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ABSTRACT

This second-year project report describes the current status and future planned development of the Florida Information Resource Network (FIRN), an evolving statewide system which will make possible the electronic movement of educational data between Florida's public schools, school districts, colleges, universities, the Department of Education (DOE), and the legislature. Major sections of the report discuss legislative and DOE activities related to FIRN, current and future levels of functional computing capability in Florida's educational system, the five-phase FIRN implementation program, and FIRN's anticipated costs. The timing of implementation phases; advisory, policy and staff considerations; security and privacy issues; and proposed methods of evaluation are briefly described. A technical summary of hardware, software, and system configurations in different FIRN implementation stages is provided. Appendices contain diagrams of the management information system model used by Florida's educational information community and the hierarchy of that community; a list of current computing capabilities of the individual Florida school districts; sample pages from a FIRN data element dictionary covering student, program, staff, finance, facility, and community data elements; a recommendation from the State University System of Florida (SUS) for an educational computer network; and a review of DOE and public school data collection instruments and activities. A list of FIRN benefits and a glossary are included. (ESR)

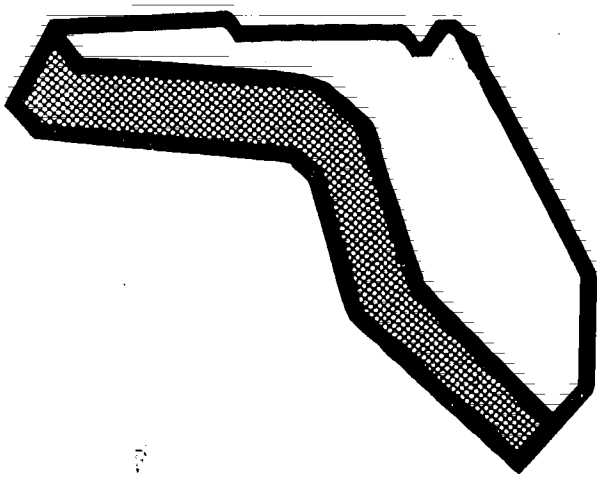
A Report To The Florida Legislature

On Developing A

FLORIDA INFORMATION RESOURCE NETWORK (FIRN)

Second Edition

January, 1983



This document was developed as a cooperative effort between the Florida Department of Education and the School District Council on Comprehensive Management Information Systems. Inquiries concerning this document may be directed to: Mr. Ed R. Allen, Jr., Administrator, Management Information Systems, Florida Department of Education, Tallahassee, Florida 32301 (904/487-2280).

This public document was promulgated at an annual cost of $2,860.17 or $2.86 per copy to satisfy a legislative mandate to continue developing a planned state-wide information system.

FLORIDA INFORMATION RESOURCE NETWORK PLAN

1983

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B E N E F I T S

The Florida Information Resource Network (FIRN) will provide many benefits, present and future. Some of these include:

Teacher Data Burden Reduction - promoting the reduction of teacher paperwork through the use of computer hardware and software at district and school levels for activities such as student record keeping, grade reporting and attendance reporting;

Automated Reporting - enabling the transmission of information from the State to the school districts/schools and vice versa;

Record Keeping - storing student records one time in machine readable format enabling the transfer of information from one institution to another, i.e., school to school, district to district, district to community college, district to university or community college to university;

Instructional Computing - establishing the foundation for the integration of administrative and instructional computing to support activities such as Computer Managed Instruction (CMI). Aslo, making the network (railroad in the analogy described in Section IV.C) available for file to file transfers and down-line loading in support of Computer Assisted Instruction (CAI) and Computer Science courses;

Accuracy and Timeliness - improving accuracy and timeliness of information at all levels within the state-wide educational system;

Automated Procedures - increasing automated user functional procedures at district and school levels thereby providing greater efficiency in the handling of student/program, staff, finance, facility and community information;

Resource Sharing - providing a vehicle for the sharing of data processing resources (people, hardware and software) among school districts, community colleges and universities;

Equitable Access - enabling more equitable access to functional computing (computer hardware, systems software and applications software), regardless of the size of the school district;

Cost Reduction - furnishing modern telecommunication technology as a hedge against the ever increasing costs of conventional data communication methods;

Innovative System - making a working telecommunication prototype available as a model for use by other governmental agencies;

Electronic Mail - providing the potential for greatly improving the speed at which correspondence travels from one educational entity to another and the cost associated with this document transfer.

ACKNOWLEDGMENTS

The Council greatly appreciates the opportunity extended by the Florida Legislature for it to prepare and submit this plan for a Florida Information Resource Network (FIRN).

The Council would also like to recognize the following individuals and committees for the cooperation, dedication and support which they displayed to make this plan a reality in a relatively short period of time:

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Information Processing Committee
The same members as FIRN Technical Advisory Board.

I N T R O D U C T I O N

FIRN is an acronym for Florida Information Resource Network--an evolving state-wide vehicle which will enable the electronic movement of data and information between all levels of Florida's educational system, e.g., schools, school districts, colleges, universities, Department of Education and the Florida Legislature.

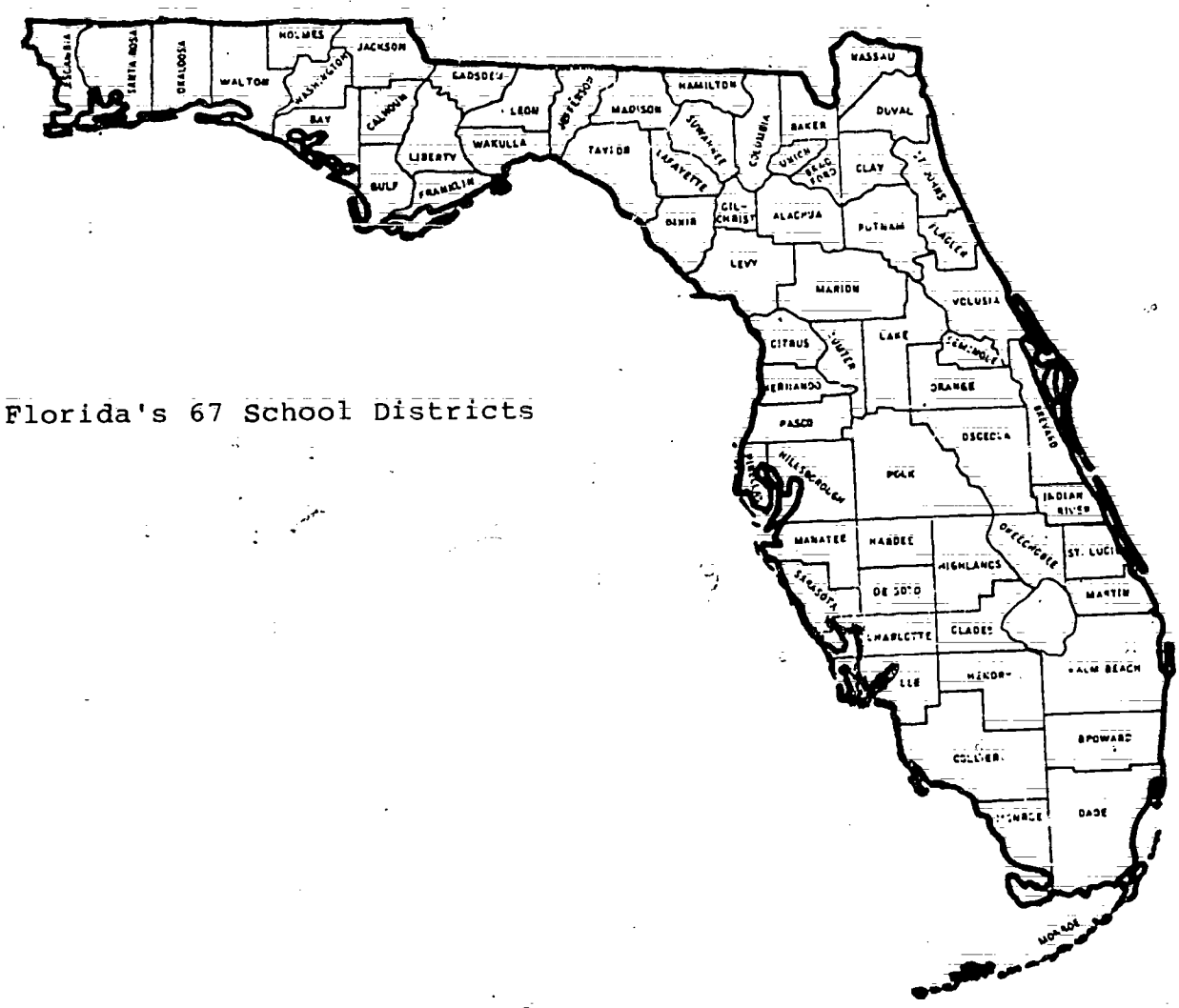
The School District Council on Comprehensive Management Information Systems (Council), comprised of representatives from all 67 school districts, has been working with the Florida Legislature and the Department of Education since 1975. Goals of this joint effort have been to achieve equitable access to educational (administrative and instructional) computing for all 67 school districts, reduce and/or minimize teacher data burden as well as to build an automated multi-directional information exchange capability within Florida's public education system. The Council commends the Florida Legislature, and Governor and Cabinet for their invaluable support and looks forward to a continuation of this relationship during future phases of the FIRN project.

Why should Florida continue to develop and implement a FIRN? The answer to this question can be found by looking at the make-up of Florida's educational system in terms of size, current mode of doing business and requirements. Florida has more than 2,300 schools within 67 school districts (counties) spread over a land mass of 54,136 square miles. More than 90,000 teachers endeavor to reach out to more than 1,500,000 students in rural and urban areas and make available a comparable standard of education state-wide. Florida's teachers and administrators find themselves confronted with reporting, teaching and/or managing requirements. The methods and resources available to meet these requirements differ considerably among schools and school districts. This is particularly true in computer automation. For example, some schools and school districts utilize computers for administrative computing and automated reporting, computer assisted instruction, computer managed instruction and computer science courses. Other schools and school districts use computers to lesser degrees. Some schools and school districts have neither local computing resources nor access to them.

A copy of the 1982 FIRN Plan was sent to every state. Inquiries have been received from thirteen of these states and four countries. As you read this second edition of a planned five to six year project, please keep in mind that, **from the start of the FIRN project to the present, all the funded activities have remained on schedule.**

A FIRN is needed to support administrative and instructional activities at all levels within Florida's educational system. With the implementation of a FIRN and improved reporting methods and procedures, it is conceivable that the data burden placed upon our teachers will be held to a minimum. The installation of a FIRN will mean that all 67 school districts will have access via local terminals, microcomputers, minicomputers and/or mainframes to the resources of large educational computing facilities in Florida.

Through the use of custom and/or common educational applications software, all 67 school districts will be able to provide machine readable data such as cost reporting, student membership, vocational education, and other required data in a common format. These school district "pools" of information will then be available, via the FIRN, for automated reporting to or access by authorized individuals within schools, school districts, the Department of Education and the Florida Legislature.



Florida's 67 School Districts

II. SUMMARY OF BACKGROUND INFORMATION

A. LEGISLATIVE PROVISO (1973, 1975, 1976, 1981 and 1982)

A Florida Educational Computing Network has been a goal of the Florida Legislature since 1973. Proviso language was incorporated in the respective appropriations acts, and funds were provided during 1978 through 1982 to enable educational institutions to acquire and share computer hardware and common applications software. The objective of these early sharing arrangements was to establish equitable access to computing resources at all 67 school districts in Florida. By 1981, all but 18 school districts had access to some level of computing resources. Funds which were included in the 1981 Appropriations Act were used during 1982 to acquire and install terminals or microcomputers at these school districts. **Today, progress toward equitable access to computing resources has been achieved at all 67 school districts. This access and the ability which larger school districts and regional data centers have to produce magnetic media, made limited automated reporting to the State a reality for all 67 school districts in 1982.**

The 1981 Appropriations Act, item 324, allocated $175,361 for the Council to work with the Florida Department of Education to..."develop a plan for the implementation of a FIRN". **Less than $100,000 of these funds were expended.** The plan which was submitted to the Legislature on January 15, 1982, provided for an organized process of identifying information needs, collecting and processing data, and providing information for decision making. As required, the plan outlined the steps necessary for an automated delivery system of information flowing from the individual schools through the district to the State and back. The 1982 FIRN Plan presented a priority implementation approach with time lines, funding requirements and appropriate review procedures. Utilizing the 1982 FIRN Plan as a base or building block, this second edition presents updates to all aspects of the overall plan, i.e., technical, financial and governance.

In addition, the 1981 Appropriations Act stated that..."The Florida Legislature is dedicated to completing the Florida Education Computing Network currently being developed. The goals of the network are the implementation of a state-wide interactive network and the reduction of the data burden on teachers and other personnel. The Department shall continue the development and refinement of automated program cost reporting and vocational education data reporting for occupational students (VEDOS). In addition, a principle emphasis for 1981-82 shall be the automation of student information systems. In particular, the Department shall

assist districts to automate individual student records, student scheduling, grade reporting, student membership and FTE reporting. The Commissioner shall require from each district by September 1, 1981, a plan for the automation of these data activities that shall specify how the district will accomplish automated reporting in a way that simultaneously accomplishes a reduction in the data burden on teachers. The Commissioner shall report to the Legislature by April 1, 1982 on districts' success in implementing these plans. It is the intent of the Legislature that districts shall submit the FTE student membership report based on the February, 1982, student count in machine readable form. If the Commissioner determines prior to the deadline for submission of the February, 1982 FTE report that any district is not making satisfactory progress toward accomplishing that objective, he shall notify the district school board of this fact and, if appropriate action is not taken that permits the district to submit its October, 1982, report in machine readable form by the deadline, the district school board shall be directed, pursuant to the provisions of Section 230.23(11)(B), F.S., to withhold the further payment of salary to the district superintendent until such time as automated FTE reporting is accomplished."

The 1982 Appropriations Act provided $[illegible]9,160 (subsequently reduced by 13.4%); to continue the adv[illegible]ement of the FIRN and stated that..."Funds appropriated in specific appropriation 248E shall be used to establish a network pilot project with technical assistance provided by the Board of Regents as described in Florida Information Resource Network: A Plan To Build Upon. The outcome of this pilot project shall be evidence clearly demonstrating, e.g., through the electronic transfer of FTE data, the feasibility of further expansion of the network." Section II.B.7 of this 1983 FIRN Plan provides a status report of the pilot project.

The 1982 Appropriations Act further stated that..."The Florida Legislature is dedicated to completing the Florida Information Resource Network (FIRN) currently being developed. The goals of the network are the implementation of a state-wide interactive network and the reduction of the data burden on teachers and other personnel. The Department shall continue the development and refinement of automated program cost reporting and vocational education data reporting for occupational students (VEDOS). In addition a principle emphasis for 1982-83 shall continue to be the automation of student information systems."

B. OVERVIEW OF DOE/COUNCIL ACTIVITIES

1. 1977 M.I.S. CONCEPTUAL DESIGN (Reference Appendix A)

In 1977, the Florida Department of Education and the Council developed a Management Information Systems (MIS) model to assist school districts with their MIS plans and to promote continuity between MIS plans on a state-wide basis. The model encompassed the following activities and products:

- A N A L Y Z E I N F O R M A T I O N N E E D S

ACTIVITIES:
DETERMINE INFORMATION NEEDED FOR DECISIONS
PREPARE FORMAT FOR FINALIZED 'DECISION' DATA
SEARCH FOR EXISTING INFORMATION IN DATA BASES

PRODUCTS:
DATA BASES: STUDENT/PROGRAM, STAFF, FINANCE, FACILITY AND COMMUNITY

- C O L L E C T D A T A R E Q U I R E D

ACTIVITIES:
DESIGN DATA COLLECTION INSTRUMENT (form, source and time line)
REVIEW OF DATA COLLECTION FORM AND PROCEDURES
COLLECT DATA FROM SOURCE

PRODUCTS:
DATA ELEMENT DIRECTORIES
ANNUAL DATA COLLECTION PLAN

- P R O C E S S D A T A C O L L E C T E D

ACTIVITIES:
MANIPULATE DATA
ANALYZE DATA
SUMMARIZE DATA

PRODUCTS:
ELECTRONIC DATA PROCESSING HARDWARE SHARING
COMMON APPLICATIONS SOFTWARE SHARING

- R E P O R T I N F O R M A T I O N

ACTIVITIES:
PREPARE INFORMATION FOR REPORTING
DISSEMINATE INFORMATION
EVALUATE INFORMATION

PRODUCTS:
REPORTS CATALOG
MIS STATISTICAL REPORTS
DOE PUBLICATIONS

2. DATA ELEMENT DEFINITIONS (DICTIONARIES) - (Reference Appendix D)

The elements that form the foundation for educational information systems in Florida have been divided into six data bases: Finance, Student, Staff, Program, Facilities and Community. During 1981 and 1982 the Program and Student data elements were merged into one data base by the Department and the Council. Samples of the current data dictionaries are included in Appendix D. More detailed codification and content information for these data elements are available from the Department of Education, Division of Public Schools. Each data element in the five data bases has been coded as: required by the State, required locally or optional. The main function of the data element dictionaries is to serve as a basic guide for school districts in establishing local information systems.

