ABSTRACT

LONG RANGE PLAN FOR THE
ELEMENTARY-SECONDARY-VOCATIONAL
INFORMATION SYSTEM

The 1980 Legislature directed the Elementary-Secondary-Vocational (ESV) Computer Council to develop a Systems Architecture and Long Range Plan for the computerized statewide education management information system used by the public schools and Department of Education in the State of Minnesota. This statewide system includes three major application systems for districts; a finance accounting and reporting system (ESV-FIN), a personnel/payroll information system (ESV-PPS), and a student records information system (ESV-SSS). Together, these application systems are known as the Elementary-Secondary-Vocational Information System (ESV-IS), which is accessed and used by the school districts through seven regional centers. In addition to ESV-IS, the statewide education management information system also includes a component intended to serve the management information needs of the Minnesota Department of Education. That component, known as the State Department of Education Information System (SDE-IS), is operated by the Department. Although it was originally intended that SDE-IS would be a counterpart to ESV-IS with an information base comprised of data transferred from ESV-IS, that is currently true only for the financial accounting and reporting application where ESV-FIN data is transferred to the Department's counterpart, SDE-FIN. Department needs for information in the other application areas are met through district completion of approximately 198 paper/pencil forms.

The intent of this plan is to refocus the various activities of the legislature, State Department of Education, regions, and school districts to attain a total management information system to meet information needs at the local, state, and federal level.

The 1984 Legislature included the following language in the conference committee appropriation bill:

"As part of the fiscal year 1986-87 biennial budget process, the commissioner shall, with the assistance of the ESV Computer Council, prepare a plan for modification of the statutory requirement for school district affiliation with a regional center. This plan shall include recommendations for any statutory amendments required to implement this change in policy." Laws of 1984, Chapter 654, Article 4, Section 1.

This directive is also addressed within the context of this Long Range Plan and not dealt with as a separate, isolated policy issue apart from related issues impacting school districts, ESV Regions, the MDE, and state reporting.

Specific findings and conclusions have been provided in relationship to the basic assumptions of the original plans to develop a statewide system. These findings and conclusions are followed by a set of goals and objectives with specific strategies to provide direction for the next three to five years.

While there are many specific strategies in the report, the basic premises can be summarized as follows:

1. The total management information system referred to as ESV-IS and SDE-IS should be continued and completed to include personnel and student information.

2. The regional service centers should be continued with funding provided by district user fees and state reporting subsidies.

3. Computer hardware decisions should be made on a "business decision" basis recognizing an increased role for microcomputers by many districts.

4. Software decisions should be made at the local and regional levels with state approval limited to the ability of the software to meet state reporting requirements.

5. The state should provide a financial incentive for districts to share common software by providing a base level of support for a single version of mainframe software and a single version of a microcomputer version to cover all reporting requirements.

6. A check and balance between resources available and user needs should be instituted by requiring school districts to pay for system changes that are not required by the state.

While the plan may be periodically modified, it is intended to provide major policy direction for a two year period. During this two year period, we anticipate a gradual district evolution to increased use of technology within the district and diminished reliance on remote mainframes for management information processing. Therefore, the plan includes objectives and strategies designed to govern this transition period while preparing for new data processing service options for the future. At the end of the two year period, questions regarding mandated regional affiliation should be reassessed in light of technology and service mode changes occurring during the term of this plan.

INTRODUCTION

The 1983 Legislature directed the Elementary-Secondary-Vocational
(ESV) Computer Council to develop a Systems Architecture and Long
Range Plan for the computerized statewide education management
information system used by the public schools and Department of
Education in the State of Minnesota. This statewide system includes
three major application systems for districts; a finance accounting
and reporting system (ESV-FIN), a personnel/payroll information system
(ESV-PPS) and a student records information system (ESV-SSS).
Together, these application systems are known as the
Elementary-Secondary-Vocational Information System (ESV-IS), which is
accessed and used by the school districts through seven regional
centers. In addition to ESV-IS, the statewide education management
information system also includes a component intended to serve the
management information needs of the Minnesota Department of Education.
That component, known as the State Department of Education Information
System (SDE-IS), is operated by the Department. Although it was
originally intended that SDE-IS would be a counterpart to ESV-IS with
an information base comprised of data transferred from ESV-IS, that is
currently true only for the financial accounting and reporting
application where ESV-FIN data is transferred to the Department's
counterpart, SDE-FIN. Department needs for information in the other
application areas are met through district completion of approximately
198 paper/pencil forms.

The ESV Computer Council established a subcommittee to gather relevant
information and draft a report. The entire Council reviewed,
modified, and adopted the final report. The intent of the Council is
to fulfill the direct charge of the 1983 Legislature and to provide
findings and recommendations which can be used by policy makers in
making decisions relative to the administrative use of computers in
education.

SECTION I: BACKGROUND

The Development of ESV-IS

Based on a number of studies conducted by statewide steering
committees and governor's task forces in the early 1970's, a position
was adopted to develop a statewide education management information
system. It was determined that the Minnesota Educational Computing
Consortium (MECC) would perform the task related to the development
and implementation of the management information system and that the
services to the districts would be provided through seven independent
regionally based service centers throughout the state. In addition to
a need for information processing capability for districts, Department
needs for information to satisfy its own information processing and
reporting needs were also considered. It was anticipated that the
Department information needs could be met as a by product of district
use of the systems to be developed--information would transfer from
the regional centers providing computer support services to the
districts to "mirror image" systems developed and maintained at the
Department of Education.

A statewide steering committee was established to provide policy
direction during the development of the statewide education management
information system. From their activity, the following system
development guidelines emerged:

1. There should be one common core system for the entire State.

2. The system should address needs identified through statewide
    application advisory committees.

3. The system must meet state and federal reporting requirements.

4. The TIES (the first regional center) system should be used as a
    model.

5. The system should use vendor supported system software where
    possible.

6. System and user documentation standards should be established and
    followed.

Based on these guidelines, MECC established an MIS division and hired
staff to address the project. A program review technique called PRIDE
was adopted. Statewide advisory committees were established. The
comprehensive needs assessment conducted based on the PRIDE
methodology resulted in a design document which was reviewed and
approved by the statewide advisory committees. From this effort, MECC
developed three components (ESV-FIN, ESV-PPS, ESV-SSS) of the
Elementary-Secondary-Vocational Information System (ESV-IS) and the
Department developed SDE-FIN.

Implementation of ESV-IS

Seven independent, regionally based regions were designated or formed, each with the responsibility of providing ESV-IS services for their member districts. The regions established were regions I (operating from Moorhead), II (operating from Duluth), III (operating from St. Cloud), IV (operating from Marshall), V (operating from Mankato), METRO II (operating from St. Paul) and TIES, the model (operating from Roseville). MECC provided training, technical assistance, and planning assistance to the regions according to their local needs. In addition to these "people" services, MECC provided "product" resources which included the computer programs, vendor software, user manuals, system documentation, statewide standards, and training materials. These were used and in some cases modified by the regions on an individual basis to address the unique needs of each region.

The ESV-FIN (Finance System) was officially released in October of 1977 with four METRO II districts converting to it that first year. Gradually, the system was implemented throughout the state in anticipation of the July 1, 1981 mandate. The implementation schedule was determined primarily on the basis of what the individual districts wanted. The exception to this procedure was TIES (ESV Region VII), which adapted ESV-FIN for their districts during fiscal 1980 and converted their entire region at one time to avoid problems of running two systems.

The ESV-PPS (Personnel/Payroll System) was officially released in January of 1979. However, due to service needs and commitments, a number of districts implemented the system before it was completely documented and debugged. Due to these problems, as well as the normal problems of bringing up a new system, a considerable amount of dissatisfaction was expressed concerning the system. A Peat, Marwick, Mitchell & Co. evaluation ordered by the Legislature was in part a result of the user dissatisfaction expressed during the early implementation of the system.

