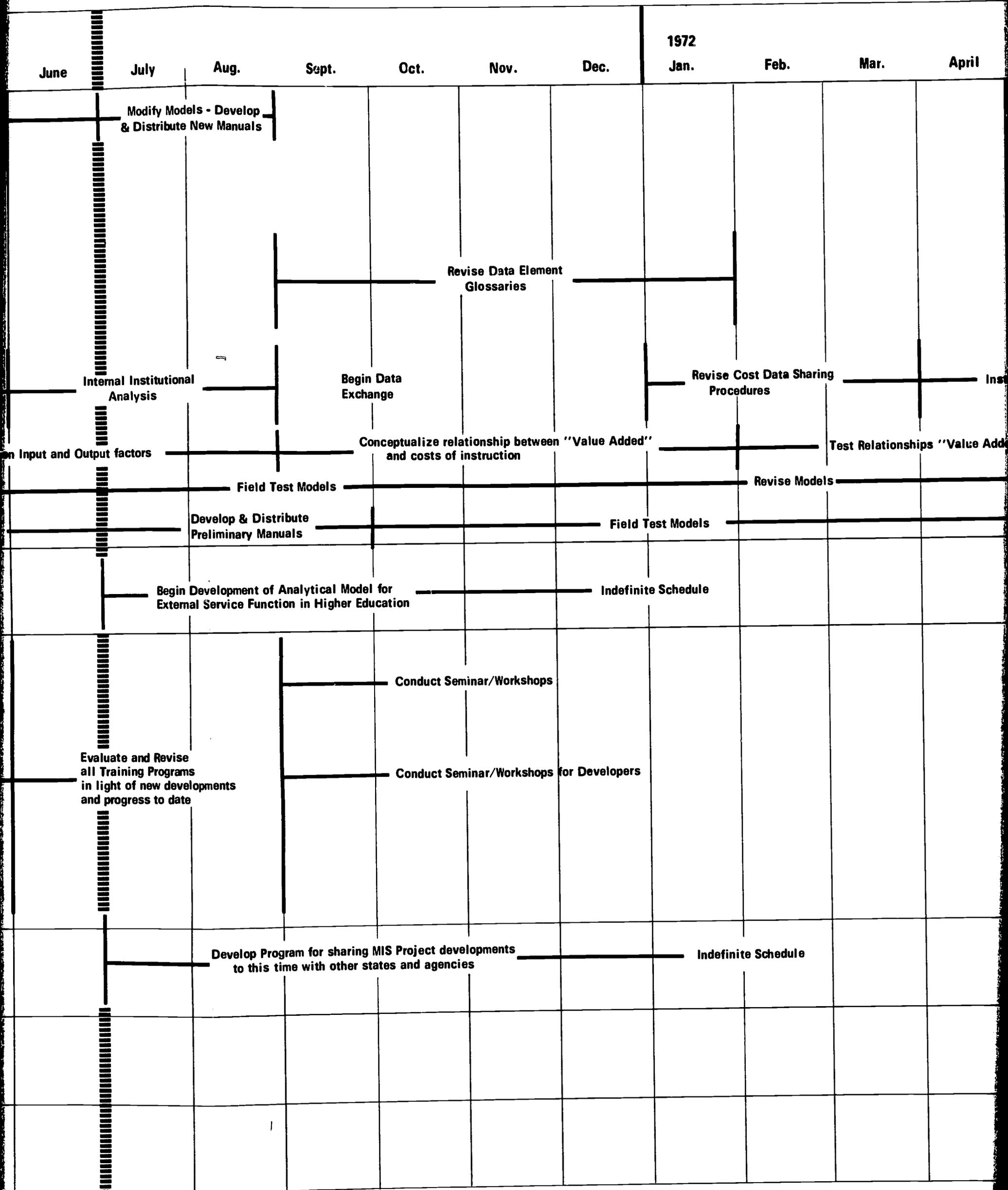




# TIME SCHEDULE

## Information Systems Program Phase II





	1972							
	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
Data Element Series								
Relationship between "Value Added" Section			Revise Cost Data Sharing Procedures			Institutional Gear Up		
				Test Relationships "Value Added" to "Costs"				
			Revise Models					
		Field Test Models						
	Indefinite Schedule							
/Workshops								
/Workshops for Developers								
ments		Indefinite Schedule						