3. DIVISION OF PUBLIC SCHOOLS COMMON SOFTWARE

The Legislature funded a common software program during the four year period of time from 1978 through 1981. The program provided approximately two million dollars ($2,000,000) in project dollars which were used by school districts to improve their data handling capabilities. Through a widespread effort on the part of the Department of Education and the school districts, 61 districts realized some gain or participation in shared applications software. The projects which were funded addressed a broad range of educational administrative activities. Examples include: finance, testing, student, staff, food service and vocational class reporting. Several projects consisted of educational entities sharing computing software and resources with local governmental agencies, a philosophy advocated by the Legislature and backed by proviso language. The common software installed as a result of this program has already provided benefits to many school districts and will continue to provide long-term benefits for many years.

4. FLORIDA EDUCATIONAL COMPUTING PROJECT

The Florida Educational Computing Project (FECP) was created in 1977 by the Legislature to improve the "effectiveness, efficiency and equity of educational computing". At that time "educational computing" meant those administrative computing resources needed by all public educational entities to satisfy local management needs and meet state and federal reporting requirements.

The objectives of "effectiveness, efficiency and equity" were accomplished by using existing resources whenever possible. The FECP provided $1,200,000 to school districts to improve computing capabilities where resources were inadequate.

As a beginning point, Florida was divided into eight consortia to encourage the sharing of computing resources. Emphasis was placed on sharing computing resources, usually hardware and software, but in some cases the resources included data processing personnel. For example, some projects called for one institution to do the work of several schools, thereby saving the time and expense of developing several similar programs at different schools. On other occasions, participants shared the cost of a "circuit rider" who served several entities. Tremendous savings in time and dollars resulted from these approaches; costs avoided and actual savings have amounted to over four million dollars ($4,000,000) since 1978.

To assist educational institutions to improve the efficiency of their computing capability in the most cost effective manner, the FECP also negotiated state-wide discount agreements with vendors. The savings due to vendor discounts alone have come to just under $700,000 for the period between 1978 and 1981.

The term "instructional computing" is used to differentiate classroom computing from that of administrative computing. Most FECP activities have been directed toward the equitable distribution of administrative computing applications, but in the last two years of its existence the FECP provided technical assistance and leadership in the area of instructional computing by:

- Assisting with a legislatively mandated instructional computing study. In compliance with the 1979 General Appropriations Act, the FECP assisted the Commissioner's Advisory Council on Instructional Computing in a study of the role, feasibility and cost effectiveness of computer assisted instruction for Florida public education. A report, **More Hands for Teachers**, was produced;

- Funding pilot projects. Two projects were funded to examine microcomputer resources available for teaching basic skills and for use in other key instructional areas. Three other projects were funded to allow for the sharing of computer assisted guidance systems;

- Developing and presenting a computer literacy seminar. The FECP-designed seminar entitled, Computer Literacy: An Introduction to Technology for the Non-Technical, was presented to school districts, community colleges and Department of Education groups; and

- Assisting with plans for the 1981 Instructional Computing Conference, which was attended by more than 800 Florida educators, most of whom came from school districts.

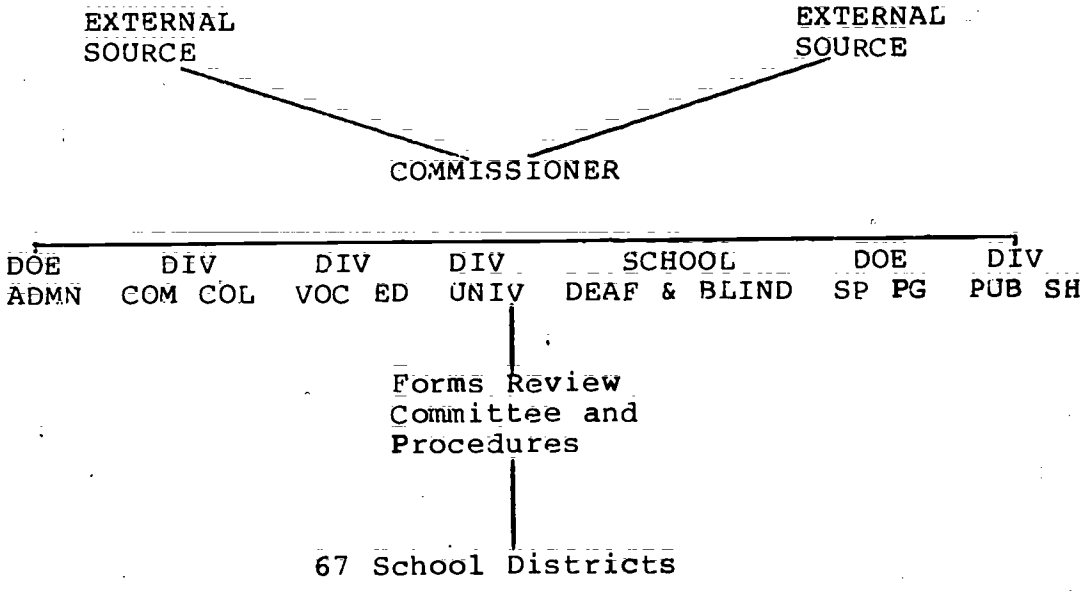
In summary, the FECP has acted as a coordinating unit for the eight computing consortia throughout Florida and as a service office for educational computing for school districts, community colleges and universities. Because of its work in these areas, Florida is now nationally recognized as one of five states (the others are Minnesota, Texas, California and North Carolina) providing leadership in the area of educational computing. These functions, along with others such as uses of automated reporting and new technology, have been carried out by the Educational Technology Section within the Department of Education which was created in 1981. In addition to these responsibilities, the Educational Technology Section is continuing to negotiate quantity discount agreements (QDA) with vendors. These QDA savings amount to literally hundreds of thousands of dollars annually.

5. INSTRUCTIONAL COMPUTING

Several papers which address instructional computing have been prepared during the last couple of years. Two of these are, More Hands for Teachers (prepared for the Commissioner of Education) and Future Uses of Computers in Florida Public Education (prepared for the House of Representatives Task Force on Mathematics, Science, and Computer Education). The subject of instructional computing is not only important to the students of Florida's public education system but it is becoming immensely important to the economy of the United States. This statement is directed at the critical need to remain technologically a leader among the nations of the industrial world. Computer Assisted Instruction (CAI), Computer Managed Instruction (CMI), Computer Science, computerized robotics, Computer Assisted Design/Computer Assisted Manufacturing (CAD/CAM), etc., all play a vital role in our future and that of today's students. This paper will not attempt to go into these subject areas except to emphasize their importance and that FIRN can assist as a delivery network for many of these services and resources.

6. FORMS REVIEW

The Forms Review Committee has been a standing committee of the Council since the mid-1970's. Its charge was to review forms used by the Department of Education to collect information from school districts and to advise the Division regarding format, content and redundant data collection. Since the committee's inception and the establishment of review procedures, a large number of the Department's forms have been either eliminated or improved. Today, this Committee is known as the Data Review Committee and its function has been expanded to include the approval of all data elements. It consists of 16 school district personnel, drawn from a cross-section of school districts and educational programs or services across the state. Members are selected to serve rotating two year terms. Their role is to review all data collection activities initiated under the sponsorship of the Department of Education which request school districts to collect, maintain, or report data or other items of information. As indicated in the following illustration, data collection needs can emanate from a number of sources within the Department of Education and a multitude of persons and/or organizations external to the Florida system of public education.



Since the inception of the Forms Review Committee and establishment of related procedures, any data collection forms sent to any school districts, which were not approved by the Forms Review Committee were considered "bootleg forms," and therefore, the receiver did **not** need to respond. Appendix F describes the current role and scope of the Committee, now known as the Data Review Committee.

7. PILOT PROJECT

The 1982 FIRN Plan called for a one-year Pilot Project in data communications that would verify the ability to perform all of the required functions. After review of the FIRN Plan by the 1982 Legislative session, the Department of Education received an appropriation of $529,160 (subsequently reduced by 13.4%) to "establish a network Pilot Project, as described in the 1982 FIRN Plan". Proviso language in the specific appropriation #248E further set forth that "the outcome of this Pilot Project shall be evidence clearly demonstrating, e.g., through the electronic transfer of full-time equivalent data, the feasibility of further expansion of the network."

During the spring of 1982, a FIRN Pilot Project bid evaluation committee was appointed, and specifications were drafted in accordance with the functional characteristics of the plan. An Invitation to Bid was released on June 4, 1982, to fourteen vendors. Bids from five firms were received on August 4, 1982, and the committee recommmended the award to Tymnet, Inc. on September 17, 1982. Final contract award was made on October 22, 1982, after review by the Florida Governor and Cabinet.

The Pilot Project is a one-year lease of data communication equipment. It is an experiment running throughout calendar year 1983 and shall place emphasis on:

- Performing all of the data communications functions set forth in the plan;
- Achieving anticipated loading characteristics on existing data circuits that are moved to the FIRN facility; and
- Providing access to existing computer applications in selected administrative areas for districts not having an automated solution.

From this experiment shall come definitive data in three major areas:

a) The capability to provide more timely and accurate information for State-level requests;

b) The utilization of existing telephone data circuits, thereby reducing expenditures in this area; and

c) The ability to access the many educational host computers by a wide variety of terminal equipment.

In January, the Department of Education shall begin connecting devices to three (3) Tymnet nodes installed in Miami, Gainesville and Tallahassee. Existing State University System terminal traffic shall be used as the test load for this experiment. To comply with the proviso language, the Gainesville node will be connected first to the Northeast Regional Data Center (IBM host interface) and three terminal types (asynchronous, 3270 bisynchronous and 3270 System Network Architecture) shall be tested. Internodal circuits will connect all three sites and general purpose dial-up asynchronous traffic shall be added at each node. This shall be followed by the first significant test, connecting the Northeast Florida Educational Consortium (eleven school districts with Putnam County schools acting as the host) and transferring full-time equivalent (FTE) data to Tallahassee. It is planned that this function shall be demonstrated by March 31, 1983.

Upon successful FTE transfer from Putnam, host interfaces for the Southeast Regional Data Center (SERDC-Univac), FSU Computing Center (FSUCC-CDC) and the Northwest Regional Data Center (NWRDC-IBM) shall be installed. Selected terminals from the Board of Regents, Florida State University, Department of Education, University of North Florida, University of Florida and Institute of Food and Agricultural Sciences (IFAS), encompassing all terminal types to be supported by FIRN, shall be connected and tested.

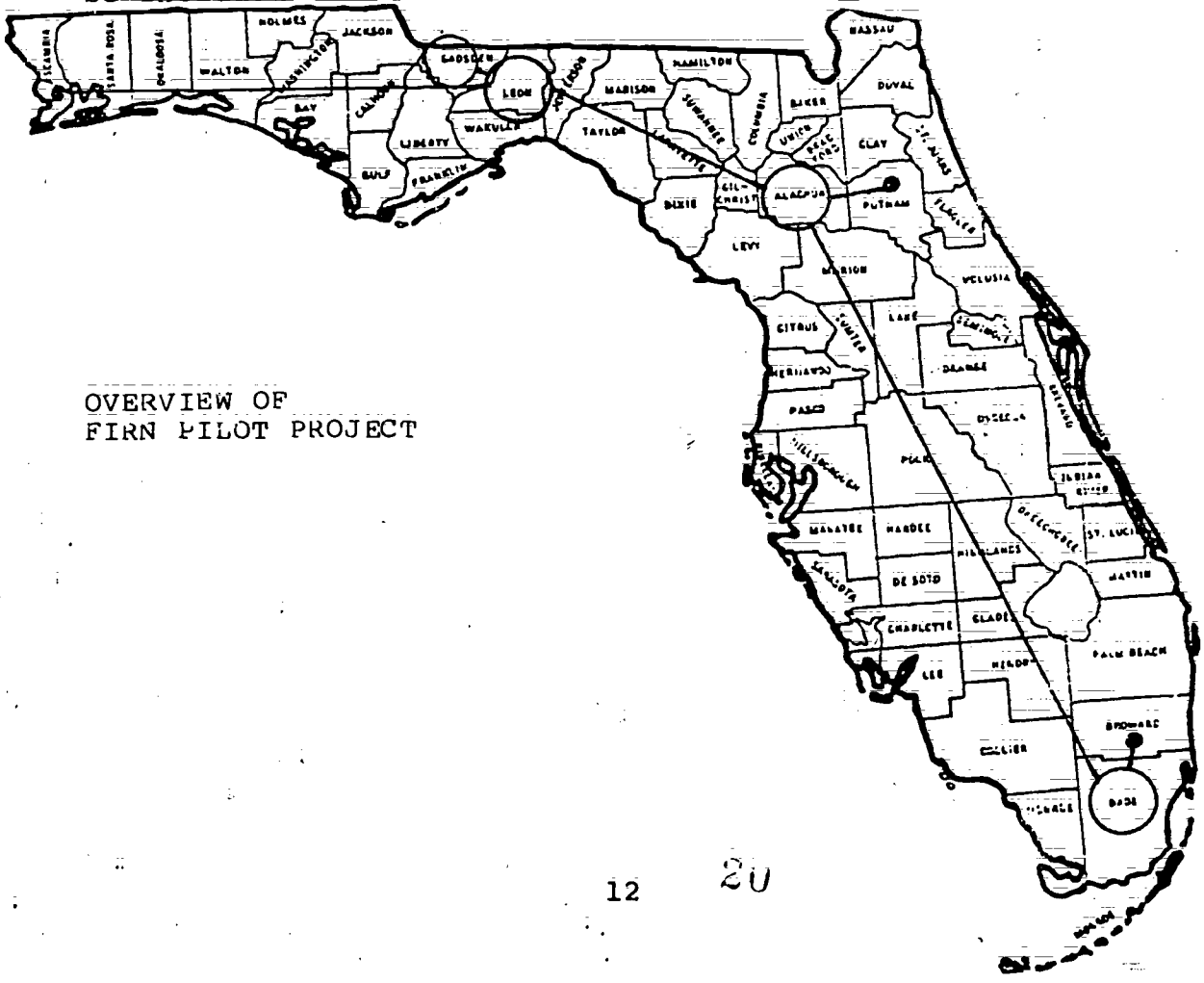
One of the more interesting experiments during the pilot will connect a Gadsden County high school with the student records system on the Dade County Public Schools computer system. A host interface will be installed from the Dade system to the Miami node in April. Access will be from a terminal in Quincy Shanks High School, sharing a circuit to the Tallahassee node with the Quincy Institute of Food and Agricultural Sciences Research Station. This terminal traffic will then be routed to Miami for transaction processing. Hard copy output support for the pilot will be provided by the Board of Regents print station. Proving shared communications will be only one milestone. Four autonomous educational entities (Board of Regents, Gadsden County, Dade County and Institute of Food and Agricultural Sciences) will participate in this test.

A crucial capacity test of the network will be the transmission of administrative transactions between regional data centers. Beginning in mid-April, Florida International University will transfer all of its 3270 terminal traffic via FIRN. This transmission will demonstrate the network's ability to handle large volumes of information.

Broward County School District and the University of West Florida will be the next participants. Broward will utilize an interface similar to that used by the Northeast Florida Educational Computing Consortium (batch and 3270 pass-thru), and will experiment with FTE batch transfer and 3270 interactive access from the schools. The University of West Florida will move all instructional asynchronous traffic via FIRN, with a Tallahassee node entry point. By June, Miami-Dade Community College will be connected for batch transmission of data. The remainder of the pilot year will be spent testing and loading the network with all connected devices.

It should be noted that this Pilot Project has adhered to a rather ambitious schedule which was established in April of 1982. This fact in itself is a major accomplishment and a tribute to the dedication and determination of all those people who served on the FIRN effort during the past year.

The future direction of the FIRN Pilot Project will depend primarily on the results of these initial activities. If successful, the next step will be the allocation of more resources to continue the growth of the FIRN. Additional school districts and universities will be brought into the FIRN circle of activities. Community colleges will likewise be included as their interest and needs evolve.



OVERVIEW OF
FIRN PILOT PROJECT

20

III. SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

The current status of functional computing capability in Florida's 67 school districts varies from minimal to extensive. The words "functional computing" are used because they encompass a combination of the information base, technical staff, computer hardware, systems software and educational applications software. A balance of all five resources is required to provide the teachers and administrators of a school district with adequate local and/or remote functional computing capability. Due to financial constraints and numerous other factors, **most** of Florida's school districts do not have the most desirable mix of these resources to meet their specific needs. Generally speaking, their capabilities can be classified into one of the following status conditions:

1) An accounting machine only, used for financial tasks, with a computer terminal linked to a remote facility currently supplying limited computing resources;

2) A computer with limited processing power and peripherals, minimal technical staff and batch-oriented non-integrated or semi-integrated educational applications software;

3) Interactive and integrated educational applications operating in computing installations of significant size and complexity, terminals located primarily at the school district office, non-automated document transfer between the school district office and schools, and a well-trained technical staff; and

4) Interactive and integrated educational applications operating on a computing network comprised of any combination of non-intelligent video and hard copy terminals, microcomputers, minicomputers and mainframe computers located at the school district office and schools, a well-trained technical staff, and user tools such as an ad hoc information retrieval system with "what if" and computational features.