Gradually, the ESV-PPS system was documented and stabilized. There was no mandate to use the system; therefore, implementation was totally a district and regional decision. By July 1, 1981, four of the seven regions had installed the system with approximately 160 districts using the system. As the larger districts in METRO II reviewed the capabilities of the system and as TIES reviewed the system for their districts, both METRO II and TIES determined that significant enhancements to the system would be necessary before all of their districts could use the system. As a result, in 1982 it was determined to freeze the current version of the system and to concentrate all development resources on an enhanced version of the system. This effort was begun with METRO II and MECC working on the Payroll portion of the system and TIES working on the Personnel portion of the system. When State funds were cut due to the State's

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financial problems in 1982, the State effort at MECC was redirected to supporting the existing version of the system while METRO II and TIES continued the development of a new version on their own.

Today, four out-state regions use the State supported version of ESV-PPS with software support still coming from MECC through a State contract while Region II continues to use a similar system on which ESV-PPS was based, METRO II is using an enhanced version of the system which they are supporting and TIES is using its own personnel/payroll system which includes a new personnel system which they developed as an intended part of the new ESV-PPS before the funding cuts. Consequently, there are four regions with 402 reporting units using the State supported version of ESV-PPS, Region II with 39 districts using a similar system, METRO II with 7 districts using an enhanced version of ESV-PPS, and TIES with 59 districts using their version of PPS.

The student system implementation began as a live pilot at METRO II for the St. Paul School District. This took place after a decision was made to incorporate GEMCOS (a Burroughs message control program) because of on-line requirements and the adoption of an interim goal "to make it work in a district" before going statewide. St. Paul went on a live production mode in January of 1979 with several other METRO II districts following shortly thereafter.

During 1979-1980, the pilot implementation was expanded to Region III (St. Cloud) with the understanding that the system would have to be "generalized" moving from the concept of "making it work in a district" to "making it work in a region," in this case a region that had more similarities with the rest of the State. Region III was a live production pilot for the 1979-80 and 1980-81 school years.

During the 1980-81 school year, Region II (Duluth) began to install the system, intending to pilot test it to see if it would meet their districts' needs. The system was released for Regions I and IV to operate on the Moorhead based computer for the 1981-82 school year.

As was the case with ESV-PPS, METRO II and TIES both concluded that significant enhancements would be required before all of their districts could use the system. When the State funds were cut that resulted in limiting the support for ESV-PPS, the decision was made to discontinue all State funds for ESV-SSS. Consequently, today four outstate regions with 332 reporting units are using the ESV-SSS with only minor modifications being made on an individual regional basis, while Region V uses the Burroughs Scheduler component of the system, METRO II is using ESV-SSS with significant modifications which their region has made, and TIES continues to use and support their own student system.

Underlying Purpose and Assumptions

The development and maintenance of the statewide education management information system (ESV-IS and SDE-IS) was and is intended to serve the following specific purposes as set forth in Minnesota Statutes 121.931, Subd. 2:

(a) To provide comparable and accurate educational information in a manner which is timely and economical;

(b) To provide a computerized research capability for analysis of education information;

(c) To provide school districts with an educational information system capability which will meet school district management information needs; and

(d) To provide a capability for the collection and processing of educational information in order to meet the management needs of the state of Minnesota.

To accomplish these pupwoses, a series of plans were made and implemented based on a set of assumptions believed valid at the time. While there is no single document that contains all of the original assumptions for the state's education management information system plans, the assumptions on which the existing hardware, software and support service network were based can be constructed or deduced by reviewing the early Task Force recommendations and subsequent legislation, as well as the actual activities of the State Department of Education, MECC, and the seven ESV Regions. This review produces the following list of assumptions which were the basis of the major hardware, software and support service decisions during the early years of ESV-IS:

(a) Hardware

1. Large mainframe computers will be needed to operate ESV-IS.

2. A single brand of mainframe hardware should be used so that common software can be developed and data can be reported in a compatible format by each of the regions.

3. Significant savings can be realized by establishing a master contract for hardware procurement.

(b) Software

4. A single set of software can be developed to meet the needs of the districts.

5. Centralized development of software is the most economical approach.

6. Use of vendor system software would be more cost effective than developing system software locally.

(c) Support Services

7. Most districts do not have the knowledge necessary for successful operation of a computer system.

8. The state should provide the financial resources necessary to support the application software to guarantee the integrity of the data reported to the state.

9. The state should subsidize the regions because part of the cost is due to state reporting requirements.

10. Every district would belong to a region.

11. UFARS requirements are so complex that a computerized system is mandatory.

12. UFARS requirements are so complex that specialized training should be provided/supported by the state.

A review of each of these assumptions and a determination of the current validity was the starting point in development of the goals, objectives and strategies contained in Section III of this plan. Section II, following, contains the results of that review and current assumptions believed valid for purposes of the plan development.

SECTION II: ASSUMPTIONS AND FINDINGS

ORIGINAL ASSUMPTION 1: Large mainframe computers will be needed to operate ESV-IS.

> DISCUSSION: During the planning stages of ESV-IS, it was assumed that large, mainframe computers would be needed to operate ESV-IS. The technical analysis done at that time determined that the amount and complexity of processing necessary to support ESV-IS on a statewide basis would require the computing capacity of large, mainframe computers. As a result, large mainframe computers are installed in regional data processing centers across the state. Currently, there are large mainframe computers located in six of the seven regions serving all of the disricts in the state (regions I and IV currently share mainfrome hardware which is located at a joint computer center in Moorhead).

> Today, new technology allows microcomputer processing of many applications once thought possible only with use of a mainframe computer. As a result of both significant price drops and increased capacity of microcomputers in recent years, more application software is being developed for the microcomputers, further encouraging their use. Use of microcomputers allow districts to determine the nature and timing of their data processing internally and can result in increased data processing effectiveness for many districts. In addition, use of microcomputers can result in significant telecommunication cost savings when used either as a communication link to mainframes or as a stand alone device.

> There are however, significant dangers and costs associated with the use of microcomputers on a stand alone basis for business data processing. Among these are the need for a continuous flow of trained staff to support the stand alone microcomputer application processing, time and dollar demands associated with software and hardware maintenance in an uncontrolled environment, the danger of data loss and the relatively slow and limited processing possible on a microcomputer.

FINDINGS AND CURRENT ASSUMPTIONS

1. While the power of microcomputers is increasing very rapidly, large mainframe computers are still needed today and will probably be needed by many districts for the next three to five years.

2. The cost of computer hardware is decreasing and will continue

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to decline. However, rapid obsolescence and increased
maintenance costs must be considered when evaluating long
range hardware costs.

3. The use of large mainframe computers in most regional centers
   will be continued for the near term (3 to 5 years) to realize
   an adequate return on investment for the existing equipment.

4. The microcomputer is commonplace in most school districts
   across the state and must be taken into consideration when
   planning computer hardware needs.

5. Microcomputers will continue to become more powerful.

6. The cost of hardware to support micro based processing at the
   district level will be considered nominal by most districts.

7. The decision to use or not use large mainframe computers will
   be made by districts on the basis of supporting technical and
   financial evidence.

8. Different sizes of computers can be linked and can
   communicate with each other.

9. Communication lines will still be (next two to three years)
   the primary link for on-line use of mainframes.

10. In geographic areas where there are large distances between
    districts and the mainframe, telephone costs for on-line
    access will outweigh the cost of local microcomputers.

ORIGINAL ASSUMPTION 2: A single brand of mainframe computer should be
required so that common software can be developed and data can be
reported in a compatible format by each of the regions.

DISCUSSION: The use of standardized equipment is usually
required to obtain economies of scale and significant leverage on
price, accompanied by standard operating procedures and
documentation. Standardized hardware also facilitates greater
control of maintenance costs as well as simplification of the
resale or upgrade process for mainframes and peripherals and
provision of standardized parts and supplies for use throughout
the system. Further advantages accrue due to the uniform
training and documentation. Finally, the communications protocol
within a single brand of hardware eliminates the hidden costs and
frustrations of language compatibility and conversion costs.