The effort and money required to implement FIRN capabilities will vary from school district to school district because of the present disparity in functional computing resources. To achieve either local or remote access to extensive functional computing resources at all 67 school districts will require considerable time, money, talent and dedication. To extend this same power to Florida's more than 2,300 schools, where a higher probability of truly reducing teacher data burden exists, will require even greater quantities of these same essential elements.

The Department of Education is a user of the State University System (SUS) Northwest Regional Data Center (NWRDC) and, as such, has access to a vast array of computer hardware, systems software and talent at the NWRDC and throughout the SUS network. Through the efforts of its own applications development staffs, the Department of Education has designed and implemented a significant number of systems at the NWRDC in support of Department planning, decision making and operational needs.

Appendix C addresses "only" the computer hardware resources at Florida's school districts, community colleges and state universities. Due to interim upgrades, we cannot guarantee that even the indicated computer hardware resources will be totally accurate by the time this 1983 FIRN Plan is printed and distributed.

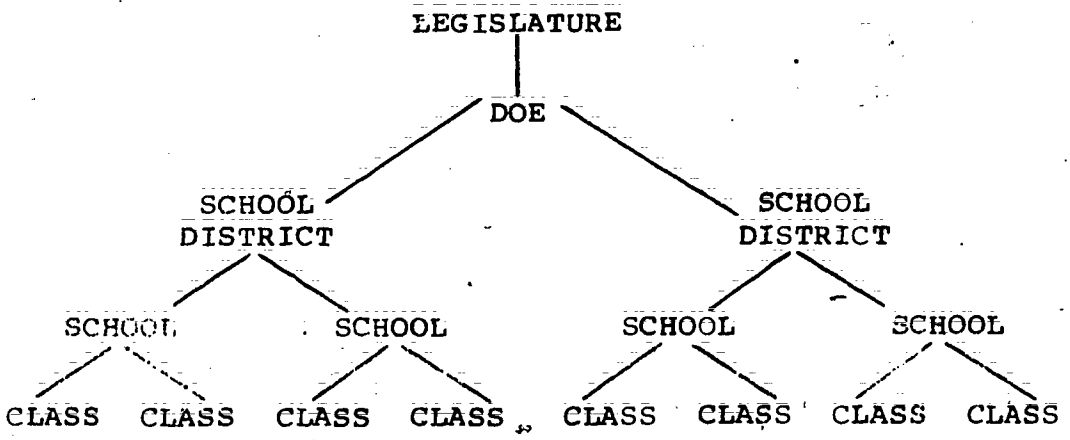
IV. FUTURE FUNCTIONAL COMPUTING GOALS & OBJECTIVES

A. OVERVIEW DISCUSSION (CLASSES, SCHOOLS, DISTRICTS, DOE, AND FLORIDA LEGISLATURE INFORMATION HIERARCHY)

To be successful in any organized endeavor, decisions affecting direction, emphasis and operation must accurately target needs and optimally allocate resources to meet those needs. Those charged with the responsibility of making these decisions must rely on their own skills and the availability of timely, accurate information.

The State of Florida has long recognized the importance of decision making elements and has, over the years, continually worked to improve not only the skills but also the information base used to set the course for public education. In the latter of these efforts, improving the information base, computer technology has been viewed as a vital tool yet one often presenting as many problems as solutions.

Section V of this plan presents a phased implementation strategy for a FIRN which will meet the objective of providing timely, accurate information while capitalizing on investments made to date in achieving that objective. **In essence, the purpose of the network is to--deliver the right information at the right time to the right place as efficiently as possible.** To better appreciate the concepts proposed by the design and phased implementation, examine the detailed presentation of the "Educational Information Hierarchy" reflected in Appendix B. The following figure also presents this hierarchy:



As illustrated, there are five levels in the pyramid ranging in function from executive (setting policy and long-range plans) to management (allocating and overseeing resources to implement policies and plans) to operational (delivering resources to the target population). At each level a variety of information needs exists, all sharing common characteristics.

Each level within the pyramid is an information repository. In the interest of efficiency, only that information appropriate to the primary activity is held at a given level. As examples, teachers, as required by law, keep detailed records on individual students, school administrators record class summaries, district administrators record schools, etc. Standards and procedures must be established to ensure that, should a question requiring a detailed response arise at any level, the information chain can carry to the next lower level for expansion. As examples: a school administrator, noting exceptional achievement by students in one class, may access a teacher's records to gain further insight; a district administrator, seeing a drop in attendance at a school, may require more detailed information from the school administrator. In addition to these information requests from within the pyramid, there are requests from without. These may originate from a myriad of sources and enter the pyramid at any level.

While the information provided by such a pyramid is invaluable, one negative aspect exists. The bulk of the weight of a pyramid rests on the lowest level. Therefore, the greatest data burden is placed on the teachers. Three ways to reduce this burden are to:

1. Eliminate redundant data collection;

2. Transfer record keeping to either the next higher level in the pyramid or to an external resource; and

3. Improve the tools available to manage data at the level itself.

B. PROBLEMS AND PROMISE

With information requests ever-present and ever-growing, school districts able to dedicate resources to information automation have acquired computer hardware and software (computerized information systems) capable of meeting their individual needs. It may help to examine more closely potential problems resulting from past individual district efforts governed primarily by the availability of resources. The result can be seen in:

1. A lack of standardized and compatible information maintained from district to district;

2. A variety of computer hardware and software, often incompatible from one district to the next; and

3. A disparity of resources, with some districts possessing extremely sophisticated information handling systems and others relying entirely on manual records.

To address these inequities and improve the overall ability of a state-wide information network, many efforts were begun and have thus far established the foundation on which this plan rests. The most notable of these are:

1. The direction established by the Legislature and its funding of early sharing arrangements;

2. The conceptual design and data element dictionaries developed by the Council and the Department of Education;

3. The common software distributed/funded by the Division of Public Schools;

4. The hardware made available by funding through the Florida Educational Computing Project;

5. The efforts to reduce and standardize data collection by the Forms Review Committee;

6. The networking accomplishments made thus far by school districts, community colleges and the state universities;

7. The Florida Education Computer Network Steering Committee; and

8. The Florida Information Resource Network Pilot Project.

Because of these activities, the Florida system of public education is equipped with a solid base on which to build the Florida Information Resource Network--component by component, phase by phase.

C. RELATIONSHIP TO OTHER ACTIVITIES

The Florida Information Resource Network is an evolving network. **The "Benefits" outlined at the beginning of this 2nd edition are applicable to school districts, community colleges and universities.**

Because of these common benefits, many projects and activities of all three delivery systems are beginning to come together. These include, but are not limited to:

1) College On-line Information Network (COIN);

2) Florida Education Funding Program;

3) Statewide Course Numbering System; and

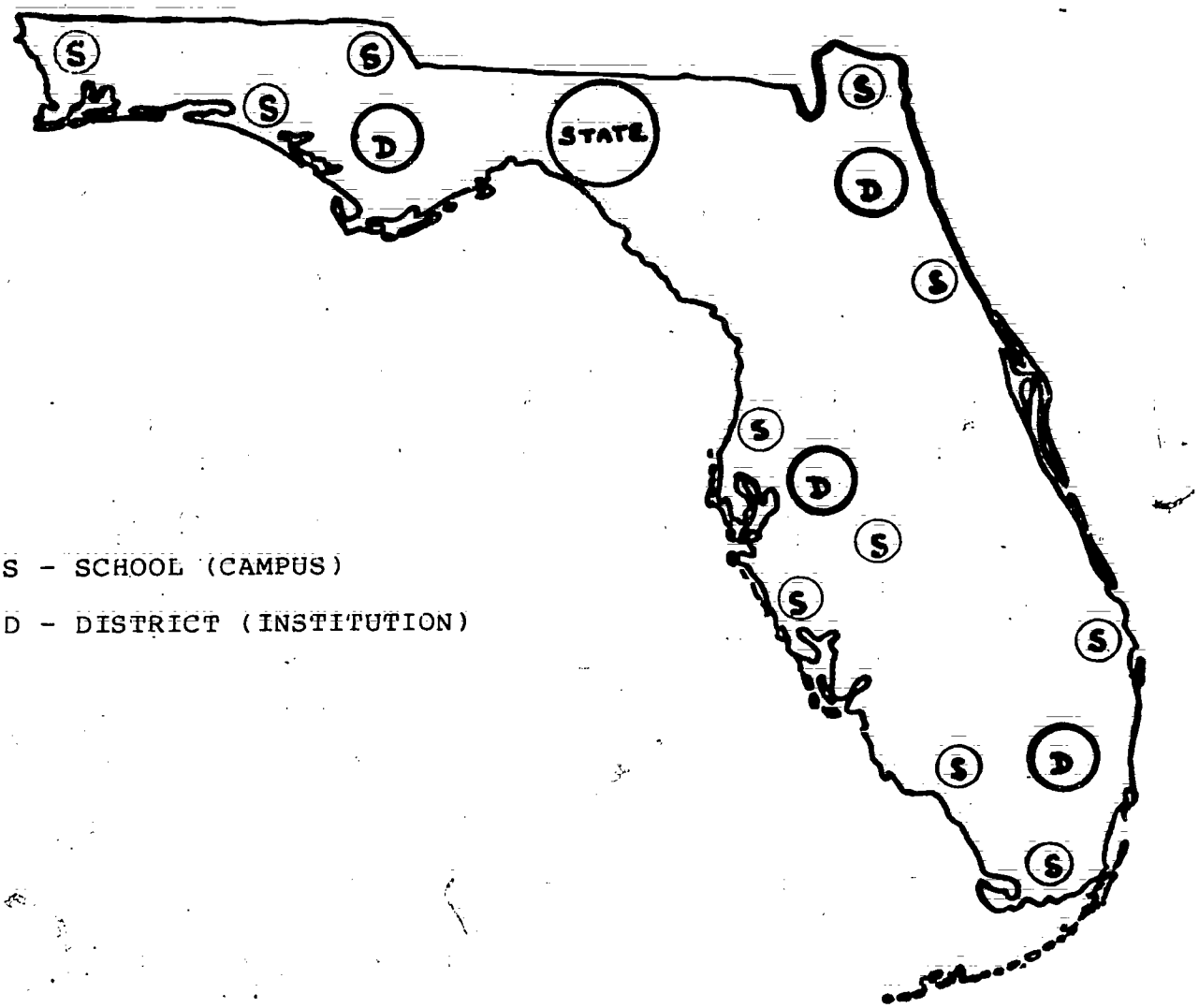
4) Teacher Certification.

D. GENERAL INFORMATION NETWORK DESIGN DISCUSSION

Implementation of a delivery system capable of supporting the variety of information requirements discussed in Section IV.A, while simultaneously overcoming the problems inherent in an effort of this magnitude, requires a carefully planned, thoughtfully implemented information network. The foundation design was presented in the 1982 FIRN Plan. This 1983 edition attempts to build on that base yet incorporate some new ideas, technologies and services. Herein are presented both the design for such a network and a discussion of the seven individual resources (Network Hardware, Network Software, Network Technical Staff, Information Base/Data Review Committee, Information Processing Hardware, Information/Application Software and Information/Application Technical Staff) which comprise the final product and are critical to its success. The design intends to capitalize on, rather than displace, efforts to date. These resources should be understood individually yet viewed as a whole for the plan to succeed. In presenting the design, each resource is introduced as an analogy to provide an understandir of the function served by the resource without using technical terminology. Later, in Section IV.E, these resources are discussed at a more technical level.

With the purpose of an information network being to provide the ability to deliver the right information at the right time to the right place as efficiently as possible, it can be compared to the development and operation of a railroad. Therefore, the seven resources which comprise the network will be introduced in those terms.

Prior to laying track, railroad planners must assess the need for delivery to various locations, anticipated volumes and frequencies, etc. In the Florida Information Resource Network (FIRN) these **"destinations"** might be illustrated in the following figure:

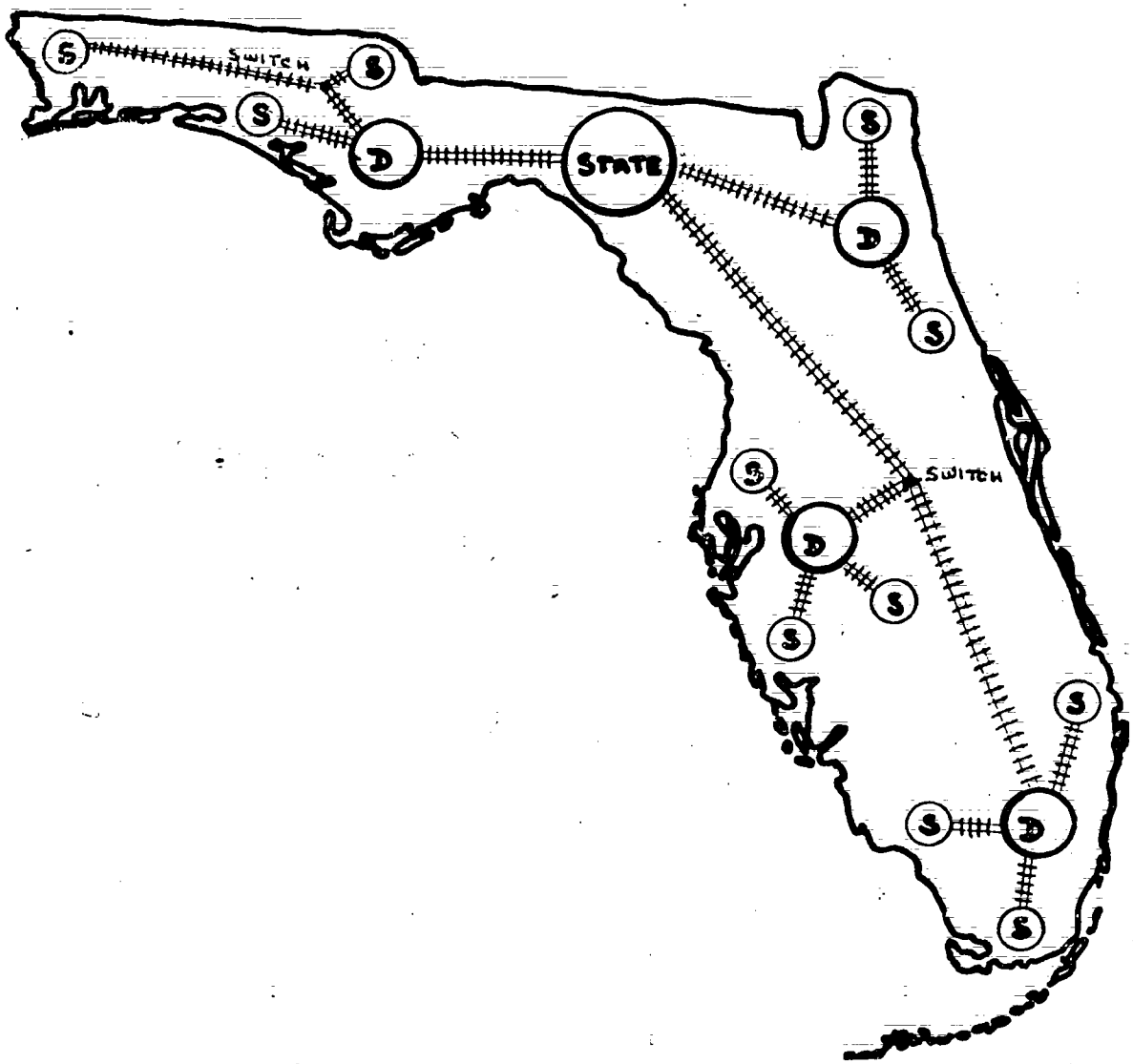


S - SCHOOL (CAMPUS)

D - DISTRICT (INSTITUTION)

As presented in Section IV.A, information must be delivered to and from schools, school districts, and the Department of Education and Legislature in Tallahassee. Also discussed in Section IV.A, were the various characteristics of the **"information freight"** to be delivered - how much, how often, and in which direction. This knowledge - how much information freight originates at each depot (node), how it must be packaged, to where it is delivered and how often - is the design of the **Information Base** itself.

Equipped with this information, just as the railroad planners can design the network of tracks which will connect each of the depots, the network planners can connect each of the nodes in the FIRN. Adding tracks to the previous figure creates the following illustration:



The planners recognized, in this illustration, the need to have connector lines supporting the daily flow of information freight between school depots and their respective district offices as well as long haul lines which could carry larger volumes of freight over longer distances. Also note they had the foresight to install switches allowing trains to be routed to different destinations when the anticipated volume of freight could not justify the cost of individual tracks. These tracks and switches, as shown in the illustration, are representative of the Network Hardware required to establish routes for the information to travel between points.

With the tracks (network lines) laid, the network is in place. The tracks do not dictate what brand of train runs on the tracks. However, each train must be of the same gauge as the tracks, be able to clear bridges, and so on. This is also the case with FIRN. Information may originate on any kind of **Information Processing Hardware**, as long as that computer can "fit the tracks."

Now the network is ready to move to its next phase--operation. It is immediately apparent that two trains cannot head towards one another on the same track without colliding. Also, switches must be thrown to direct them to the correct destination. Therefore, it is necessary to have a system of signals to control routing and scheduling. With the FIRN, this is the function of the **Network Software**. This resource of the FIRN controls the movement of the information.

The network is now equipped to operate but still unable to deliver its information freight. Somehow the freight must be loaded on the trains. This function is met by **Information/Application Software** which has been designed and programmed by **Information/Application Technical Staff** (programmer/analysts). These are technicians who are knowledgeable of system design, programming and the user procedures performed by educational administrators. They can be selected from within the educational system and/or private firms to form the most proficient team possible to address the task at hand. The Information/Application Software will maintain a "dynamic" Information Base of Student/Program, Staff, Finance, Facility and Community data. An information request can now be initiated in Tallahassee, sent down the network communication lines and received at a network node. Information/Application Software will then analyze the request, gather the information needed to effectively respond, package the information, affix a destination address and load it on the next train (packet) leaving for Tallahassee.

Finally, the network appears to be operational yet no information is being transmitted. The last resource is missing. To function, the network must have **Network Technical Staff** just as the railroad must have engineers and switchmen. These persons will actually operate and maintain the network and see that the "information freight" is delivered to the right destinations at the right time.

E. RESOURCES OF THE FLORIDA INFORMATION RESOURCE NETWORK

Therefore, it can be seen that the Florida Information Resource Network is comprised of seven essential resources. A brief description of these seven resources follows:

1. **Network Hardware** - As described in the railroad analogy presented earlier, the Network Hardware is to the computer network much the same as the tracks are to a railroad system. The Network Hardware, in non-technical terms, is a combination of electronic boxes and data communication land lines, microwave and/or satellites. The specific types of equipment and mode of data communication used between network points will be transparent to the users of the FIRN.

2. **Network Software** - Software refers to programs or instructions used to tell computers what to do. Network Software packages the data for delivery, presents the data to the Network Hardware and tells the Network Hardware where to route packages of information. Network Software, at the destination point, prepares the data for presentation to the Application Software. This approach is sometimes referred to as packet-switched networking.

3. **Network Technical Staff** - Personnel are required to make the FIRN operational and keep it running. Without the proper technical staff, at the right locations, the services of the FIRN will be totally inadequate, and the FIRN will fail. From the outset, knowledgeable staff members must be in place to make decisions concerning the selection and development of Network Hardware and Network Software resources.

4. **Information Base/Data Review Committee** - An early task in the development of the FIRN will be the design of the Information Base, e.g., the logical identification of the levels of integration and the standardization of data elements at school, district, Department and legislative plateaus within the Educational Information Hierarchy. Appendix B illustrates the hierarchy while Appendix D reflects the characteristics of the hierarchy's data elements. Even though considerable work has been done in these two areas, a significant challenge lies ahead as the more technical issues of logical design and physical implementation are addressed. These will require the services of personnel from the public and/or private sector knowledgeable of distributed computing and distributed processing as these concepts apply to educational computing.

The design will parallel the pyramid illustrated in Section IV.A, providing for retention of data sufficient in detail for the primary function of the level at which it resides. The design will also make available clearly defined upward and downward paths of information flow with standards for summarization. Decisions regarding the addition, deletion or modification of these data elements will be overseen by the Data Review Committee and the Department of Education, Division of Public Schools (Appendix F).

5. Information Processing Hardware - As mentioned earlier, this resource will be resident at the DOE, which is serviced by the SUS-Northwest Regional Data Center, and the regional data centers and/or school districts throughout the state. It is conceivable that the equipment which will be installed during Phases IV (district) and V (school) will be of a microcomputer architecture thereby enabling some degree of distributed computing to take place at the smaller school districts and many, if not most, of the 2,345 schools in Florida. During Phases II, III, IV and V, this plan will establish communication links between schools/districts requiring computing assistance and a provider or host site within the Florida system of public education. The provider site could be another school district, community college or a SUS-regional data center. As processing workloads are increased at these provider sites, additional processing hardware such as memory and storage devices will be required. In some cases the computer's Central Processing Unit (CPU) may require upgrading. The costs associated with these upgrades must be borne by the new users, who in many, if not all cases, cannot afford these costs. Therefore, if a FIRN is to become a reality, a significant amount of funding must be provided by the State to build it and, for a limited number of years, to assist in keeping it running.

6. Information/Application Software - This software supports user activities such as scheduling students, paying employees, and keeping financial records. Each functional activity, such as purchasing or FTE reporting, is supported by computer programs called a system. These systems are used to enter data in the Information Base, maintain the Information Base once the data has been entered and extract information in the form of video terminal screens or reports. Educational administrative systems differ from other systems since the business of education is different from other businesses.

In education, the focus is on systems such as:

FINANCE	STUDENT	STAFF
Accounts Payable	Record Keeping	Payroll
Budgeting	Schedule Activities	Positions
General Ledger	Grade Reporting	Personnel
Purchase Order	Attendance	In-Service
Revenue	VEDOS	Skills Records

The importance of good Information/Application Software cannot be stated too strongly. The FIRN will not be fully operational until either new Information/Application Software is written, or the existing software is modified. This activity can be accomplished by a central development team, private firms, school district staff or any combination of these sources.

7. Information/Application Technical Staff - **During this past year the people working on the FIRN project confirmed that the application software is perhaps the most critical of the resources necessary to make the FIRN a success.**

Just as the Network Technical Staff makes the Network Hardware and Network Software operational and keeps it running, a team of Information/Application Software specialists in educational administration is required to build the many Information/Application Software systems required by school, district, DOE and legislative personnel. Integrated interactive systems must be designed and programmed for every level within the Educational Information Hierarchy. These systems will need to address planning, decision making and operational needs as related to Student/Program, Staff Finance, Facility and Community information at all levels of the hierarchy. This software will reside on mainframe computers, minicomputers and microcomputers (Information Processing Hardware) within the FIRN. As stated earlier, this staff can come from the Department, institutions, private firms or any combination of these sources. This plan recommends a combination approach to bring extensive resources to the task during Phase II through Phase V.

V. IMPLEMENTATION PHASES (ASSUMPTIONS, OBJECTIVES, ACTIVITIES AND TIME FRAMES)

A. OVERVIEW DISCUSSION

The following assumptions were made before stating the objectives, activities and time lines associated with each of the phases in this plan:

- The Florida Information Resource Network is too large and complex to implement in a single effort. The project must be divided into phases, each having its own objectives, series of activities and milestones;

- A sufficient quantity of the seven essential FIRN resources, described in Section IV.E, and adequate funding must be present during each phase. The absence of any of these resources or funds at any time during the course of implementation could cause a significant delay for that phase and all subsequent phases; and

- The plan anticipates that the project's management and technical personnel will need to maintain a balance between being **"technical pioneers"** or **"technical followers"**. While the goals and objectives stated earlier may change to some degree over time, it is almost certain that the technology available to meet those goals and objectives will be upgraded during the course of the project. Because of this, the planning activity needs to be viewed as an ongoing, dynamic activity, always aiming to select a path which will produce the desired results in the most cost-effective manner available at the time.

B. PHASES COMPLETED

PHASE I - SEMI-AUTOMATED CAPABILITY AT THE DISTRICT AND/OR REGIONAL LEVEL USING MAGNETIC MEDIA TRANSFER OR DATA COMMUNICATIONS TRANSMISSION TO THE DOE

The 1981 Legislative Appropriations Act required all 67 school districts to furnish their February, 1982, student full time equivalency data to the State in machine readable media. All 67 school districts met this requirement during the February and October counts. Some districts either electronically transmitted this data over communication lines or provided a magnetic tape as they have in the past. Other school districts, without computing resources or magnetic tape units, found a neighbor district, college or university to help them comply with this requirement.

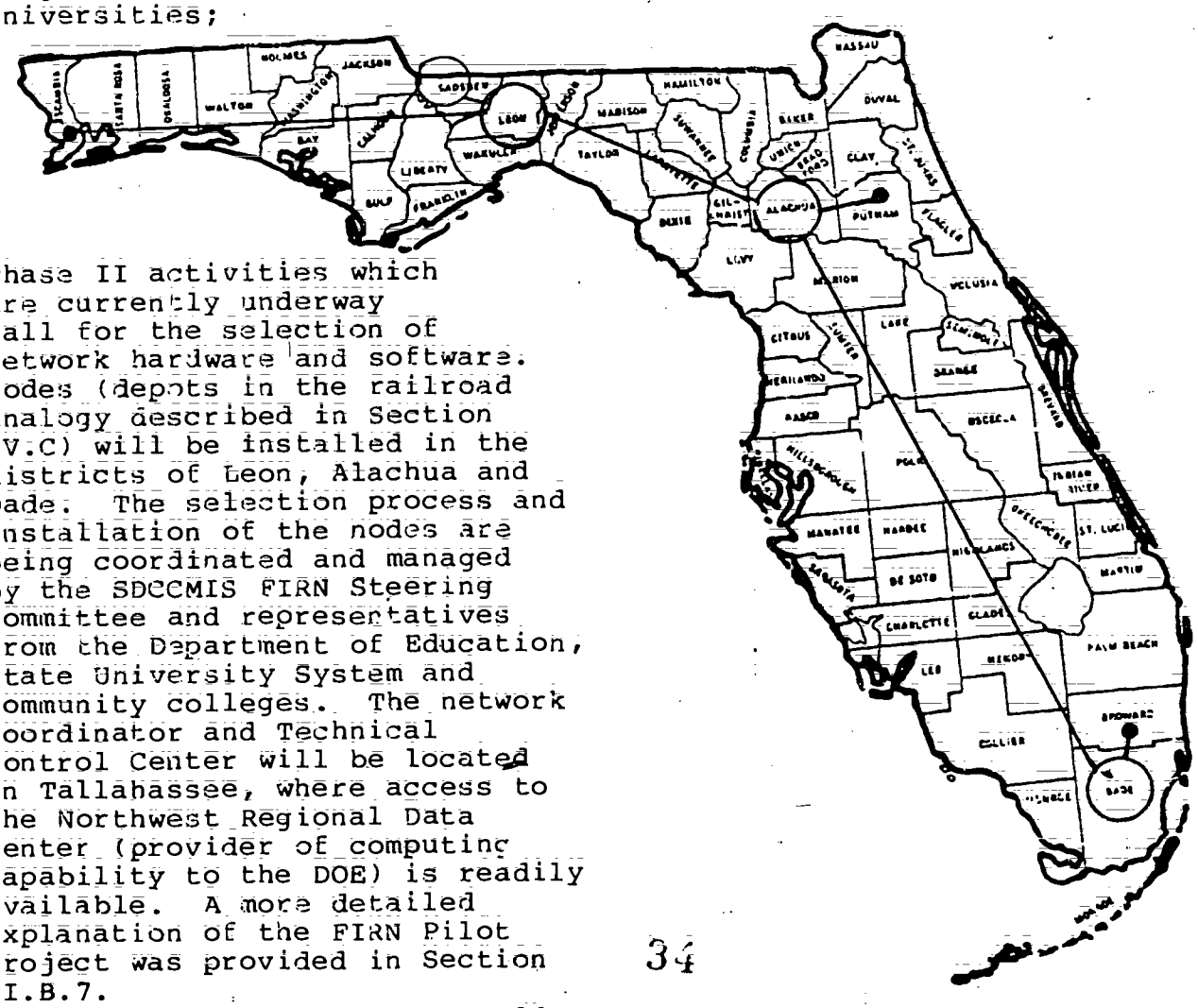
C. PHASES IN-PROGRESS

PHASE II - AUTOMATED CAPABILITY AT THE DISTRICT AND/OR REGIONAL LEVEL USING MAGNETIC MEDIA TRANSFER AND MORE DATA COMMUNICATIONS TRANSMISSION TO THE DOE

The following is a summary of the status of Phase II activities:

- During fiscal year 1981-82, funds were allocated to and distributed by the Division of Public Schools to assist the 18 school districts without automated reporting capability. These funds were used to install terminals, microcomputers or other equipment. Some districts have completed this acquisition and installation task while others are in the process of implementing hardware to meet their needs;

- A second PHASE II activity recommended by this plan was the initiation of a **"Network Pilot Project"** using approximately $500,000 in funds specifically appropriated for this purpose. As indicated below, the FIRN Pilot Project involves school districts, community colleges and universities;



Phase II activities which are currently underway call for the selection of network hardware and software. Nodes (depots in the railroad analogy described in Section IV.C) will be installed in the districts of Leon, Alachua and Dade. The selection process and installation of the nodes are being coordinated and managed by the SDCCMIS FIRN Steering Committee and representatives from the Department of Education, State University System and community colleges. The network coordinator and Technical Control Center will be located in Tallahassee, where access to the Northwest Regional Data Center (provider of computing capability to the DOE) is readily available. A more detailed explanation of the FIRN Pilot Project was provided in Section II.B.7.

PHASE II (continued)

- A third planned activity during Phase II focused on the Information/Application Technical Staff (public and/or private firm employees) further defining the data elements, logical design, and physical implementation of the required "pool" of Student/Program, Staff, Finance, Facility and Community information. Much of the work pertaining to the definition of the data elements to be maintained at the various levels within the Information Base hierarchy has already been completed by the Department of Education and Council teams which developed the data directories shown in Appendix D. However, since funds were received for only the Pilot Project, the logical design and physical implementation components of this activity have begun but only minimal resources have been available;

The next step will be the establishment of an Information/Application Software development team comprised of individuals from the public educational system and/or private enterprise. This team's charge will be to solicit user information needs from the Legislature, Department, school districts and schools. This information will need to be studied to determine what elements will be required to effectively respond to questions which will be raised by the FIRN user constituency in the future;

Having completed the user needs analysis, the Information/Application team will build a logical design of the Information Base hierarchy, level by level. After the logical design is established, the team will need to communicate with staff members working on the Network Hardware and Network Software to insure that the individual designs of FIRN resources will be compatible when combined to form a whole. During these team check points, information will be exchanged, and the course of the project will be modified and reset as required to provide for a better end product; and

- A fourth activity during Phase II will be the establishment of procedures to promote the formation of a more compatible Information Processing Hardware base throughout the state. Compatible Information Processing Hardware will assist in the development of Information/Application Software for different levels of the Information Base hierarchy and subsequent state-wide dissemination of these application products. Clearly, it is

more cost-effective to have **one** set of multi-level application products which will run, without change, on all the Information Processing Hardware distributed throughout the state at school, district and state levels than to have **many** sets. This plan recommends that the following steps be taken to further the goal of a more compatible Information Processing Hardware base in Florida's system of public education:

1. Development of specifications for "Information Processing Hardware" for **each** level of the Information Base hierarchy (state, school district, school and perhaps later, classroom). In some cases, the specifications will vary even within one level. For example, the Information Processing Hardware needs of a school district with 200,000 students will understandably be quite different from those of a district with 2,000 students;

2. Establishment of technical standards to govern Information/Application Software system design, programming and technical/user documentation;

3. Coordination of state, regional and multi-district Invitation to Bid documents and Bid evaluation procedures for the different Information Base processing levels and sub-levels, and

4. Continuation of the Department of Education's role pertaining to the review of school district, community college and university computer hardware acquisitions.

D. FUTURE PHASES

PHASE II - AUTOMATED CAPABILITY AT THE DISTRICT AND/OR REGIONAL LEVEL USING MAGNETIC MEDIA TRANSFER AND MORE DATA COMMUNICATIONS TRANSMISSION TO THE DOE

Even though the FIRN Network Hardware and Network Software portions of Phase II are in-progress, the Information/Application Software needs have not been addressed due to inadequate funding. Therefore, Phase II is intentionally shown as both "in-progress" and "future".

PHASE III - AUTOMATED CAPABILITY AT THE DISTRICT AND/OR REGIONAL LEVEL WITH BATCH BI-DIRECTIONAL DATA COMMUNICATION TRANSMISSION OF STRUCTURED INFORMATION SUCH AS FTE, VEDOS AND COST REPORTING

The key word in reference to the functional computing capability which will be put in place during Phase III is "structured". Activities associated with this phase will provide Information/Application Software, residing on Information Processing Hardware, which will maintain a pre-defined or structured "pool" of information for automated reporting and the answering of specific questions related to Student/Program Staff, Finance, Facility and Community information. All 67 school districts will be linked to the State either directly or via a host (regional center) to enable electronic transmission of information in a bi-directional manner.

Because of the structured nature of the Information Base ("pools of information") during Phase III, it is very important that the application planners, developers and writers begin careful evaluation of the information needs of legislators and educators at this time. To make this "batch" question, answer and reporting capability of the FIRN operational according to the time line reflected in Section VII, work on the system design, programming, technical documentation and user documentation should begin immediately. These tasks should be addressed by State, regional center, school district, private firm personnel or any combination thereof as soon as possible.

Phase III (continued)

There are two ways which the FIRN Information/Application Software "team" can provide the State, school districts and schools the ability to enter, maintain and extract data from their respective levels within the Information Base:

1. Provide Information/Application Software at each level of the Educational Information Hierarchy shown in Appendix B; or

2. Provide a modification to existing Information/Application Software at each level of the Educational Information Hierarchy.