It is important to recognize the vulnerabilities of the state's
standardized hardware system, however, in the presence of a
hardware vendor who may elect to take advantage of in-plant
investment, through the skillful negotiation of a disadvantageous
pricing to the state in future years. Careful vigilance must be
maintained on comparative costs and potentially disadvantageous

pricing based on a commitment to existing investments with a single vendor.

FINDINGS AND CURRENT ASSUMPTIONS

1. To realize an optimum return on the significant investment in hardware, the existing installation of Burroughs equipment will remain intact for the near term.

2. Now that the initial mainframe version of ESV-IS has been developed and reporting requirements have been defined, a requirement to use a single brand of mainframe is not required to achieve uniform data reporting.

3. Some brands of microcomputers can now communicate with each other.

4. Software allowing the conversion of software from one vendor line to another is becoming available.

5. Cost effective decisions regarding the selection and acquisition of mainframe hardware can be made on the basis of:

    A. A technical analysis determining the need for a mainframe.

    B. Evidence that the brand is capable of running software that will meet the state reporting requirements.

    C. A financial analysis of alternative brands.

ORIGINAL ASSUMPTION 3: Significant savings can be realized by establishing a master contract for mainframe hardware procurement.

DISCUSSION: The 40.9 percent discount obtained on the original master contract demonstrated that the master contract concept in acquiring hardware can provide significant leverage on price and service. The mere size of the contract usually dictates that only well established buyers can compete which ensures the continuity of necessary service over the useful years of the investment. Great care must be taken, however, to ensure favorable pricing to the state on any upgrade provisions or acquisitions of additional equipment, documentation, or other services from any single vendor. Escape clauses must be included to enforce the integrity in such additional negotiations.

FINDINGS AND CURRENT ASSUMPTIONS
1. The State could, but currently does not, provide a mechanism for developing and issuing a master contract for mainframe hardware and software procurement which can be used by

regions and districts.

2. Master contracts should not provide a vendor with the exclusive right to products covered by the contract. This non-exclusive clause will help ensure competition from third party vendors within given brands of hardware and software.

3. Master contracts provide districts with a mechanism for cost effective computer purchases.

ORIGINAL ASSUMPTION 4:   A single set of software is needed to reduce costs.

DISCUSSION: The original plans for the development of ESV-IS called for the development of a single set of programs which would operate on a large mainframe computer using the state of the art data base management programs to store all of the data that would be needed by individual districts as well as the state for reporting purposes.   As the ESV-IS was developed and implemented, three issues and policies evolved from the original assumption.   These issues or policies can be stated as follows:

1. A single set of software can be written to meet the needs of all districts.

2. The state should support a single set of software.

3. The state should allow a single set of software.

Based on what is operational today, seven years after the release of the first system (ESV-FIN), one might argue that it is theoretically possible to develop a single system that will meet the needs of all the districts in the state. From a practical point, however, it must be concluded that to be successful in the development effort is highly improbable.   Experience would tell us that one system is needed to meet the needs of those districts that have very complex requirements, usually the larger districts, and another system is needed to meet the needs of districts with less complex requirements, usually the smaller districts.   To a certain degree, this two-system concept is already a reality across the seven regions.

FINDINGS AND CURRENT ASSUMPTIONS

1. It is not practical to develop a single set of software to meet the needs of all the districts in the state.

2. There is an inverse relationship between state receipt of uniform, accurate, and timely education data and the number of software packages used by districts to meet those data reporting needs.

3. The cost of software development and maintenance will continue to increase.

4. To realize the optimum return on the significant investment in mainframe application software, the existing configuration of mainframe application software will be used for the near term.

5. The state has an interest in encouraging cost effective district software use.

ORIGINAL ASSUMPTION 5: Centralized development of software is the most economical approach for developing software.

DISCUSSION: Just as a single set of software to meet the needs of all districts has proven to be an impractical goal, the concept of a single, centralized development group has also been unobtainable. However, due to the fact that many districts have common needs, and all districts have basically the same reporting requirements, it is desirable to promote standardization and cooperative development whenever possible.

FINDINGS AND CURRENT ASSUMPTIONS

1. The state's software support funds should be allocated in a manner that encourages cooperation in the development effort and discourages redundancy among districts, regions and state.

2. All software packages will require modification on a periodic basis to meet state reporting requirements.

3. More commercial software that meets district needs will become available.

ORIGINAL ASSUMPTION 6: The state should provide the financial resources necessary to support the application software to guarantee the integrity of the data reported to the state.

DISCUSSION: In the early development of ESV-IS, the state provided financial resources to develop the overall system. The system design included addressing those needs that were identified by the local districts as well as those needs that were identified by the state for reporting purposes. After the systems were released, it became obvious that the districts would continue to identify new needs that could be included in the system. It also became apparent that the state would continue to identify new reporting requirements that must be incorporated into the systems if they were to be used for state data reporting. As state funds were cut, it became impossible for the

state resources to provide all of the reporting modifications as well as the new requests that originated from the districts. Therefore, the state resources were concentrated to support only the ESV-FIN and the ESV-PPS systems. Many of the new needs that were identified by the districts were left unsatisfied or were installed through regional funds primarily in the TIES and METRO II regions.

FINDINGS AND CURRENT ASSUMPTIONS

1. The state requires receipt of uniform, accurate, and timely education data.
2. State support of standard reporting software encourages district decisions to use such software because it may be more cost effective than other alternatives.

3. State software support funds should be adequate to provide a base level of support for at least one version of each ESV-IS application system for a mainframe computer and one version for a microcomputer.

5. State reporting requirements will receive first priority in any allocation of state software support funds.

ORIGINAL ASSUMPTION 7: Use of vendor system software would be more cost effective than developing system software locally.

DISCUSSION: In the early development of ESV-IS, there was considerable question as to the availability and quality of vendor system software (the internal programs which manage the computer and the application programs). It was determined to include system software as a requirement in the original master contract.

The-state-of-the-art relative to the system software has evolved to a point where almost all data processing centers now operate on vendor system software because it is not cost effective to develop in-house system software.

FINDINGS AND CURRENT ASSUMPTIONS

1. Use of vendor system software is now common practice in the industry.

ORIGINAL ASSUMPTION 8: Most districts do not have the knowledge necessary for successful operation of a computer system.

DISCUSSION: This assumption had its basis when computer systems were defined as large, mainframe computers with many

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complex programs. There were very few educators or school districts that had the expertise necessary to operate that type of a computer system. Today, there are still large, complex, mainframe based computer systems, but there are also less complex microcomputer based systems.

FINDINGS AND CURRENT ASSUMPTIONS

1. Today, many schools have the expertise to run computer systems, especially microcomputer based systems.

2. ESV-IS systems for reporting purposes are still complex even if they are micro based.

3. Users are becoming more sophisticated in their use of computers while at the same time, software is becoming more user friendly.

ORIGINAL ASSUMPTION 9: The state should share in the cost of providing regional support services because part of the cost is due to state reporting requirements.

> DISCUSSION: The regions provide a number of services, including the operation of the large mainframe computers, training in the use of the computer, training in the area of UFARS requirements, and collecting and consolidating district data for state reporting purposes. Unless the state does away with the UFARS requirements and reporting structure, these services will continue to be needed by the individual school districts. The associated costs for these services will have to be covered by the individual school districts, by the state, or a combination of funds from the school districts and the state. Any change in the subsidy formula or the amount of the subsidy without a change in the training and reporting requirements will result in a reallocation of district funds from other educational activities.

FINDINGS AND CURRENT ASSUMPTIONS

1. The regional center is a cost effective structure for state reporting and for providing computer support services to districts.

2. Regional membership is valuable from a state perspective because it provides the state with accurate, uniform and timely data while providing districts with training, backup for people and computers, opportunities for sharing in costs of computer and programs, and is a disincentive for districts that "want to do their own thing."

3. Providing automated student and payroll/personnel data will

require additional state funding.

4. The state could not receive effective data reporting support services from a single centralized facility.

5. State support of ESV regions has helped ensure the existence of a stable base for computer support service to districts.

6. The formula for allocating state funds to the regions has been worked out as a compromise based on input from all of the regional boards.

ORIGINAL ASSUMPTION 10: Every district would belong to a region.

DISCUSSION: In the original plan for an ESV-IS system, it was determined to keep the computer and the programs serviced as close to the district as possible. Thus, the regions were created under the control of local boards representing local school districts. The concept was to develop a single system that would meet district needs as well as state reporting requirements rather than developing just a reporting system for the state. Now that microcomputer based systems are becoming available, some districts may be able to operate their own systems for district needs and capture the information that is needed for state reporting at the same time. This information could then theoretically be forwarded to the state and not require the intermediate step of consolidation at the regional level.

FINDINGS AND CURRENT ASSUMPTIONS

1. No complete cost analysis has been completed relative to direct reporting to the state from microcomputer based systems, although pilot projects involving microcomputer based systems reporting directly to the state are currently being conducted.

2. Many districts will continue to want mainframe computer services and will not desire to operate computer hardware locally.

3. As the state automates student and personnel/payroll data reporting, district needs for computerized reporting support services will increase.

4. Regional services may include operation of a large mainframe computer but do not have to include the large mainframe.

5. District computer support services could not effectively be provided from a single, centralized state facility.

6. As users become more sophisticated in their computer use,

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needs for training and support services increase rather than decrease.

7. The importance of back-up services provided by regional centers will frequently go unrecognized by districts until needed.

8. Staff costs will continue to increase and for many districts, staff sharing through regional centers will be cost effective.

9. The current number of regional service centers is adequate to meet the support service needs of districts.

ORIGINAL ASSUMPTION 11: UFARS is so complex that a computerized system is mandatory.

DISCUSSION: Four years ago, the state allowed districts to use alternative manual systems to meet the UFARS requirements. One district, Verdi, applied and received permission to pursue a manual system of keeping UFARS books. That district has since gone to a computerized system using the services offered by Region IV. No other district has requested authorization to use a manual system.

FINDINGS AND CURRENT ASSUMPTIONS

1. UFARS requirements are complex and districts, through necessity, are required to use a computerized system.

2. As long as the UFARS requirements remain, a mandate to use a computerized system is not necessary, because districts will conclude that it is the only way they can get the job done.

3. Because the UFARS requirements are complex, it is necessary for the state to approve any computerized systems that will be used for financial accounting to ensure integrity of data.

ORIGINAL ASSUMPTION 12: UFARS requirements are so complex that specialized training should be provided/supported by the state.

DISCUSSION: Under the original plan to convert all school districts to UFARS requirements, district staff were trained by state funded employees known as UFARS Coordinators. Gradually, this training function role was assumed by the regions and the state resources for the use of the UFARS training were included in the state funds provided to the regions. Each region made its own decision as to how that service would be delivered.

FINDINGS AND CURRENT ASSUMPTIONS

1. Regional service centers are providing UFARS training. This training is combined with training on how to use the computerized system the region offers which meets the UFARS requirements.

2. The state should not provide categorical aid for UFARS training. Because this training is provided by the regions as one of the services that all of the regions provide, it should be covered by the regional support provided by the state.

SECTION III: LONG RANGE GOALS, OBJECTIVES, AND STRATEGIES

1. GOAL: Establish effective use of ESV-IS personnel, hardware, software, and communication resources while reducing unit costs and increasing the quality of service by orderly procurement, replacement, reallocation and management of those resources.

    1.1. OBJECTIVE: Contain the unit costs of participating in ESV regional management information centers through the orderly procurement, replacement, and reallocation of ESV-IS hardware resources.

        STRATEGIES:

        1.1.1. Require the review and approval by the state before acquisition of mainframe hardware. This review must include a cost analysis to determine if costs could be further minimized if district affiliation were realigned or if regional processing sites were consolidated.

        1.1.2. Secure legislation establishing a vehicle for regional cooperative purchasing.

        1.1.3. Ensure that statewide communication studies include analysis and recommendations regarding ESV-IS communication needs.

        1.1.4. Develop a model for district information management plans.

        1.1.5. While individual districts may consider microcomputer expenditures for administrative computing as a nominal cost, collectively, the amount is substantial. District school boards and administrators should be advised to carefully review and manage the purchase and use of microcomputers for administration.

    1.2. OBJECTIVE: Contain the development cost of ESV-IS application software while encouraging the cost effective use of technology to meet district needs for information processing, storage and reporting.

        STRATEGIES:

        1.2.1. Encourage competition in the development of software packages by allowing the use of multiple software packages as long as they meet state reporting requirements.

1.2.2. Provide an incentive for districts and regions to share in the cost of software development through state support of mandated reporting changes on a single mainframe and a single microcomputer version of ESV-IS software.

1.2.3. Require the review and approval by the state before acquisition or development of ESV-IS mainframe application software. This review must include a cost analysis to determine if costs could be further minimized if district affiliation were realigned or if regional processing sites were consolidated.

1.2.4. Establish a central software review and evaluation function for microcomputer administrative software.

1.3. OBJECTIVE: Equitably allocate the costs of providing districts with automated information processing support services at ESV Regional Management Information Centers.

STRATEGIES:

1.3.1. Allow the determination of regional fee structures by the regions but require that the structure reflects service use or cost.

1.3.2. Establish a process for district appeal to the ESV Computer Council for determination of an approporiate fee if they believe the fee set by the region is inequitable.

1.3.3. Provide ESV Regional Management Information Centers with a continuation of an adequate base level of state support to compensate for reporting services provided to the state.

1.4. OBJECTIVE: Increase the flexibility of regional structures in allowing districts to obtain more economical or efficient services.

STRATEGIES:

1.4.1. Establish a process for approval of district contracting for services from regions other than the region of affiliation when the service desired is not available from the region of affiliation.

1.4.2. Develop criteria to determine liability for existing regional debt in the event of an approved transfer of regional affiliation.

1.4.3. Establish an appeals process to resolve differences when districts request transfer from one region to another.

2. GOAL: To effectively satisfy the education information needs of the state while minimizing the Department and local education agency costs caused by information processing, storage and reporting requirements.

2.1. OBJECTIVE: To expand the Department capability to receive data in an automated format from ESV regions.

STRATEGIES:

2.1.1. Supply ESV regions with the SDE-IS data base element dictionary and provide training on its use.

2.1.2. Conduct an analysis to determine which SDE-IS required data elements are resident at regional host computers.

2.1.3. Develop a plan and schedule for automating the transfer of SDE-IS required data elements currently available at the region to SDE-IS.

2.1.4. Determine what ESV-IS system modifications are required to automate the transfer of SDE-IS required data elements that are not currently incorporated in ESV-IS.

2.1.5. Develop a plan and schedule for modifiying ESV-IS to include appropriate data elements required by SDE-IS.

2.1.6. Develop an integrated data base of student and staff data to be retrieved from ESV regions in lieu of manual district reporting for districts using the regional ESV-IS application systems.

2.1.7. Establish a plan and schedule for district conferences and training sessions regarding available software use and data reporting options.

2.2. OBJECTIVE: Contain or reduce the costs associated with imposition of new or changed reporting requirements.

STRATEGIES:

2.2.1. Establish a process and procedure for the development of fiscal notes (cost impact statements) for legislative action requiring changes in data collection and/or processing.

2.2.2. Develop a process for the exchange of information between Department and Legislative staff regarding predicted information need trends.

2.2.3. Publish in the Annual Data Acquisition Calendar an information inventory of core data elements required by MDE data collectors.

2.2.4. Develop an SDE-IS integrated data base in areas of student and staff data which can be retrieved from ESV regions in lieu of manual district reporting.