The Application Software at each level must be able to:

1. Provide for the establishment and maintenance of the Information Base at that level, preferably as part of present ongoing operational procedures;

2. Provide for the packaging and presentation of data to the Network Software; and

3. Provide video terminal screens and/or reports of information for planning, managing and reporting.

PHASE IV - INTERACTIVE AD HOC INFORMATION (STUDENT/PROGRAM, STAFF, FINANCE, FACILITY AND COMMUNITY) RETRIEVAL AND REPORTING CAPABILITY FOR DISTRICT, DOE AND LEGISLATIVE LEVELS OF EDUCATIONAL MANAGEMENT

During Phase IV, the Information Base will be expanded to include information elements in addition to those maintained and made available as a result of Phase III activities. **Data element compatibility between schools and school districts will be critical starting with Phase IV forward due to the ad hoc nature of the functional capability. Also, security will become a major issue with external access limited to aggregate or summary data rather than individual student or staff information.** While the Information Base will be broadened at this point in the evolution of the FIRN, the primary improvement to the users of the FIRN will be the introduction of "interactive" and "ad hoc" capabilities during Phase IV.

Phase IV (continued)

The "batch" Information/Application Software will need to be expanded, upgraded and in some instances replaced with "interactive" versions which will address the on-line data entry, record update, and information retrieval of Student/Program, Staff, Finance, Facility and Community information. These versions will be designed, programmed, distributed and in some instances installed by the Information/Application Software "team." The new versions will need to be made available for the primary types (vendors) of Information Processing Hardware installed throughout the Florida system of public education and for every level within the Educational Information Hierarchy.

With the installation of interactive and ad hoc features, users of the FIRN will be able to initiate a question at one location within the network, direct it to another location or locations within the network, access a "live" Information Base at that level and receive an answer to the question within moments of its initiation. For example, during the legislative session, a need arises for "current" information on the number of students in a particular "program" at school districts between 35,000 and 70,000 FTE and the information is needed in summary form by race and sex. The Network Hardware, Network Software, Information Base, Information Processing Hardware and Information/Application Software will be "in place" to provide an answer to this question only a short time after the request is entered into the FIRN.

The Phase IV functional computing capabilities will be made available at the "State" and "school district" levels. This means that a significant investment in the seven FIRN resources, outlined in Section IV.D of this plan, will need to be made at the State level, regional level and at all of Florida's 67 school districts. These costs are outlined in Section VI.

PHASE V - INTERACTIVE AD HOC INFORMATION (STUDENT/PROGRAM, STAFF, FINANCE, FACILITY AND COMMUNITY) RETRIEVAL AND REPORTING CAPABILITY FOR SCHOOL, DISTRICT, DOE AND LEGISLATIVE LEVELS OF EDUCATIONAL MANAGEMENT

During Phase V, the Information Base will be expanded to include information elements which will be maintained at the "school" level. The "interactive" and "ad hoc" capabilities introduced during Phase IV will be expanded to the more than 2,300 school sites within the state by implementing Information Processing Hardware linked to district points in the network.

Some school districts will use microcomputers to support distributed processing components (school level) of the FIRN Information/Application Software. Other school districts will install terminals at schools to achieve the desired interactive and ad hoc functional computing capabilities at the "school" level. These terminals will be connected to the Information Processing Hardware at the district office. Through the use of these terminal devices, school-based administrators will be able to create, retrieve and update information elements related to Student/Program, Staff, Finance, Facility and Community. With the linkage between the school-based terminals and the district Information Processing Hardware resources, a more centralized approach to attaining the desired interactive and ad hoc information processing facilities will have been taken than the decentralized or distributed concept of microcomputers.

Both approaches will work, and both are acceptable from the standpoint of this plan. The decision as to which is most cost-effective will vary from district to district and perhaps school to school, based on FTE count, location, present hardware/software base and other variables. In either case, administrators at schools will receive a new or increased level of computing capability. As a direct result, the timeliness and accuracy of information for all the users of the FIRN will be improved.

During Phase V, the resources of the FIRN will be made available at State, school district and "school" levels. Therefore, a substantial financial investment will be required during Phase V to provide for the devices (microcomputers or terminals), data communication lines, Information Processing Hardware, Information/Application Software and technical staff required to support more than 2,300 school sites state-wide.

VI. A N T I C I P A T E D C O S T S

A. OVERVIEW DISCUSSION

Many school districts have already spent millions of dollars to provide computing resources to support administrative and instructional activities. This plan is designed to capitalize on the investment made thus far. The dollars already spent should be viewed as "in-kind" funds which have been contributed by school districts to form the base from which the Florida Information Resource Network will grow.

The costs associated with the development and installation of the FIRN will vary from district to district depending on the present status of their functional computing. Another impacting variable will be the different degrees of automation needed by the members of the user population. The costs presented herein are based on today's goals and known technologies to achieve these goals. The goals, however, must be viewed as dynamic points along a technological continuum--these points will move, over time, as a result of new product announcements.

Installation support staff and circuit riders (individuals), capable of assisting the users of the 20 district and/or regional centers, will be needed during each phase of implementation. The cost of these resources has been included in this section.

After Phase V, the school districts will be faced with an annual ongoing cost for items such as hardware maintenance, software maintenance and communication lines. While this plan does not reflect these costs, it is vital that the Florida Legislature and Department of Education begin making plans to assist school districts with these ongoing costs through the use of categorical funds in addition to future FEFP dollars.

B. PHASE I

No costs have been reflected for Phase I since all 67 school districts used existing or "temporary" resources to comply with the proviso language requiring machine readable student FTE data by February, 1982. However, it should be recognized that there were real costs associated with Phase I and that these dollars should be considered "in-kind" school district expenditures.

ANTICIPATED COSTS (continued)

ORIGINAL COST ESTIMATE BY PHASE

PHASE BEGINNING FY YEAR PHASE = 24 MONTHS	PHASE II 82-83	PHASE III 83-84	PHASE IV 85-86	PHASE V 86-87	TOTALS
Network Hardware	512,000	1,214,940	1,856,000	3,200,000	6,782,940
Network Software	20,000	40,000	50,000	65,000	175,000
Network Staff	95,000	210,060	325,000	350,000	980,060
Information Hardware	516,000	1,809,000	4,737,000	9,850,000	16,912,000
Application Software	250,000	2,000,000	2,800,000	2,200,000	7,250,000
Application Staff	95,000	355,000	475,000	490,000	1,415,000
Circuit Riders	-0-	1,200,000	1,800,000	2,400,000	5,400,000
Installation Staff	-0-	1,300,000	2,535,000	2,600,000	6,435,000
TOTALS	1,488,000	8,129,000	14,578,000	21,155,000	45,350,000

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COST SUMMARY BY FISCAL YEAR

	82-83	83-84	84-85	85-86	86-87	87-88	TOTALS
NH	341,960	1,274,454	1,032,188	973,960	1,856,000	2,100,000	7,578,562
NS	7,200	124,860	217,720	30,000	55,000	30,000	464,780
NS	35,000(1)	211,340	330,825	185,820	283,360	175,000	1,221,345
IH	80,000	838,000	2,670,000	2,670,000	4,063,000	5,505,425	15,826,425
ASW	21,417	520,000	1,710,000	1,710,000	2,150,000	950,000	7,061,417
ASF	68,000	160,000	347,303(6)	275,000	400,000	245,000	1,495,303
CR	-0-	260,000	940,000	940,000	1,800,000	1,200,000	5,140,000
IS	-0-	280,000	1,450,000	1,450,000	2,050,471	1,265,000	6,495,471
		25,000(2)					25,000
		60,000(3)					60,000
		54,000(4)					54,000
	553,577			SUB TOTAL PRIOR TO FUNDING CUTS			45,422,303
	-72,303(5)						-72,303
	481,274	3,807,654	8,698,036	8,234,780	12,657,831	11,470,425	45,350,000

(1) Board of Regents staff
(2) COIN/FIRN integration
(3) Community college participation
(4) Electronic Mail
(5) Project funding cuts as of December 1, 1982 taken from Application Staff
(6) Budget cut restoration plus $275,000

Application software dollars will be used to acquire new third-party software, award contracts and grants to school districts to build "cross-walks" to existing software, and to contract for the development of specific software components not already available.

Application staff dollars include both Department of Education staff members and contracts with private firms for additional resources as required.

VII. IMPLEMENTATION PHASES (TIME LINES)

The five phases outlined in this plan will be considerably overlapped due to the complexity of the FIRN project. The phases and their respective goal and objectives must drive the implementation and funding activities. Therefore, this plan recommends that the Legislature, Department of Education and Council begin making plans and taking action to insure that an adequate level of all seven essential FIRN resources and funding are available during each phase of implementation. This plan recommends the following phased or building-block implementation strategy and milestones:

PHASE	81-82 MAMJ	82-83 JASONDJFMAMJ	83-84 JASONDJFMAMJ	84-85 JASONDJFMAMJ	85-86 JASONDJFMAMJ	86-87 JASONDJFMAMJ
I	(completed)					
II		xxxxxxxxxxxx	xxxxxxxxxxxx			
III			xxxxxxxxxxxx	xxxxxxxxxxxx		
IV					xxxxxxxxxxxx	xxxxxxxxxxxx
V						xxxxxxxxx...

Provisions should be made to enable funds to be carried forward between fiscal years to promote effective and efficient staff, contract and grant administration.

It should be noted that since all the money requested in the first edition of the FIRN Plan for Phase II was not forthcoming some of these activities have progressed at a slower rate than initially planned. However, as stated earlier, the major tasks of the project have remained on schedule, where funded.

The time lines reflected above can only be maintained if the funds requested in Section VI are appropriated during the fiscal years indicated.

VIII. FIRN ADVISORY, POLICY AND STAFFING CONSIDERATIONS

The management of the FIRN, during the formative stages and later when it is fully operational, will be very important to its success. This plan addresses all school sites, all 67 school districts, the Department of Education and the Florida Legislature. Therefore, the FIRN advisory and policy recommendations of the plan will be stated primarily from a public school (K-12) standpoint. However, it should be recognized that a broad governance structure is being presented and that the structure will facilitate the inclusion of other educational delivery systems (State University System, Community Colleges and Vocational Education) without requiring major modification.

As illustrated in the proposed FIRN Governance Structure, the Legislature, State Board of Education, Department of Education (Commissioner and Associate Deputy Commissioner), a Coordinating Council and a Technical Advisory Board will oversee the FIRN. The two primary steering bodies being the FIRN Coordinating Council and the FIRN Technical Advisory Board. The composition of each of these groups is presented in the organizational chart in this section. The individuals appointed to these entities are listed in the Acknowledgments section of this second edition of the FIRN Plan.

As indicated by the organizational chart, the planned governance structure includes virtually every public educational delivery system to insure fair representation in matters with broad influence and effect. In addition to the representation presented, Department of Education staff members will serve in a ex-officio capacity on the FIRN Council and Board, as appropriate.

The proposed governance structure represents a major refinement in the governance and policy making recommendations presented in the first edition of the FIRN Plan. The proposed organization better addresses the subject of fair and adequate representation for all constituents and also "fits" the seven essential network resources more closely. This match between the governance structure and the actual operation or technical aspects of the FIRN was considered a major objective when developing the structure. While all seven resources must be addressed separately, they must all blend as a whole or the FIRN will not provide the many benefits, previously outlined, in a cost-effective and fair manner. The same holds true with the governance structure. Separate issues will require focused attention, but yet must "fit" as a whole. We are confident that a fair technical and administrative blend will be achieved through implementation of the proposed structure. The narrative following the organizational chart attempts to provide more information as to the role and scope of the various governance entities.

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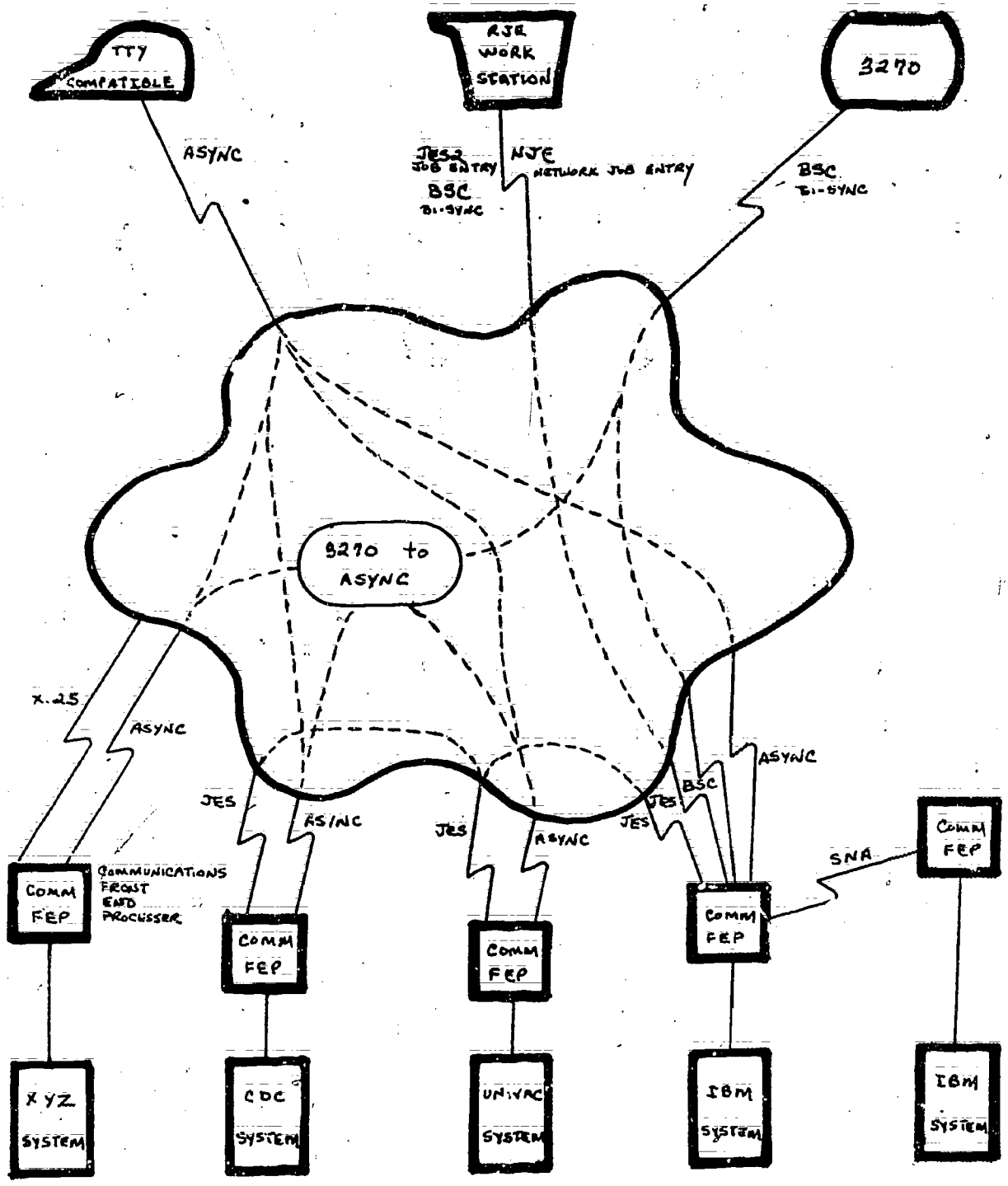
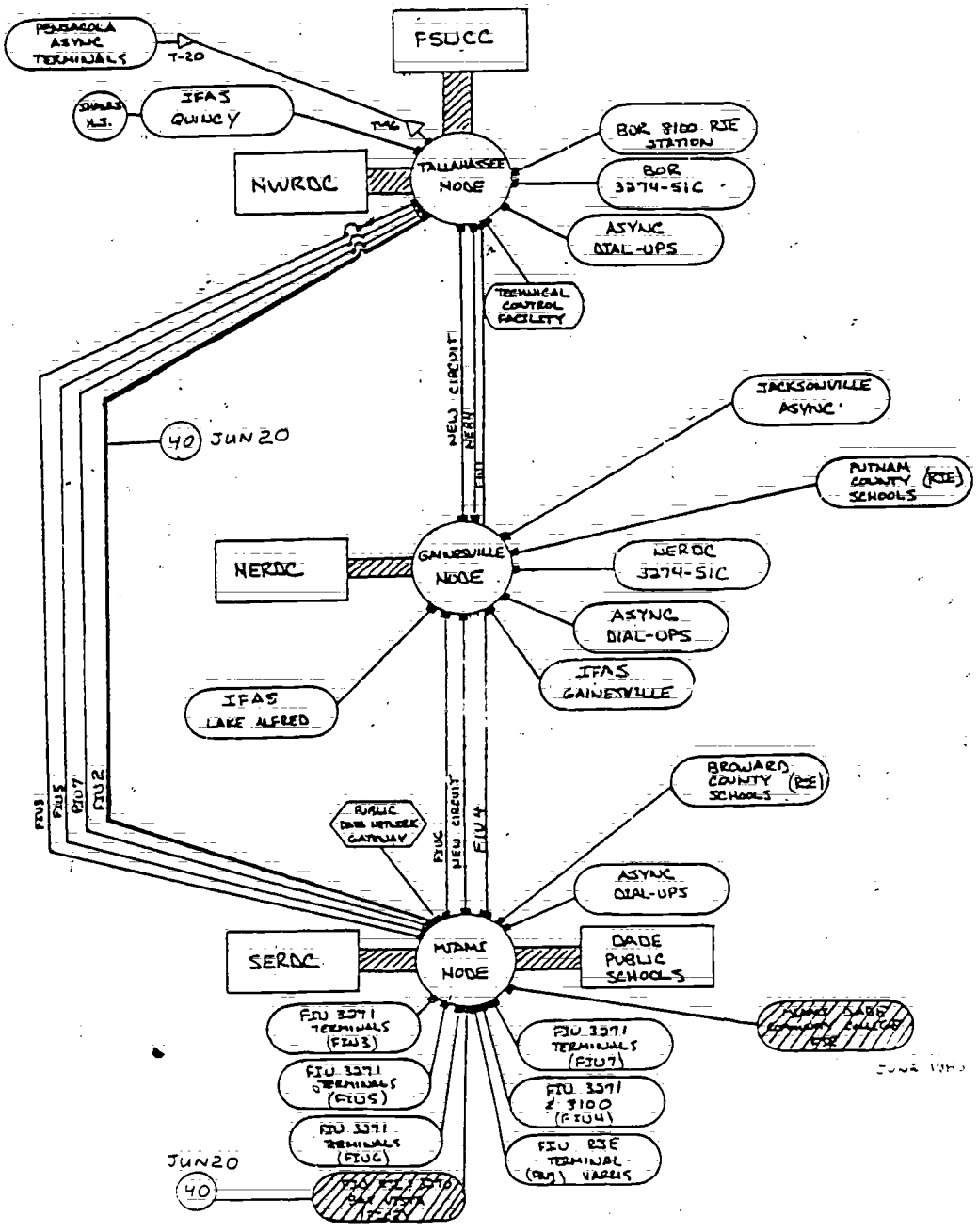
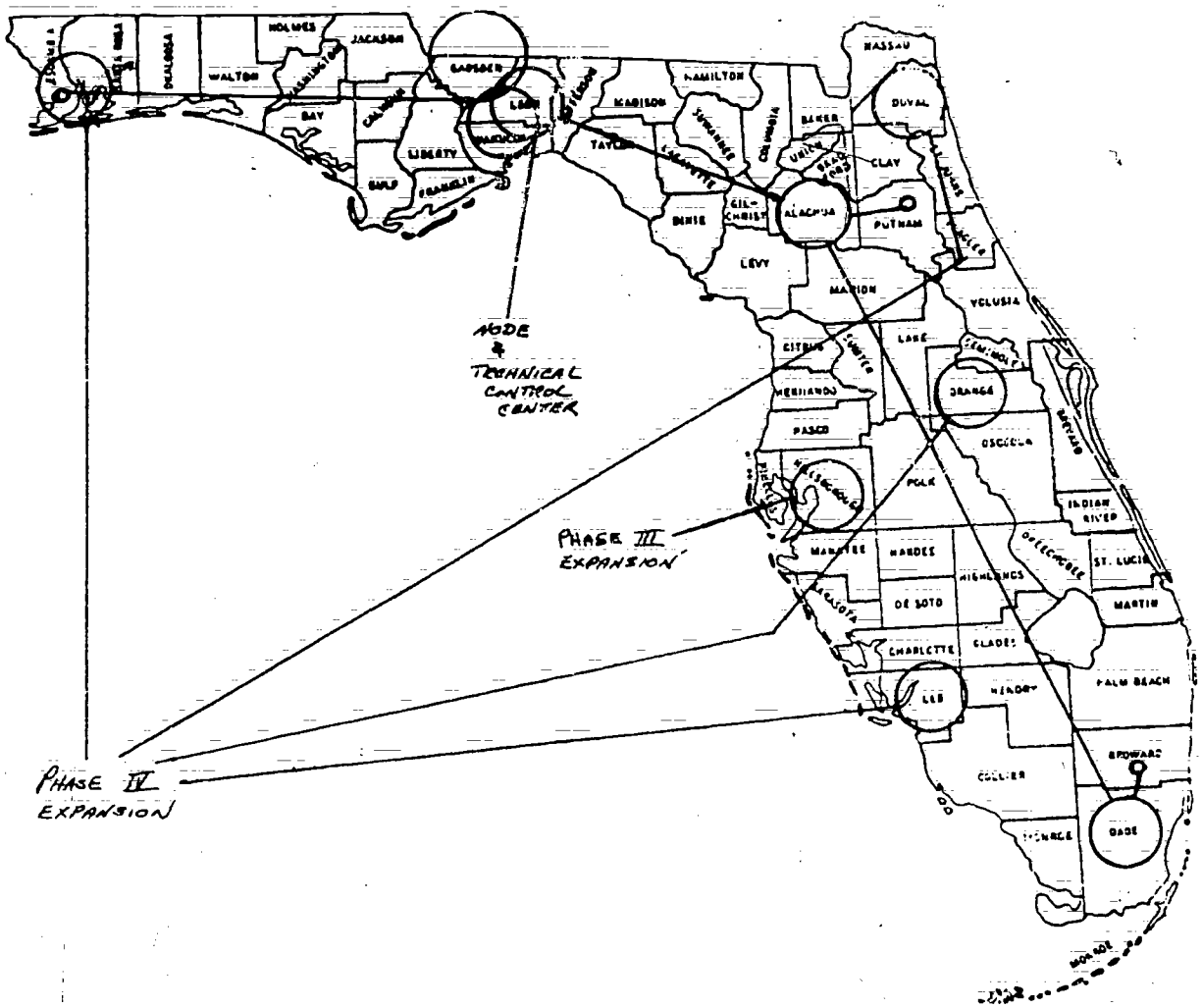
The following illustration reflects the "logical" paths which will be taken inside the "cloud":