2.2.5. Conduct a pilot study of the feasibility of shared student data use within the department.

2.2.6. Conduct a study of the feasibility of using the teacher licensing system to meet department needs for staff related data.

2.2.7. Continue the Data Acquisition Review Committee process for the review and approval of new or changed reporting requirements.

2.2.8. Establish a process to review and approve the state plan for SDE-IS components that relate to ESV-IS.

3. **GOAL:** To maximize coordination and planning for desirable information access and processing capabilities so that the state and all districts are provided with a full range of information consistent with their needs.

3.1. **OBJECTIVE:** Reduce the inefficiencies and costs of accessing education information.

STRATEGIES:

3.1.1. Encourage the linking of microcomputers and mainframes for purposes of up and down loading.

3.1.2. Limit the number of alternative system pilot districts reporting directly to SDE-IS.

3.1.3. Establish a plan, schedule and procedure for down loading to district, regions or state education data users, subsets of data available within SDE-IS.

3.2. **OBJECTIVE:** Provide for the effective use of education data in education policy analysis and decision making.

3.2.1. Prepare a plan for downloading subsets of application data to legislative and department staff for use in local micro utility packages.

3.2.2. Develop a plan for a comprehensive training program of legislative and department staff regarding report generator software, the data base element dictionary software, inquiry software and other appropriate computer programs.

4. GOAL: Provide effective data systems to support and enhance SDE capability to perform statutory responsibilities relative to the supervision over all matters pertaining to schools.

4.1. OBJECTIVE: Contain the development cost of SDE-IS application software necessary to meet state education management needs.

STRATEGIES:

4.1.1. Train department staff regarding the use of microcomputers for data entry, edit, up load and down load.

4.1.2. Train department development staff regarding the use of microcomputers for front end systems development work.

4.2. OBJECTIVE: Contain the state development cost of ESV-IS software necessary to meet state reporting needs.

STRATEGIES:

4.2.1. Software modifications for district needs should be paid for by the requesting districts to provide a check and balance system for excessive demand on limited resources.

4.2.2. Develop a process for the identification of one mainframe version of each ESV-IS application system for which the state will fund development necessary to meet state reporting requirement changes.

4.2.3. Develop a process for the identification of one microcomputer version of each ESV-IS application system for which the state will fund development necessary to meet state reporting requirement changes.

4.3. OBJECTIVE: Contain the cost of providing mainframe computer capability to the Department.

STRATEGIES:

4.4.1. Develop an overall EDP plan based on the needs of department system users for hardware, staff, software and other data processing support requirements.

4.4.2. Establish and maintain a microcomputer utility and application software library for use by department staff

when making software acquisition decisions.

4.4.3. Establish and maintain a hardware demonstration process and lab for use by department staff when making hardware acquisition decisions.

4.4.4. Establish a procedure for volume purchasing of hardware and software resources.

Minnesota Department of Education

Capitol Square   550 Cedar Street   Saint Paul, Minnesota 55101   Phone:

LONG RANGE PLAN FOR THE
ELEMENTARY-SECONDARY-VOCATIONAL (ESV)
INFORMATION SYSTEM:

1987-88 UPDATE

DR. RUTH E. RANDALL
Commissioner

DANIEL SKOOG
Assistant Commissioner

MARJORIE JOHNSON
President, State Board of
Education

Elementary-Secondary-Vocational Computer Council

Dr. Dale Schneiderhan, Chairperson

Nancy Abraham
Richard Braun
Roger Doucet
James Lamont
John McClellan

John Madden
Glen Shaw
Joyce Thompsen
Thomas Watson

Robert J. Wedl, Executive Director

Pursuant to Mn Stat 121.931, sd 4

LONG RANGE PLAN FOR THE ELEMENTARY-SECONDARY-VOCATIONAL INFORMATION SYSTEM:
1987-88 UPDATE

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LONG RANGE PLAN FOR THE
ELEMENTARY-SECONDARY-VOCATIONAL
INFORMATION SYSTEM
1987-88 Update

EXECUTIVE SUMMARY

The 1981 Legislature directed the Elementary-Secondary-Vocational (ESV) Computer
Council to develop a Systems Architecture and Long Range Plan for the
computerized statewide education management information system used by the
public schools and Department of Education in the State of Minnesota. This
statewide system includes three major application systems for districts; a
finance accounting and reporting system (ESV-FIN), a personnel/payroll
information system (ESV-PPS), and a student records information system
(ESV-SSS). Together, these application systems are known as the
Elementary-Secondary-Vocational Information System (ESV-IS), which is accessed
and used by the school districts through seven regional centers. In addition to
ESV-IS, the statewide education management information system also includes a
component intended to serve the management information needs of the Minnesota
Department of Education. That component, known as the State Department of
Education Information System (SDE-IS), is operated by the Department. Although
it was originally intended that SDE-IS would be a counterpart to ESV-IS with an
information base comprised of data transferred from ESV-IS, that is currently
true only for the financial accounting and reporting application where ESV-FIN
data are transferred to the Department's counterpart, SDE-FIN. Department needs
for information in the other application areas are met through district
completion of approximately 180 paper/pencil forms.

Since 1984, the intent of the plan has been to refocus the various activities of
the legislature, State Department of Education, regions, and school districts to
attain a total management information system to meet information needs at the
local, state, and federal level. The most significant effort in this direction
during the next two years will be the State Department of Education's project,
referred to as the "Integrated Data Base Project." The basic goal of this
project is to collect information from school districts in a manner which will
permit linkage of staff, student, and finance information. This project, along
with all other ESV activities, are addressed within the context of this Long
Range Plan and are not dealt with as separate, isolated policy issues apart from
related issues impacting school districts, ESV Regions, the MDE, and state
reporting.

Specific findings and conclusions have been provided in relationship to the
basic assumptions of the original plans to develop a statewide system. These
findings and conclusions are followed by a set of goals and objectives with
specific strategies to provide direction for the next three to five years.

While there are many specific strategies in the report, the basic premises can
be summarized as follows:

1. The total management information system referred to as ESV-IS and SDE-IS should be continued and completed to include personnel and student information.

2. The regional service centers should be continued with funding provided by district user fees and state reporting subsidies.

3. Computer hardware decisions should be made on a "business decision" basis recognizing an increased role for microcomputers and minicomputers in many districts.

4. Software decisions should be made at the local and regional levels with state approval limited to the ability of the software to meet state reporting requirements.

5. The state should provide a financial incentive for districts to share common software by providing a base level of support for a single version of mainframe software. Districts and regions should recognize that adoption of non-state supported software may increase local costs.

6. A check and balance between resources available and user needs should be instituted by requiring school districts to pay for system changes that are not required by the state.

While this plan may be periodically modified, it is intended to provide major policy direction for a two year period. During this two year period, as during the past two years, we anticipate a continuing, gradual district evolution to increased use of technology within the district and diminished reliance on remote mainframes for management information processing. Therefore, the plan continues to include objectives and strategies designed to govern this transition period while preparing for new data processing service options for the future. At the end of the two year period, questions regarding mandated regional affiliation should again be reassessed in light of technology and service mode changes occurring during the term of this plan.

There has been no new legislation relative to the long range planning process since 1984, and no legislative recommendations are forthcoming by the ESV Computer Council this year. This document represents the biannual update as required by M.S. 121.934, Subd. 4.

INTRODUCTION

The 1981 Legislature directed the Elementary-Secondary-Vocational (ESV) Computer Council to develop a Systems Architecture and Long Range Plan for the computerized statewide education management information system used by the public schools and Department of Education in the State of Minnesota and to update that plan each even-numbered year. This statewide system includes three major application systems for districts; a finance accounting and reporting system (ESV-FIN), a personnel/payroll information system (ESV-PPS), and a student records information system (ESV-SSS). Together, these application systems are known as the Elementary-Secondary-Vocational Information System (ESV-IS), which is accessed and used by the school districts through seven regional centers. In addition to ESV-IS, the statewide education management information system also includes a component intended to serve the management information needs of the Minnesota Department of Education. That component, known as the State Department of Education Information System (SDE-IS), is operated by the Department. Although it was originally intended that SDE-IS would be a counterpart to ESV-IS with an information base comprised of data transferred from ESV-IS, that is currently true only for the financial accounting and reporting application where ESV-FIN data is transferred to the Department's counterpart, SDE-FIN. Department needs for information in the other application areas are met through district completion of approximately 180 paper/pencil forms.