As part of Phase II, which is in-progress, a network pilot project is being conducted as described in Section II.B.7. A full one year "pilot" **(after providing approximately 6 months for Network Hardware/Network Software acquisition)** is essential to all future phases of the FIRN. In essence, **the existing resources and the "pilot" form the foundation of the FIRN!**
The "technical services" which are being tested during this Phase II Pilot include:



As the FIRN moves into Phase III, a fourth node will be established in Tampa. Each time a node is added to the network additional funds will be required for start-up equipment, a person will be hired for that node and the ongoing software and hardware maintenance costs will increase. During Phase III, it is estimated that the monthly ongoing maintenance cost for this hardware and software will be approximately $20,000. The network will resemble the following illustration:



Phase IV will further expand the FIRN by establishing nodes in Pensacola, Jacksonville, Orlando and Ft. Myers. The Technical Control Center (TCC) staff in Tallahassee will need to be expanded and another person will be stationed at each new node in the network bringing the remote or node staff reporting to the TCC to a total of eight persons. The 67 school districts will be either directly or indirectly (routed through host) to these eight nodes in the FIRN state-wide.

Having taken interactive ad hoc FIRN services to the 67 school districts in Phase IV, these functional computing services will now be expanded to all school sites during Phase V. A significant cost during this phase will be for the acquisition of terminals and/or microcomputers for all of these schools and the communication lines/modems required to link these school-based terminals and/or microcomputers to district facilities.

A diagram of the FIRN after completion of Phase V would be quite involved since the Florida system of public education will have in place, at a minimum:

1 Technical Control Center in Tallahassee;
5 SUS-Regional Data Centers;
8 Network Nodes in cities throughout the state;
20 School District and/or Regional Data Centers;
67 School Districts with equipment linked to the FIRN;
2300 plus school sites linked via district facilities;
9 State Universities (5 SUS-Regional Centers);
28 Community Colleges linked to nodes in the FIRN; and
Communication links to multiple governmental entities.

Approximately 20 school districts and/or regional data centers, mentioned earlier, will be identified by the Council and Department of Education as the FIRN evolves.

Very extensive Information/Application Software will be operational at all the schools and school districts by the close of Phase V. Even though the seven essential FIRN resources will have been addressed, it will still be necessary for the educational system to undertake one of the most ambitious ongoing training programs ever conducted. The objective of this training program will be to insure that the many users of the FIRN understand the services and facilities and how to best use them.

XII. A P P E N D I C E S

APPENDIX C.

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY (12/82)

DISTRICT	EQUIPMENT	CONTACT PERSON
Alachua	IBM 4331, TRS-80's	John Neller
Baker	NCR 499, TRS-80's	Janet DeBoe
Bay	Data 100, terminals to NWRDC	Harvey Casey
Bradford	IBM System/3, TRS-80's	Mike Reddish
Brevard	IBM 4341	Tom Jordan
Broward	IBM 4341 (2), 170 minicomputers	Fred Kauffman
Calhoun	NCR 399, terminals to NWRDC	Andrew Ramsey
Charlotte	NCR 8410	John Sullivan
Citrus	IBM System/3	Edward Neeb
Clay	Datapoint 6600	Lyman Dingman
Collier	PDP 11/40, IBM 4331	Max Ulm
Columbia	IBM System 34	Roger Noll
Dade	NAS 9050 linked to all schools	Alan Olkes
De Soto	NCR 399, terminals to Lee	George Latimer
Dixie	terminals to NEFEC (Putnam)	Barbara Naylor
Duval	B-7700(City)	Robert Stanley
Escambia	B-2930	Clayton Lewis
Flagler	IBM System 34	Mark Greason
Franklin	terminals to NWRDC	Bob Daria
Gadsden	L-8500, L-9000, link to NWRDC	Jake Parslow
Gilchrist	terminals to NEFEC (Putnam)	Ann Combs
Glades	terminals to Lee	Lester Mensch
Gulf	NCR 499, terminals to NWRDC	Walter Wilder
Hamilton	IBM 5110	Margaret Scaff

APPENDIX C (continued)

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

DISTRICT	EQUIPMENT	CONTACT PERSON
Hardee	L-8500, terminals to Lee	Patricia Marsh
Hendry	B-800	Tom Boswell
Hernando	B-1700 (county)	Julian McCracken
Highlands	NCR 399, terminals to Lee	Wallace Cox
Hillsborough	IBM 4341	Mary Esther Raker
Holmes	NCR 399, terminals to NWRDC	Amy Faircloth
Indian River	B-1955	Tom Dooley
Jackson	NCR 399, terminals to NWRDC	Evelyn Johnson
Jefferson	terminals to NWRDC	Anita Sapp
Lafayette	planned link to NWRDC	Randall Hewitt
Lake	IBM 4331	Bob Greer
Lee	IBM 4331	Willis Rich
Leon	IBM 4331	Joe Klock
Levy	NCR 399, IBM System 34 to NEF	Earl Moon
Liberty	NCR 399, terminals to NWRDC	Wendy Phillips
Madison	NCR 399, terminals to NWRDC	
Manatee	IBM 4341 (shared with MJC)	Robert Dexheimer
Marion	IBM System 38	Ronald Lehmann
Martin	B-900 (2), B-1955	Gene Fleming
Monroe	IBM System 34	Bob Todd
Nassau	B-711-1, terminals to NWRDC	Gary Harnage
Okaloosa	IBM 370/115	John Bruner
Okeechobee	NCR 399, planned link to Lee	Dorothy Kinsaul

APPENDIX C (continued)

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

DISTRICT	EQUIPMENT	CONTACT PERSON
Orange	IBM 3031-AP	Craig Rinehart
Osceola	B-1955	Don Young
Palm Beach	IBM 4341, IBM 370/138	Robert Hilterman
Pasco	B-1955, Honeywell 62/40	Russ Miller
Pinellas	Honeywell 66/05	Walter Croke
Polk	IBM 4331	Harry Bedford
Putnam	IBM 4331	Lyle (Bucky) Buck
St. Johns	B-1955	David Toner
St. Lucie	NCR 8550, NCR 399 (2)	Bill Merryman
Santa Rosa	IBM System/3 with link to NWRDC	W. Robert Land
Sarasota	NCR 8455, NCR 8555	Robert Rogers
Seminole	IBM System/3, TRS-80's, Apple's	Randall Johns
Sumter	B L-8000, RJE link to Lake	Bill Spell
Suwannee	NCR 499, terminals to NWRDC	Madelyn Baucom
Taylor	NCR 399, terminals to NWRDC	Vince Dorman
Union	terminals to NWRDC (Putnam)	Howard McNeill
Volusia	IBM 4331	Dick Snyder
Wakulla	terminals to NWRDC	R. H. Carter
Walton	B L-8000, terminals to NWRDC	David Johnson
Washington	IBM 1130-2B, Data 100 to NWRDC	John Adams

APPENDIX C (continued)

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

COLLEGE	EQUIPMENT	CONTACT PERSON
Brevard	B-3741, B-771, B-874	William Angel
Broward	IBM 4341	Roy Freeman
Central Fla.	Xerox 530, IBM 1130, Brevard link	Bill Dampier
Chipola	IBM 1130, Univac V-77, NWRDC link	Carlotta Appleman
Daytona Beach	B-6807	Anthony Yebba
Edison	IBM 1130/2C, terminals to PBJC	David Wallace
FJC	IBM 4341	Bill McTammany
Fla. Keys	IBM System 34	John Andrews
Gulf Coast	B-1855	Herman Spering
Hillsborough	IBM 370/138	Peter Greco
Indian River	IBM 4331	Pat Voncks
Lake City	IBM 1130, D-116, D116E, B-771 terminals linked to Brevard CC	Jamie Bass
Lake-Sumter	Data General C/300	
Manatee	IBM 4341 (shared with Sch. Dist.)	Ron McCord
Miami-Dade	NAS 5000	Phil Nicely
North Florida	IBM 1130, terminals to NWRDC	Wanda Hodnett
Okaloosa-Walton	IBM 4331	Marty Steinberg
Palm Beach	IBM 4341, IBM 370/125	Jack Kelly
Pasco-Hernando	B-1855	Harlow Kendig
Pensacola	B-6700	Dick Monish
Polk	B-1955, B-1860	Jay Richardson

APPENDIX C (continued)

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

COLLEGE	EQUIPMENT	CONTACT PERSON
St. Johns	IBM System 34	Richard Clark
St. Petersburg	B-3700	Richard Brett
Santa Fe	IBM 4331	Robert Roberts
Seminole	Burroughs 1855	Orvin Stai
South Florida		
Tallahassee	IBM 4331 (shared with Leon)	Mitch Davidson
Valencia	IBM 4341	Larry Hawkins

APPENDIX C (continued)

SUMMARY OF FLORIDA EDUCATIONAL COMPUTING CAPABILITY

University	EQUIPMENT	CONTACT PERSON
FAMU	Link to NWRDC Harris S125, IBM 8100	Prince Hinson
FAU	Link to SERDC & NWRDC Univac 1106, Data 100 78 IBM 8100, Harris S123	William Hunt
UCF	Link to NWRDC, NERDC, CFRDC Harris S550 & S800, IBM 8100	Bill Branch
UNF	Link to NERDC, Harris S120	Jack Tinsley
UWF	Link to NWRDC, IBM 4341, IBM 3741 & 8100	Russell Lee
Institutional Research	Link to NERDC 2 DEC VAX 11/780	Mark Hale
Admin. Ctr.	Link to NWRDC, 3 IBM 3777	Jim Spencer
Research Ctr.	Link to CFRDC, 3 Data 100 Hetra, 2 Series 1, IBM 8100	Charles Fisher
Admin. Ctr.	Link to NERDC, IBM 4331, 3777	Jack Hadley
IFAS	Link to NERDC DEC VAX 11/750	Tom Hintz
REGIONAL DATA CENTERS:		
FSUCC	CDC Cyber 730 CDC Cyber 76	Howard Huff
CFRDC	IBM 3033N8	John Jackson
NERDC	Amdahl 470 V/6-II, IBM 4341 IBM 3033N12	Ronald Schoenau
NWRDC	Amdahl 470 V/6-II, IBM 4341	Steve Botts
SERDC	Univac 1100/81	Jim Helms

DATA ELEMENT DIRECTORY (Sample Pages)

STUDENT/PROGRAM DATA ELEMENTS

ELEMENT NAME	USE	TYPE	FIELD SIZE	FIELD TYPE	EDP	DEFINITION/DOMAIN	PUPIL NUMBERS
ALTERNATIVE EDUCATION PROGRAM, SCHOOL	1	B	1	N	2	The school is conducting an alternative education program: 0 No 1 Yes	ESE 201
ASSESSMENT RESPONSIBILITY, PREP	1	B	4	N	3	The personnel in the district who are responsible for PREP assessments (mark all that apply): 1 Classroom Teachers 2 Primary Specialists 3 Other, Specify 4 Other, Specify	ESE 260
ASSESSMENT STATUS, PREP	1	A	1	N	1	The student's assessment status: 1 Requires further assessment 2 Receiving further assessment 3 Further assessment not required	ESE 260
ASSESSMENT CODE	3	A	1	N	-	A code to indicate the reason for a student to be assigned to a school: 1 Original assignment 2 Continuing assignment (original assignment to this school then left county and subsequently returned to same school in county where previously assigned). 3 Exceptional student assigned to a school outside geographical attendance area. 4 Change in residence (hardship) 5 No bus transportation (hardship) 6 Recommendation of qualified psychiatrist, psychologist, physician, or juvenile court 7 Educational reasons 8 Unusual circumstances	None
ATTENDANCE POLICY, VETERAN EDUCATION	1	B	300	A/N	4	The school's attendance policy as it pertains to veterans.	DVE 576
AWARD TYPE, VOLUNTEER PROGRAM	3	B	3	N	4	The type of award received by the district in connection with its volunteer program (mark all that apply): 1 Golden School Award(s) 2 Silver School Award(s) 3 Superintendent Award	ESE 379 (Vol)
BIRTH DATE VERIFICATION SOURCE	2	A	2	N	3	The type of evidence used to verify the student's birthdate. Suggested possible options: 01 Birth certificate 02 Baptismal certificate 03 Passport or immigration card 04 Life insurance policy (in effect at least two years) 05 Family Bible 06 Driver's License 07 School Records 08 Affidavit of parents and physician 09 Other, specify 10 None, verbal statements only	ESE 047, ESE 386
BIRTH PLACE	2	A	41	A	3	The city, state and county of record where the child was born: City 15 chr. State 2 chr. County 12 chr. Country 12 chr.	ESE 047, ESE 386
BUS NUMBER	1	A	4	N	1	The official number used by the district for the bus to which the student is assigned for transportation purposes.	ESE 233
BUS ROUTE NUMBER	3	A	4	N	-	The number assigned to the school bus route.	None
BUS RUN NUMBER	3	A	1	N	-	The number of a school bus run when the route is considered to comprise more than one run.	None