During 1986, the ESV Computer Council conducted a number of activities to gather information needed to update the Long Range Plan. These activities included a joint meeting with representatives from all of the ESV Regional Boards, special hearings at each of the Regional Board meetings, and staff visits to numerous districts. This information was used as the Council reviewed and updated the Long Range Plan.

The intent of the Council is to fulfill the direct charge of the Legislature and to provide updated findings and recommendations which can be used by policy makers in making decisions relative to the administrative use of computers in education.

MISSION

The 1985 Minnesota Legislature adopted the following as the Mission for Public Education:

> "The purpose of public education is to help individuals acquire knowledge, skills, and positive attitudes toward self and others that will enable them to solve problems, think creatively, continue learning, and develop maximum potential for leading productive, fulfilling lives in a complex and changing society."

In order to carry out this mission, the following goals have been established for public education:

1

o Public education in Minnesota shall be accountable for verifiable student achievement.

o Public education in Minnesota shall provide systematized opportunities to participate in experiences which lead to personal, social, cultural, and career development, and civic responsibility.

o Public education in Minnesota shall make lifelong learning opportunities available to learners of all ages.

o Public education in Minnesota shall allocate its resources so that effective delivery systems guarantee equity in and access to quality education.

o Public education in Minesota shall be responsive to the changing needs of learners in an increasingly complex society.

o Public education in Minnesota shall communicate its mission, achievements, and impact on Minnesota's future.

A quality education system must be supported by an effective management information function which assures that needed information is available to facilitate decision making. The mission, therefore, regarding the state's management information system is as follows:

> "The mission of the statewide education management information system is to cost effectively collect, process, store, and make accessible education information needed for governance and administration of elementary, secondary, and vocational public education in the State of Minnesota."

SECTION I: BACKGROUND

The Development of ESV-IS

Based on a number of studies conducted by statewide steering committees and governor's task forces in the early 1970's, a position was adopted to develop a statewide education management information system. It was determined that the Minnesota Educational Computing Consortium (MECC) would perform the task related to the development and implementation of the management information system and that the services to the districts would be provided through seven independent regionally based service centers throughout the state. In addition to a need for information processing capability for districts, Department needs for information to satisfy its own information processing and reporting needs were also considered. It was anticipated that these Department information needs could be met as a byproduct of district use of the systems to be developed—information would transfer from the regional centers providing computer support services to the districts to "mirror image" systems developed and maintained at the Department of Education.

A statewide steering committee was established to provide policy direction during the development of the statewide education management information system. From their activity, the following system development guidelines emerged:

1. There should be one common core system for the entire state.

2. The system should address needs identified through statewide application advisory committees.

3. The system must meet state and federal reporting requirements.

4. The TIES (the first regional center) system should be used as a model.

5. The system should use vendor supported system software where possible.

6. System and user documentation standards should be established and followed.

Based on these guidelines, MECC established an MIS division and hired staff to address the project. A systems development technique called PRIDE was adopted. Statewide advisory committees were established. The comprehensive needs assessment, conducted based on PRIDE, resulted in a design document which was reviewed and approved by the statewide advisory committees. From this effort, MECC developed three components (ESV-FIN, ESV-PPS, ESV-SSS) of the Elementary-Secondary-Vocational Information System (ESV-IS) and the Department developed SDE-IS, which included the creation of SDE-FIN as the Department counterpart to ESV-FIN.

Implementation of ESV-IS

Seven independent, regionally based centers were designated or formed, each with
the responsibility of providing ESV-IS services for their member districts. The
regions established were Regions I (operating from Moorhead), II (operating from
Duluth), III (operating from St. Cloud), IV (operating from Marshall), V
(operating from Mankato), VI or METRO II (operating from St. Paul) and VII or
TIES, the model (operating from Roseville). MECC provided training, technical
assistance, and planning assistance to the regions according to their local
needs. In addition to these "people" services, MECC provided "product"
resources which included computer programs, vendor software, user manuals,
system documentation, statewide standards, and training materials. These were
used, and in some cases modified, by the regions on an individual basis to
address the unique needs of each region.

The ESV-FIN (Finance System) was officially released in October of 1977 with
four METRO II districts converting to it that first year. Gradually, the system
was implemented throughout the state in anticipation of the July 1, 1981
mandate. The implementation schedule was determined primarily on the basis of
what the individual districts wanted. The exception to this procedure was TIES
(ESV Region VII), which adapted ESV-FIN for their districts during fiscal 1980
and converted their entire region at one time to avoid problems of running two
systems.

The ESV-PPS (Personnel/Payroll System) was officially released in January of
1979. However, due to service needs and commitments, a number of districts
implemented the system before it was completely documented and debugged. Due to
these problems, as well as the normal problems of bringing up a new system, a
high level of dissatisfaction was expressed concerning the system. A Peat,
Marwick, Mitchell & Co. evaluation ordered by the Legislature was in part a
result of the user dissatisfaction expressed during the early implementation of
the system.

Gradually, the ESV-PPS system was documented and stabilized. There was no
mandate to use the system; therefore, implementation was totally a district and
regional decision. By July 1, 1981, four of the seven regions had installed the
system with approximately 160 districts using the system. As the larger
districts in METRO II reviewed the capabilities of the system and as TIES
reviewed the system for their districts, both METRO II and TIES determined that
significant enhancements to the system would be necessary before all of their
districts could use the system. As a result, in 1982 it was determined to
freeze the current version of the system and to concentrate all development
resources on an enhanced version of the system. This effort was begun with
METRO II and MECC working on the Payroll portion of the system and TIES working
on the Personnel portion of the system. When state funds were cut due to the
state's financial problems in 1982, the state effort at MECC was redirected to
supporting the existing version of the system while METRO II and TIES separately
continued the development of a new version on their own.

Today, four out-state regions use the state supported version of ESV-PPS with

software support still coming from METRO II through a state contract while Region II continues to use a similar system on which ESV-PPS was based, METRO II is using an enhanced version of the system which they are supporting and TIES is using its own personnel/payroll system which includes a new personnel system which they developed as an intended part of the new ESV-PPS before the funding cuts. Consequently, there are four regions with 251 reporting units using the State supported version of ESV-PPS, Region II with 39 districts using a similar system, METRO II with 7 districts using an enhanced version of ESV-PPS, and TIES with 59 districts using their version of PPS.

The student system implementation began as a live pilot at METRO II for the St. Paul School District. This took place after a decision was made to incorporate GEMCOS (a Burroughs message control program) because of on-line requirements and the adoption of an interim goal "to make it work in a district" before going statewide. St. Paul went on a live production mode in January of 1979 with several other METRO II districts following shortly thereafter.

During 1979-1980, the pilot implementation was expanded to Region III (St. Cloud) with the understanding that the system would have to be "generalized;" moving from the concept of "making it work in a district" to "making it work in a region," in this case a region that had more similarities than the rest of the state. Region III was a live production pilot for the 1979-80 and 1980-81 school years.

During the 1980-81 school year, Region II (Duluth) began to install the system, intending to pilot test it to see if it would meet their districts' needs. The system was released for Regions I and IV to operate on the Moorhead based computer for the 1981-82 school year. Only one district in ESV Region IV uses ESV-SSS.

As was the case with ESV-PPS, METRO II and TIES both concluded that significant enhancements would be required before all of their districts could use the system. When the state funds were cut that resulted in limiting the support for ESV-PPS, the decision was made to discontinue all state funds for ESV-SSS. Consequently, today three outstate regions with 31 reporting units are using the ESV-SSS with only minor modifications being made on an individual regional basis, while Region V uses the Burroughs Scheduler component of the system, METRO II is using ESV-SSS with significant modifications which their region has made, and TIES continues to use and support their own student system.

Underlying Purpose and Assumptions

The development and maintenance of the statewide education management
information system (ESV-IS and SDE-IS) was and is intended to serve the
following specific purposes as set forth in Minnesota Statutes 121.931, Subd. 2:

(a) To provide comparable and accurate educational information in a manner
     which is timely and economical;

(b) To provide a computerized research capability for analysis of education
     information;

(c) To provide school districts with an educational information system
     capability which will meet school district management information needs;
     and

(d) To provide a capability for the collection and processing of educational
     information in order to meet the management needs of the state of
     Minnesota.

To accomplish these purposes, a series of plans were made and implemented based
on a set of assumptions believed valid at the time. While there is no single
document that contains all of the original assumptions for the state's education
management information system plans, the assumptions on which the existing
hardware, software and support service network were based can be constructed or
deduced by reviewing the early Task Force recommendations and subsequent
legislation, as well as the actual activities of the Minnesota Department of
Education, MECC, and the seven ESV Regions. This review produces the following
list of assumptions which were the basis of the major hardware, software and
support service decisions during the early years of ESV-IS:

   (a) Hardware

        1. Large mainframe computers will be needed to operate ESV-IS.

        2. A single brand of mainframe hardware should be used so that common
            software can be developed and data can be reported in a compatible
            format by each of the regions.

        3. Significant savings can be realized by establishing a master
            contract for hardware procurement.

   (b) Software

        4. A single set of software can be developed to meet the needs of the
            districts.

        5. Centralized development of application software is the most

economical approach.

6. Use of vendor system software would be more cost effective than developing local system software.

(c)   Support Services

7. Most districts do not have the knowledge necessary for successful operation of a computer system.

8. The state should provide the financial resources necessary to support the application software to guarantee the integrity of the data reported to the state.

9. The state should subsidize the regions because part of the cost is due to state reporting requirements.

10. Every district would belong to a region.

11. UFARS requirements are so complex that a computerized system is mandatory.

12. UFARS requirements are so complex that specialized training should be provided/supported by the state.

A review of each of these assumptions and a determination of the current validity was the starting point in development of the goals, objectives and strategies contained in Section III of this plan. Section II, following, contains the results of that review and current assumptions believed valid for purposes of the plan development.

SECTION II: ASSUMPTIONS AND FINDINGS

ORIGINAL ASSUMPTION 1: Large mainframe computers will be needed to operate ESV-IS.

> DISCUSSION: During the planning stages of ESV-IS, it was assumed that large, mainframe computers would be needed to operate ESV-IS. The technical analysis done at that time determined that the amount and complexity of processing necessary to support ESV-IS on a statewide basis would require the computing capacity of large, mainframe computers. As a result, large mainframe computers are installed in regional data processing centers across the state. Currently, there are large mainframe computers located in six of the seven regions serving all of the districts in the state (Regions I and IV currently share mainframe hardware which is located at a joint computer center in Moorhead).
>
> Today, new technology allows in-district processing of many applications once thought possible only with use of a mainframe computer. As a result of both significant price drops and increased capacity of micro and minicomputers in recent years, more application software is being developed, further encouraging in-district processing. Use of micro and minicomputers allows districts to determine the nature and timing of their data processing internally and can result in increased data processing effectiveness for many districts. In addition, use of in-district processors can result in significant telecommunication cost savings when used either as a communication link to mainframes or as a stand alone device.
>
> There are however, significant dangers and costs associated with the use of micro and minicomputers on a stand alone basis for business data processing. Among these are the ongoing need for trained staff to support the standalone computer application processing, time and dollar demands associated with software and hardware maintenance in an uncontrolled environment, the security of data, and the relatively slow and limited processing possible on some small computers.
>
> FINDINGS AND CURRENT ASSUMPTIONS
>
> 1. While the power of microcomputers is increasing very rapidly, large mainframe computers are still needed today and will probably be needed by many districts for the next three to five years.
>
> 2. The cost of computer hardware is decreasing and will continue to decline.
>
> 3. The use of large mainframe computers in most regional centers will be continued for the near term (3 to 5 years).

4. The microcomputer is commonplace in school districts across the state and must be taken into consideration when planning computer hardware needs.

5. Microcomputers will continue to become more powerful.

6. The cost of hardware to support micro based processing at the district level will be considered nominal by most districts.

7. The decision to use or not use large mainframe computers will be made by districts on the basis of supporting technical and financial evidence.

8. Different sizes of computers can be linked and can communicate with each other.

9. Communication lines will still be the primary link for on-line use of mainframes. Emerging communication technology will have little impact over the next two years.

10. In geographic areas where there are large distances between districts and the mainframe, telephone costs for on-line access will outweigh the cost of local microcomputers.

ORIGINAL ASSUMPTION 2: A single brand of mainframe computer should be required so that common software can be developed and data can be reported in a compatible format by each of the regions.

DISCUSSION: The use of standardized equipment was generally perceived as required to obtain economies of scale and significant leverage on hardware price, accompanied by standard operating procedures, documentation, and the ability to operate standard application software. Standardized hardware also facilitates greater control of maintenance costs as well as simplification of the resale or upgrade process for mainframes and peripherals and provision of standardized parts and supplies for use throughout the system. Further advantages accrue due to uniform training and documentation. Finally, the communications protocol within a single brand of hardware eliminates the hidden costs and frustrations of language compatibility and conversion costs. For these reasons, a master contract was entered and each region acquired mainframe hardware under it, resulting in the existing regional Burroughs hardware network.

Use of standard hardware has not resulted in the development and use of completely standard software nor is it necessarily a requirement in order to achieve standard data reporting. While the software used by ESV regions today is substantially similar, there are differences between the regions. At the current time, two different versions of ESV-FIN are operated by the regions, three student records systems are used and five personnel payroll systems are supported by the regions (three versions are supported in one region). The reason for differences in software supported by the regions is simple: the needs of districts vary. Despite the differences in regional software, standardized data reporting has been achieved and maintained. Regions submit financial data in an accurate, timely basis.

It is also important to recognize the vulnerabilities of the state's standardized hardware system to a hardware vendor who may elect to take advantage of a large existing investment in mainframe hardware, through the skillful negotiation of a disadvantageous pricing to the state for hardware upgrades and maintenance in future years. Careful vigilance must be maintained on comparative costs and potentially disadvantageous pricing based on a commitment to existing investments with a single vendor.

FINDINGS AND CURRENT ASSUMPTIONS

1. To realize an optimum return on the significant investment in hardware, the existing installation of Burroughs equipment will remain intact for the near term.

2. Now that the initial mainframe version of ESV-IS has been developed and reporting requirements have been defined, a requirement to use a single brand of mainframe is not required to achieve uniform data reporting.

3. Different brands of microcomputers with increasingly expanded communications capabilities can now communicate with each other.

4. Vendor software allowing the conversion of application software from one vendor line to another is becoming available, but remains expensive and is often inefficient.

5. Cost effective decisions regarding the selection and acquisition of mainframe hardware can be made on the basis of:

    A. A technical analysis determining the need for a mainframe.

    B. A financial analysis of alternative brands including conversion costs.

    C. Evidence that the brand is capable of running software that will meet the state reporting requirements.

ORIGINAL ASSUMPTION 3: Significant savings can be realized by establishing a master contract for mainframe hardware procurement.

DISCUSSION: The 40.9 percent discount obtained on the original mainframe master contract developed by the state demonstrated that the master contract concept in acquiring hardware can provide significant leverage on price and service. The mere size of the contract usually dictates that only well established vendors can compete which ensures the continuity of necessary service over the useful years of the investment. Great care must be taken, however, to ensure favorable pricing to the state on any upgrade provisions or acquisitions of additional equipment, documentation, or other services from any single vendor. Escape clauses must be included to enforce the integrity in such additional negotiations.