STAFF DATA ELEMENTS

ELEMENT NAME	USE	TYPE	FIELD SIZE	FIELD TYPE	EDP	DEFINITION/DOMAIN	FORM NUMBERS
ACTIVITY ASSIGNMENT DESCRIPTION	1	-	300	A	2	A short description of duties and responsibilities to be performed by the staff member according to the activity assignment (See ACTIVITY ASSIGNMENT).	ESE 103, ESE 197, ESE 357
ACTIVITY ASSIGNMENT ENDING DATE	2	-	6	A/N	1	The scheduled ending date during the year for an activity assigned to the staff member (Month, Day and Year, i.e., MM/DD/YY).	ESE 103, ESE 227, ESE 324 ESE 357, ESE 424, ESE 489 ESE 494, ESE 531
ACTIVITY ASSIGNMENT ENDING TIME	2	-	6	A/N	1	The scheduled ending time on the days during the the week for an activity assigned to the staff member (Hour, Minute and Meridian, i.e., HH/MM/XM, where X = A or P).	ESE 016, ESE 028, ESE 042 ESE 046, ESE 058, ESE 066 ESE 071, ESE 103, ESE 192 ESE 196, ESE 197, ESE 227 ESE 265, OEFC 316, ESE 333 ESE 357, ESE 369, ESE 379 (Vol), ESE 424, ESE 437, ESE 461, ESE 494, ESE 499, ESE 531
ADDRESS, CONTACT PERSON	1	-	42	A/N	1	The street or P.O. Box, City, State and Zip Code address of the staff member who has been designated as the contact person for a state or federal program: Street or P.O. Box — 20 Char City — 15 Char State — 2 Char Zip Code — 5 Char	ESE 016, ESE 023, ESE 024 ESE 028, ESE 065, ESE 066 ESE 071, ESE 102, ESE 157 ESE 176, ESE 186, ESE 192 ESE 211, ESE 227, ESE 260 ESE 265, ESE 307, ESE 309 ESE 321, ESE 376, ESE 379 ESE 418, ESE 437, ESE 461 ESE 467, ESE 490, ESE 494 ESE 499, ESE 512, ESE 513 ESE 525
ADDRESS, RESIDENCE	3	-	42	A/N	-	The stree or P.O. Box, City, State and Zip Code address where the staff member resides: Street or P.O. Box — 20 Char City — 15 Char State — 2 Char Zip Code — 5 Char	None
BARGAINING UNIT, UNION	3	-	2	A/N	-	The union unit to which a staff member is affiliated for the purpose of collective bargaining.	None
BILINGUAL ABILITIES	3	-	6	N	-	A code which indicates a staff member's proficiencies in languages other than English. See Table 9.	None
BIRTH DATE	3	-	6	N	-	The month, day and year on which a staff member was born. The format is MMDDYY.	None
BIRTHPLACE	3	-	22	A/N	-	The city and two character abbreviation of state as approved by USPS regulations. See Table 8. If foreign born, indicate country.	None
CERTIFICATE EXPIRATION YEAR	2	-	2	N	2	The year in which the staff member's teaching certificate, issued by the Florida Department of Education, expires.	ESE 046
CERTIFICATE NUMBER	1	-	6	N	1	The identifying number as it appears on the staff member teaching certificate issued by the Florida Department of Education.	OTE 206, ESE 324, ESE 424 ESE 531
CERTIFICATE TYPE	3	-	1	A	-	The type of teaching certificate issued to the staff member by the Florida Department of Education: R Regular T Temporary	None
CERTIFICATE TYPE, DEAF-BLIND PROGRAM	1	-	45	A/N	3	The type of a teaching certificate issued to the staff member.	ESE 357
CERTIFICATE AREAS	3	-	30	N	-	The functional areas as they appear on a staff member's teaching certificate within which the staff member is certified. See Table 6.	None
CERTIFICATION AREAS, DEAF-BLIND PROGRAM	1	-	36	A/N	3	The subject areas in which the staff member, working in the deaf-blind program, is certified.	ESE 357
CERTIFICATION STATE, DEAF-BLIND PROGRAM	1	-	15	A	3	The state where the staff member received a teaching certificate.	ESE 357
COLLEGES ATTENDED, DEAF-BLIND PROGRAM	1	-	30	A	3	The names of colleges and/or universities that the staff member attended to receive his/her degrees.	ESE 357

FINANCE DATA ELEMENTS

ELEMENT NAME	USE	TYPE	FIELD SIZE	FIELD TYPE	EDP	DEFINITION/DOMAIN	FORM NUMBERS
COST CATEGORY, CETA	1	-	3	N	1	The various categories of costs being reported for CETA funds (See AMOUNT, DOLLARS): 1 Administrative 2 Training Costs 3 Services to Clients	FA 400
COST CATEGORY, CETA-SECTION 204	1	-	1	N	3	The category for which a grant award amount is to be provided (See AMOUNT, DOLLARS): 1 Administration 2 Training 3 Services	ESE 429
COST CATEGORY/PROGRAM ACTIVITY, CETA-SECTION 303	1	-	1	N	3	The category for which a grant award amount is to be provided (See AMOUNT, DOLLARS): 1 Classroom training 2 On-the-job training 3 Work experience 4 Manpower services 5 Supportive services 6 Administration	DVE 428
COST CENTER TYPE	1	-	1	N	2	The type of unit to which costs and other reported financial data apply: 1 School 2 District 3 Teacher Education Center 4 Community College 5 Child Care Center 6 Outside School Hours Center 7 Title XX, Proprietary Center 8 Day Care Home	OTE 043, OTE 061, ESE 066, DVE 129, ESE 367, ESE 490
CREDIT MEMORANDUM NUMBER	3	-	10	A/N	-	The number for a notice of funds due to be returned to the school district.	None
CREDITOR, SUMMER FOOD SERVICE	1	-	37	A	3	The creditor to which money is still owed.	ESE 476
DATE	1	-	6	N	1	The calendar date in month, day and year (MM/DD/YY) when an event occured. (See DATE TYPE)	See Date Type
DATE TYPE	2	-	2	N	1	The event for which a date is being reported or maintained (See DATE): 01 Adoption/approval 02 Annual payment date 03 Bond callable date 04 Bond final maturity date 05 Bond issue 06 Contract/Agreement Signing (Award) 07 Contract/Agreement Termination 08 Interest rate begins 09 Loan approval date, Sec. 237.161 F.S. 10 Loan date 11 Monthly payment date 12 Obligation/encumbrance 13 Project starting date 14 Refunding date 15 Report beginning date 16 Report ending date 17 Semi-annual payment date 18 Special tax school district bond	ESE 003, OEFC 004, ESE 024, CE 129, ESE 140, ESE 145, ESE 157, ESE 160, FA 191, ESE 193, ESE 195 ESE 197, OEFC 207, OEFC 219, OEFC 220, OEFC 304, ESE 320, OEFC 352, ESE 367, ESE 369, ESE 374, FA 396, FA 399*, FA 400, OEFC 425, DVE 428, DVE 429, OEFC 442, ESE 470, ESE 473, DVE 575, ESE 523
DATE OF TRANSACTION	3	-	6	N	-	The date a transaction is recorded.	None
DISTRICT NAME	1	-	12	A	1	The official name of the district.	As Appropriate
DISTRICT NUMBER	1	-	2	N	1	The number of the district determined by its numerical position relative to other districts when listed alphabetically.	As Appropriate
EDUCATIONAL IMPROVEMENT/ SUPPORT SERVICES, TITLE V-CH. 2	1	-	1	N	3	The categories in which Title V-Ch. 2 funds have been and will be allocated for each of three fiscal years for educational improvement and support services (See AMOUNT, DOLLARS): 1 Acquisition and utilization of school library resources instructional equipment and materials 2 Improving local educational practices 3 Minority group concentration or isolation 4 Guidance, counseling, and testing	ESE 320

FACILITY DATA ELEMENTS

ELEMENT NAME	USE	TYPE	FIELD SIZE	FIELD TYPE	EDP	DEFINITION/DOMAIN	FORM NUMBERS
BUILDING OWNERSHIP	I	-	2	N	1	The ownership of the building: 01 Federal 02 State 03 County Commission 04 Municipal 05 School Board 06 Authority 07 Lease Purchased 08 Leased (Rented) 09 Combination 10 Private 11 Other	OEFC 223
BUILDING PLAN FOR PARCEL	I	-	1	N	1	The type of building plan for the parcel of land: 1 Finger Type Plan 2 Campus Plan 3 Compact Plan 4 Modified Co t 5 Combinatio	OEFC 222
BUILDING PRIMARY USE	I	-	2	N	1	The primary use of the buildir g: 01 Abandoned 02 New Awaiting Occupacy 03 Vacant 04 Pre-Kindergarten 05 Kindergarten 06 Elementary School 07 Middle School 08 Junior High School 09 High School 10 Exceptional Child 11 Combination of Grades 12 Agriculture Farm 13 Physical Education Building 14 Playground Facility 15 Stadium 16 Adult Education 17 County Administration 18 Warehouse Building 19 Maintenance Building 20 Pupil Transportation 21 Food Service Building 22 Community Service Building 23 Joint Use Facility 24 Multiple Use Support Service 25 Other	OEFC 223
BUILDING STORIES	I	-	2	N	1	The numbe: of stories in building without counting basement as a story if ceiling is less than 3 feet above ground level.	OEFC 223
BUILDING YEAR OF CONSTRUCTION	I	-	4	N	1	The calendar year in which construction started on the building or the mobile unit.	ESE 157, OEFC 223
BUS, JOINT-USE PROJECT	I	-	1	N	2	The bus is being used in the district's joint use project: 0 No 1 Yes	ESE 376
CAPITAL OUTLAY CLASSIFICATION	I	-	2	A/N	2	The type of classification recommended by school plant survey to the center. The classification type determines the extent to which certain funds may be used for capital improvement at the center: C1 Ed plant recommended for continued use C2 Ed plant in transition with insufficient evidence for any recommendation C3 Ed plant recommended as unsatisfactory C6 Ancillary Facility recommended fo. continued use C7 Unsatisfactory ancillary facility	OEFC 217
CLASSROOMS	I	-	3	N	1	The number of classrooms housed in the school building by type: 1 Regular 2 Kindergarten 3 Special 4 Portable 5 Other	OEFC 219

ELEMENT NAME	USE	TYPE	FIELD SIZE	FIELD TYPE	EDP	DEFINITION/DOMAIN	FORM NUMBERS
AGE GROUP NONPUBLIC SCHOOL STUDENTS, EXCEPTIONAL EDUCATION	I	B	3	N	3	The number of contracted or dually enrolled private school handicapped students by age grouping and type of disability: 1 0-2 2 3-5 3 6-17 4 18-21	ESE 227
EDUCATIONAL ENVIRONMENT NONPUBLIC SCHOOL STUDENTS, EXCEPTIONAL EDUCATION	I	B	1	N	3	The type of educational environment in which non-public school students need or are receiving services: 1 Regular Class 2 Separate Class 3 Separate School Facility 4 Other Educational Environment 5 Early Education	ESE 227
GRADE LEVEL NONPUBLIC SCHOOL STUDENTS	I	B	4	N	3	The number of nonpublic school students by grade: PK Prekindergarten Kg Kindergarten 01 Grade 1 02 Grade 2 03 Grade 3 04 Grade 4 05 Grade 5 06 Grade 6 07 Grade 7 08 Grade 8 09 Grade 9 10 Grade 10 11 Grade 11 12 Grade 12	ESE 016
HANDICAP TYPE NONPUBLIC SCHOOL STUDENTS, EXCEPTIONAL EDUCATION	I	B	3	N	3	The type of handicap of nonpublic school students contracted or dually enrolled. 01 Mentally Retarded 02 Hard of Hearing 03 Deaf 04 Speech Impaired 05 Visually Impaired 06 Seriously Emotionally Disturbed 07 Orthopedically Impaired 08 Other Health Impaired 09 Specific Learning Disabled 10 Deaf-Blind 11 Total 12 Multihandicapped	ESE 227, ESE 277
HAZARD IDENTIFICATION CODE	I	-	6	N	3	A six digit code assigned to a hazardous walking condition agreed to by local governmental entities as specified in Section 234.01, Florida Statutes. The first two digits correspond to the fiscal year of first classification and the last 4 digit represent a sequential local numerical listing of said conditions.	ESE 422
HAZARD JURISDICTION	I	-	1	N	3	The governing authorities having jurisdiction where the hazardous condition occurs (Mark all that apply): A County B City C State D Federal E Other	ESE 422
HAZARD LOCATION	I	-	75	A/N	3	The location of the hazardous walking condition including the highway, site, town or city (e.g., Mt. Heaven at the corner of Seminole and Gator Streets., Hwy. 210, 3 miles north of Mt. Heaven by Timber Mining Company's main gate, etc.)	ESE 422
HAZARDOUS CONDITION, CODE	I	-	1	A	3	The condition which best describes the nature of an identified walking hazard: A Walkways parallel to road B Walkways perpendicular to road C Combination of A and B	ESE 422
HAZARDOUS CONDITION, DETERMINATION DATE	I	-	6	N	3	The date the hazardous walking condition was determined (Month, day, and year: MM/DD/YY)	ESE 422

STATE UNIVERSITY SYSTEM OF FLORIDA
RECOMMENDATION FOR AN EDUCATIONAL COMPUTER NETWORK

During January of 1980, the Board of Regents, Management Information Systems office, established a network technical committee comprised of the associate directors of each of the State University System (SUS) regional data centers, and charged it with the identification of the next step to be taken by the existing SUS computer network. This group reviewed the history of the current facility, its limitations, positive factors and anticipated needs for the future. The committee first determined that the IBM System Network Architecture (SNA) portion of the facility should be retained and enhanced. How to accomplish this and add the features that SNA lacked or did not perform well was the issue at hand. In addition, this group felt strongly that the end product must be capable of evolving into a state-wide facility for all Florida educational entities and possibly for all state government agencies. Thus, representatives from the Department of Education and Department of General Services were asked to join in the deliberations and proceedings.

Visits by the committee to IBM'S Raleigh and Univac's Salt Lake City communications headquarters proved that the vendors were thinking in similar terms, but were not yet prepared to present an effective homogeneous solution. It was deemed that a formal Request for Information (RFI) document, to be released to the vendor community, would be of great benefit in telling what the state of the art in communications could offer. The RFI was developed so that it contained all of the functions and features that were identified as requirements by the committee. It also contained a requirement for system-to-system communications that was identified by the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida. This instruction and research need greatly enhanced the requirements in terms of supporting a wide variety of equipment types all over the state and gave credence to the idea of having an international standard communications protocol co-existing with the SNA environment. After considerable effort, this document was finalized in late December, 1980, and issued to 16 computer and communications vendors on December 30, 1980.

On March 3, 1981, the SUS received eight formal responses to this document. The committee found that only four of these responses were complete. It was deemed that each of these four should be asked for an oral presentation on how they would configure and install a pilot project between Miami, Gainesville, and Tallahassee. This pilot would be on a one-year lease and would be used to test out all desired features and functions. At the end of the one-year term, the SUS would have the option of purchasing and expanding this solution or start seeking other alternatives. In any event, the capabilities of the solution

would be a known factor before fully committing to a long term, expensive investment.

The four vendors were scheduled for presentations on April 21 and 22, 1981. During these two days of intensive evaluation, the committee found that only two were acceptable. While there were still numerous questions on the solutions presented, it was obvious that:

1) At least two vendors could provide the functions, features and interfaces necessary for the next step in the SUS network.

2) Both acceptable vendors use the international standard packet switching protocol X.25.

3) Access to public data networks was possible and could be of great benefit.

4) Such a solution could be the foundation for an educational network in Florida and could possibly be expended to serve all of Florida government.

5) It was determined that the pilot could be performed on a one-year lease by both vendors. It is the recommendation of this technical committee that steps be taken to acquire such a solution.

(Copies of the RFI and evaluation performed by the Committee, or information on the features and functions covered may be obtained from the BOR/MIS office, phone 904/488-6030.)

Appendix F
Proposed Procedure

FLORIDA DEPARTMENT OF EDUCATION

DATA COLLECTION REVIEW AND APPROVAL PROCEDURE

- Florida Department of Education Data Collection Activities to be Distributed to School Districts
- All Division of Public School Data Collection Acctivities

DIVISION OF PUBLIC SCHOOLS
DATA COLLECTION REVIEW AND APPROVAL PROCEDURE

I. STATUTORY AUTHORITY

This procedure implements the provisions of Chapters 120 and 229, Florida Statutes, which address state education agency data collection activities. Section 120.53, Florida Statutes, requires the Department of Education to establish rules of practice for adopting or modifying agency rules. A rule is defined in Section 120.52(14), Florida Statutes, to include any form which imposes any requirement or solicits any information not specifically stipulated in statute or existing rule. As part of the Department of Education's adopted rules of practice, the Division of Public Schools is required to list in Section 6A-1.011 of the Florida Administrative Code all Florida Department of Education data collection activities approved for distribution to school districts and Division of Public Schools data collection activities approved for distribution to nonpublic schools or to public or nonpublic agencies. Section 229.555(2)(a)12, Florida Statutes, directs the Commissioner of Education to initiate a "reports-management and forms-management system to ascertain that duplication in collection of data does not exist and that forms and reports are prepared in a logical and uncomplicated format, resulting in a reduction in the number and complexity of required reports, particularly at the school level ..."

II. Data Collection Activity Defined

A data collection activity is defined as any request or requirement for the collection, maintenance, or reporting of information or data elements by any manual or automated procedure. Automated or manual procedures include, but are not restricted to, forms, telephone surveys, memoranda, interviews, magnetic tapes or other electronic means of submission.

III. Department Policy

All data collection activities to be distributed to school districts under the sponsorship of the Department of Education must be reviewed and approved prior to distribution. Such data collection activites will be reviewed by the Management Information Services Section (MIS), Bureau of Program Support Services, Division of Public Schools, and by the Data Review Committee of the School District Council on Comprehensive Management Information Systems.

All other Division of Public Schools data collection activities which are to be used in conjunction with performance or compliance audits or other monitoring activities, or which will be distributed to nonpublic schools or to public or nonpublic agencies, must be reviewed and approved by the Management Information Services Section prior to distribution.

IV. Review and Approval Procedure and Criteria

Review and approval of data collection activities may be initiated by either the department program sponsor or by the MIS section.

A. Department of Education data collection activities to be distribued to school districts must be submitted for review according to the following schedule:

Anticipated Distribution Dates of	Received in MIS Section No Later Than First Week of	Data Review Committee Action First or Second Week of
July 1 - Sep. 30	January	February
Oct. 1 - Dec. 31	April	May
Jan. 1 - Mar. 31	July	August
Apr. 1 - June 30	October	November

Emergency requests for review and approval which cannot be accomodated by the above schedule will be reviewed on an individual basis. Requests for emergency review of Division of Public Schools or Division of Vocational Education data collection activities must be authorized by the respective representative Division Director or his designee. (See Appendix A.)

The Schedule for emergency review is as follows:

Received in MIS Section No Later Than	Data Review Committee Emergency Panel Action
Each Friday	Following Friday

B. Division of Public Schools Data Collection Activities, other than those included in Section IV.A., must be submitted to the MIS Section for review and approval no later than 20 working days prior to the first distribution or use date in each fiscal year.

C. MIS Section Review Criteria and Procedure

(1) Review Criteria

The purpose of the MIS review is to determine whether a data collection activity complies with the following criteria:

(a) Law or existing rule specifically stipulates a data collection requirement.

(b) Activities or tasks mandated under law or existing rule cannot be accomplished without the data which the activity will collect.

(c) The data are not presently collected by the Department.

(d) Cost of developing or modifying departmental data systems is justified in relation to state-level use.

(e) The requested data are consistent with the Data Element Directory, if applicable.

(f) Format, content, and other special methods and techniques to be used comply with established guidelines. (See Appendix B.)

(2) Review Procedure

(a) The sponsor will prepare and submit to the MIS Section, according to the schedule prescribed in Section IV.A. above, a draft of the data collection activity together with related memoranda, instructions or documentation and a completed or updated MIS Review Sheet. (See Appendix C.) Division of Public Schools or Division of Vocational Education Program sponsors requesting emergency review must also submit a completed Justification and Authorization for Emergency Review Form.

It is recommended that the MIS staff be consulted in the early phases of the development of new or substantially revised data collection activities.

(b) The MIS staff will conduct a technical review of each proposed data collection activity. Those data collection activities scheduled to be distributed to school districts which meet the criteria specified in Section IV.C.(1) above will be referred to the Data Review Committee for consideration along with the recommendations of the MIS Section (See Section V below).

(c) All other data collection activities included in Section IV.B. will be approved for distribution by the MIS Section if they comply with the criteria in Section IV.C. above.

V. Data Review Committee

The Data Review Committee is composed of 16 school district personnel nominated by the School District Council on Comprehensive Management Information Systems and appointed by the Director of the Division of Public Schools to review all Department of Education data collection activities intended for distribution to school districts. One half of the 16 member Committee is composed of members of the School District Council on Comprehensive Management Information systems. The remaining membership is drawn from district personnel at large. the Committee convenes according to the schedule prescribed in Section IV.A. above.

A. The purpose of the Committee is to review each data collection activity from the perspective of a district respondent and, accordingly, to make recommendations to the MIS Section using the following criteria in addition to those in Section IV.C.:

(1) The requested data are available in existing school district records and can be reported in the manner desired.

(2) The school district cost of collecting, maintaining and/or reporting the data are reasonable in relation to intended state-level use of the data.

(3) All instructions, documentation and other reporting requirements are clear and concise.

B. The Committee will review each data collection activity and made one of the following recommendations:

(1) Approved as submitted with no additional suggested changes

(2) Approved as submitted with additional suggested changes

(3) Approved as submitted only if specific changes are incorporated

(4) Not approved for distribution

(5) Other action.

VI. Data Collection Activity Approval

The department program sponsor will be notified in writing by the MIS Section of the approval status of the data collection activity. Data collection activities which satisfy the review criteria specified in this procedure will be approved for distribution.

VII. Appeal

Data collection activities which are not approved for distribut on may be appealed by developing and submitting a written memorandum to the MIS Section ·dicating the intent to appeal and the justification approving the data collection activity as ·riginally submitted. All appeals will be forwarded to:

A.	Division of Public Schools data collection activities	Director, Division of Public Schools
B.	All other Department of Education data collection activities	Deputy Commissioner, Department of Education

VIII. Printing and Distribution of Approved Data Collection Activities

A. The department program sponsor will prepare and send to the MIS Section the final camera-ready copy which incorporates all suggested or required changes, the MIS control number and expiration date, along with appropriate memoranda and instructions. (The MIS Section

can provide typesetting services if enough lead time is given for scheduling.) Camera-ready copy must be accompanied by a completed CS-3 Duplicating and Related Services Printing Request Form. (See Appendix D.)

B. The MIS Section, upon review of the final materials submitted, will issue an MIS Reproduction Authorization Form (See Appendix E), attach a completed CS-3 for for printing of 25 MIS copies, and forward all materials to Central Support Services for printing. If the data collection activity is to be printed outside the Department, the MIS Section must see and approve the final copy prior to the department program sponsor contacting Central Support Services for outside printing or other services.

C. The Data Collection Plan, Data Element Directory, and Section 6A-1.011, FAC, will be updated by the MIS Section when final copies of the activity are received in order to maintain a current profile of Department of Education and Division of Public Schools data collection activities.

D. Data collection activities to be used on an annual basis will be subject to annual review and approval. Data collection activities to be distributed to school districts will be called for review by the MIS Section approximately six months prior to the first distribution date in the next fiscal year according to the procedure described in Section IV.A. All other data collection activities shall be submitted to the MIS Section for review no later than twenty workdays prior to the first distribution date of the next fiscal year.

IX. Discontinued Data Collection Activities

Department data collection sponsors should contact the MIS Section well in advance of the date an approved data collection activity would have been distributed if it is to be discontinued.

Florida Department of Education
Division of Public Schools
Management Information Services

DATA COLLECTION ACTIVITY
JUSTIFICATION AND AUTHORIZATION FOR EMERGENCY REVIEW

This instrument is to be attached to the MIS Review Sheet	MIS Control Number

I. JUSTIFICATION (*Sponsor Complete This Section*)

1. Complete Title	2. Requested By (*typed name*)	
	(*signature*)	(*date*)
3. Briefly indicate why emergency review is being requested and why quarterly review procedures could not be met.		

II. AUTHORIZATION (*Division Director/Designee Complete This Section*)

4. The above request for emergency review by MIS is authorized.

(DIVISION DIRECTOR/DESIGNEE'S SIGNATURE) (DATE)

DATA COLLECTION TECHNICAL ANALYSIS GUIDELINES

A. FORMAT

1. Data collection activity does not appear overcrowded and reflects adequate spacing.

2. Excessive length is avoided and pages are numbered.

3. Type insures good readability and appearance with use of contrasting type for special instructions.

4. Department and Division/Bureau/Section identification appears at top of first page.

5. Title is descriptive of content and readily ble below Department/Division/Bureau/Section tification at top of first page.

6. MIS control number and expiration date appear on the bottom left-hand corner of first page.

7. Return date and address appear on the first or last page.

8. Individual's name does not appear in return address, only staff title.

9. Instructions are brief but not ambiguous.

   a. Brief instructions are located at the top of the first page.

   b. Comprehensive instructions are published separately in directives or manuals.

   c. Unique instructions appear before appropriate items.

10. Margins are adequate for printing and/or binding.

11. Box design format is used for questions and tables where possible.

12. Vertical alignment is used to minimize number of tab stops for typist.

13. Entry sequence insures left to right, top to bottom order of completion.

14. Format is suitable for key punching where automated processing is to be utilized.

B. Content

1. Standard terms and acr ns are defined.

2. Data elements are operationally defined.

3. Data entries are arranged in logical sequence.

4. Questions, statements, or headings are concise and avoid problems of interpretation or bias

5. Response alternatives are mutually exclusive and not ambiguous.

6. Response alternatives are appropriate for the type of data analysis to be conducted.

7. Formatting of response alternatives is consistent throughout the form or activity.

8. Data tables are constructed to facilitate accurate cross-tabulation.

9. Required calculations are clearly specified and explained.

10. Sam s, when employed, are representative of th population from which they are drawn and sa ie size is sufficient to permit adequate representation and analysis of important subgroups.

11. Statistical techniques employed are appropriate to the type of data collected and all measurement assumptions are reasonably satisfied.

Florida Department of Education

Division of Public Schools

Read instructions and review carefully b

1 Federal Form Number:	2. Offic
4 Authorization	

A data collection instrument is define
randa, which requests public or privat
Management Information Services (MI

Item

1. Federal Form Number: If this
and number of form.

2. Official Title: Record full title o
will appear in the State Board

Form
CS-3
Rev 7 82

FLORIDA DEPARTMENT OF EDUCATION
DUPLICATING AND RELATED SERVICES PRINTING REQUEST

Send completed requisition and manuscript copy to CSS, 411 Knott Bldg.

CSS received:
date _____
by _____

Title of Job: _____

NUMBER OF PAGES: _____

PAPER:
- ____ 8 ½" x 11" Size
- ____ 8 ½" x 14" Size
- ____ 20 lb. Bond
- ____ NCR
- ____ Color

STYLE:
- ____ One Side
- ____ Two Sides
- ____ Tumble
- ____ Book Style
- ____ Assemble
- ____ Collate Only

BIND:
- ____ Tape Spine
- ____ Padded (Glue)
- ____ 3 Hole Punch
- ____ 1 Fold
- ____ 2 Fold
- ____ Side Staple
- ____ Corner Staple
- ____ Do Not Staple

NUMBER OF COPIES: _____

Person Filing Requisition _____

Phone No. _____ Date _____

Division Name _____

Section Name _____

Date to be mailed, if by Duplicating Services _____

If to be delivered, please deliver to: _____

Building _____

Room Number _____

DOCUMENT CLASSIFICATION: This document is: (Check One)

Memo ____ Pamphlet ____ Book ____
Form ____ ____ Newsletter ____

APPROVED BY: _____
Bureau Chief or Designated Representative

The duplicating on this request (☐ is ☐ is not) considered a public document as defined by Section 257.05(1) of Florida Statutes.

SPECIAL INSTRUCTIONS: _____

APPROPRIATION : _____

ORG CODE			EO	OBJECT	AMOUNT		VENDOR I D	SOF	G L	TC
DIV	BUR	SEC								
0	0			230020				0	71100	00

FOR CSS USE ONLY

Masters Used: _____ Total Job Time: _____

Amount of Paper Used: _____ Covers: _____ MTSC: _____

XIII. G L O S S A R Y

ASCII Code- The acronym for American Standard Code for Information Interchange. This standardized code is used extensively in data transmission. The code includes 128 upper and lower case letters, numerals, and special purpose symbols each encoded by a unique 7-bit binary number.

Asynchronous communication- A method of transferring data where each character of information is transmitted separately. Each transferred character is preceded by a start bit and followed by a stop bit, permitting the interval between characters to vary.

Baud rate- Synonymous with signal events (bits-per-second or BPS) and used as a measure of serial data flow between a computer and/or communication devices.

Bit- A binary digit. A bit is the smallest unit of data in a digital computer.

Byte- A set of contiguous binary bits, usually eight, which are operated on as a unit. A byte can also be a subset of a computer word.

Central processor unit (CPU)- That unit of a computing system which fetches, decodes and executes programmed instructions and maintains the status of results as the program is executed. The subunits of a CPU typically include Accumulator and Operand registers, instruction logic, arithmetic/logic unit, I/O control logic.

COIN- College On-line Information Network - A computerized information network through which community college management information system (CCMIS) files can be accessed.

Council- School District Council on Comprehensive Management Information Systems

EBCDIC (Extended Binary-Coded Decimal Interchange Code)- An eight-bit character code used primarily by IBM equipment. This code provides 256 unique bit patterns.

Emulator- A program or hardware device which duplicates the instruction set of one computer on a different computer, allowing program development for the emulated computer without that computer being available.

FECP- Florida Educational Computing Project

FECN - Florida Educational Computing Network

Firmware- A computer program (software) that is implemented in hardware, such as read-only memory

FIRN- Florida Information Resource Network

Full duplex- Refers to a communication channel which can simultaneously and independently transmit and receive data.

Half duplex- Refers to a communication channel which can receive and transmit, but not simultaneously.

Hard copy- A printed output message as opposed to a volatile display on a video terminal.

Large-Scale Integration (LSI)- High-density integrated circuits for complex logic functions. LSI circuits can range up to several thousand transistors on a one-tenth of a square inch silicon chip.

Memory- A general term which refers to any storage media for binary data. Basic memory functional types include read/write and read-only.

Microcomputer- A class of computer having all major central processor functions contained on a single printed circuit board constituting a stand-alone module. Microcomputers are typically implemented by a small number of LSI circuits and are characterized by a word size not exceeding 16 bits, and very low cost, usually under $1,000.

Microprocessor- A single LSI circuit which performs the functions of a CPU. Some characteristics of a microprocessor include small size, inclusion in a single integrated circuit or a set of integrated circuits, and low cost.

Multiprocessing- A processing method in which program tasks are logically and/or functionally divided among a number of independent CPU's, with the programming tasks being simultaneously executed.

Multiprogramming- A programming technique in which two or more programs are operated on a time-sharing basis, usually under control of a monitor which determines when execution of one program stops and another begins.

Network- A structured connection of computer systems and/or peripheral devices, each remote from the others, exchanging data as necessary to perform the specific function of the network.

Node- An end point of a branch in a network, or a junction common to two or more branches in a network.

NERDC- Northeast Regional Data Center

NWRDC- Northwest Regional Data Center

Operating system- A structured set of software routines whose function is to control the execution sequence of programs running on a computer, supervise the input/output activities of these programs, and support the development of new programs through such functions as assembly, compilation, editing, and debugging.

Program- A complete sequence of computer instructions necessary to solve a specific problem, perform a specific action, or respond to external stimuli in a prescribed manner. As a verb, it means to develop a program.

Remote job (batch) entry- The processes of entering data processing jobs or tasks for execution from an input device as a terminal which is remote from the processing computer and connected to the computer by a communication line.

Response time- The time between the initiation on an operation from a computer terminal and the receipt of results at the terminal. Response time includes transmission of data to the computer, processing, file access and transmission of the results to the teminal.

SNA- IBM's System Network Architecture, a combination of hardware and software designed to support full function networking for a wide range of IBM products.

SUS- State University System

Synchronous communication- A method of transferring serial binary data between computer systems or between a computer system and a peripheral device; binary data is transmitted at a fixed rate, with the transmitter and receiver synchronized. Synchronization characters are located at the beginning of each message or block of data to synchronize the flow.

VEDOS- Vocational Education Data on Occupational Students

Word- A set of binary bits handled by the computer as the primary unit of information. The length of a computer word is determined by the hardware design. Typically, each system memory location contains one word.

X.25- This network architecture is the provisional recommendation from the Consultative Committee on International Telegraph and Telephone (CCITT) standards for packet-switched data transmission services.