FINDINGS AND CURRENT ASSUMPTIONS

1. The state has been able to establish a new master contract for purchasing Burroughs's computer hardware at a cost-competitive price.

2. Regions have been able to keep Burroughs' maintenance charges at a cost-competitive rate through direct negotiations with Burroughs and through the use of other vendors who service Burroughs equipment.

3. Master contracts should not provide a vendor with the exclusive right to products covered by the contract. This nonexclusive clause will help ensure competition from third party vendors within given brands of hardware and software.

4. Master contracts provide districts with a mechanism for cost effective computer purchases.

ORIGINAL ASSUMPTION 4: A single set of software is needed to reduce costs.

> DISCUSSION: The original plans for the development of ESV-IS called for the development of the single set of programs which would operate on a large mainframe computer using state-of-the-art data base management programs to store all of the data that would be needed by individual districts as well as the state for reporting purposes. As the ESV-IS was developed and implemented, three issues and policies evolved from the original assumption. These issues or policies can be stated as follows:

> 1. A single set of software can be written to meet the needs of all districts.

> 2. The state should support a single set of software.

> 3. The state should allow a single set of software.

> Based on what is operational today, nine years after the release of the first system (ESV-FIN), one might argue that it is theoretically possible to develop a single system that will meet the needs of all the districts in the state. From a practical point, however, it must be concluded that to be successful in the development effort is highly improbable. Experience has demonstrated that one system is needed to meet the needs of those districts that have very complex requirements, usually the larger districts, and another system is needed to meet the needs of districts with less complex requirements, usually the smaller districts. To a degree, this two system concept is already a reality across the seven regions.

FINDINGS AND CURRENT ASSUMPTIONS

1. It is not practical to develop a single set of software to meet the needs of all the districts in the state.

2. The cost of software development and maintenance will continue to increase.

3. To realize the optimum return on the significant investment in

mainframe application software, the existing configuration of mainframe application software will be used for the near term.

4. The state has an interest in encouraging cost effective district software use.

ORIGINAL ASSUMPTION 5: Centralized development of software is the most economical approach for developing software.

DISCUSSION: Just as a single set of software to meet the needs of all districts has proven to be an impractical goal, the concept of establishment of a single, centralized software development and maintenance group has also been unobtainable. However, due to the fact that many districts have common needs, and all districts have basically the same reporting requirements, it is desirable to promote standardization and cooperative development whenever possible.

During the past two years, a number of commercial vendors indicated interest in providing micro and mini-computer based software that would meet state financial reporting requirements. Currently, two micro based packages and one mini based package have been approved.

FINDINGS AND CURRENT ASSUMPTIONS

1. The state's software support funds should be allocated in a manner that encourages cooperation in the development effort and discourages redundancy among districts, regions, and state.

2. All software will require modification on a periodic basis to meet state reporting requirements.

3. More commercial software that meets district needs will become available as demonstrated by two micro and one minicomputer based packages that meet state financial reporting requirements.

ORIGINAL ASSUMPTION 6: The state should provide the financial resources necessary to support and audit the application software to guarantee the integrity of the data reported to the state.

DISCUSSION: In the early development of ESV-IS, the state provided financial resources to develop the overall system. The system design addressed those needs that were identified by the local districts as well as those needs that were identified by the state for reporting purposes. After the systems were released, it became obvious that the districts would continue to identify new needs that could be included in the system. It also became apparent that the state would continue to identify new reporting requirements that must be incorporated into the systems if they were to be used for state data reporting. As state funds were cut, it became impossible for the state resources to provide all of the reporting modifications as well as the new requests that originated from the districts. Therefore, the state resources were concentrated in FY84 and

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FY85 to support only the ESV-FIN and the ESV-PPS systems. Many of the new needs that were identified by the districts were left unsatisfied or were installed through use of regional funds primarily in the TIES and METRO II regions.

Use of state funds to support ESV-IS software has served two important functions. First, it has made more palatable use of a mandated system needed to meet state reporting requirements for accurate, uniform, and timely data. Second, it has guaranteed that software changes needed to respond to changed state reporting requirements are made.

Based on the 1984 Long Range Plan, all state funds were directed at maintaining reporting requirements of the mainframe system. Any funds not needed to address reporting requirements were used to provide increased system capabilities. Currently, all three systems are maintained by a state contract with METRO II.

Contrary to the Long Range Plan findings and current assumptions of 1984, state funds are not now needed to maintain micro or minicomputer based software packages because there are commercial vendors willing to assume this responsibility in order to capture part of the market. Actual vendor performance is not yet measurable.

FINDINGS AND CURRENT ASSUMPTIONS

1. The state requires receipt of uniform, accurate, and timely education data.

2. State support of standard reporting software encourages district decisions to use the software because it may be cost effective.

3. State software support funds should be adequate to provide a base level of support for at least one version of each ESV-IS application system for a mainframe computer.

4. State software support funds are not necessary to support micro or minicomputer based packages.

5. State reporting requirements will receive first priority in any allocation of state software support funds.

ORIGINAL ASSUMPTION 7: Use of vendor system software would be more cost effective than developing system software locally.

DISCUSSION: In the early development of ESV-IS, there was considerable question as to the availability and quality of vendor system software (the internal programs which manage the computer and the application programs). It was determined to include system software as a requirement in the original master contract.

The state-of-the-art relative to the system software has evolved to a point

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where almost all data processing centers now operate on vendor system software because it is not cost effective to develop in-house system software.

FINDINGS AND CURRENT ASSUMPTIONS

1. Use of vendor system software is now common practice in the industry.

ORIGINAL ASSUMPTION 8: Most districts do not have the knowledge necessary for successful operation of a computer system.

DISCUSSION: This assumption had its basis when computer systems were defined as large, mainframe computers with many complex programs. There were very few educators or school districts that had the expertise necessary to operate that type of a computer system. Today, there are still large, complex, mainframe based computer systems, but there are also less complex micro and minicomputer based systems.

FINDINGS AND CURRENT ASSUMPTIONS

1. Today, many schools have the expertise to run computer systems, especially microcomputer based systems.

2. ESV-IS systems for reporting purposes are still complex even if they are micro or minicomputer based.

3. Users are becoming more sophisticated in their use of computers while at the same time, software is becoming more user friendly.

4. "Buyer beware" warnings are still necessary. For example, districts need to be aware that stand-alone systems require personnel and maintenance which are costly.

ORIGINAL ASSUMPTION 9: The state should share in the cost of providing regional support services because part of the cost is due to state reporting requirements.

DISCUSSION: The regions provide a number of services, including the operation of the large mainframe computers, training in the use of the computer, training in the area of UFARS requirements, and collecting and consolidating district data for state reporting purposes. Unless the state does away with the UFARS requirements and reporting structure, these services will continue to be needed by the individual school districts. The associated costs for these services will have to be covered by the individual school districts, by the state, or a combination of funds from the school districts and the state. Any change in the subsidy formula or the amount of the subsidy without a change in the training and reporting requirements will result in a reallocation of district funds from other educational activities.

FINDINGS AND CURRENT ASSUMPTIONS

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1. The regional center is a cost effective structure for state reporting and for providing computer support services to districts.

2. Regional membership is valuable from a state perspective because it provides the state with accurate, uniform and timely data while providing districts with training, backup for people and computers, opportunities for sharing in costs of equipment and programs, and is a disincentive for districts that "want to do their own thing."

3. The state's need for assistance with reporting will increase as the state automates student and personnel/payroll data reporting.

4. The districts could not receive effective data reporting support services from a centralized facility.

5. State support of ESV regions has helped ensure the existence of a stable base for computer support service to districts.

6. The formula for allocating state funds has been worked out as a compromise based on the input from all of the regional boards.

ORIGINAL ASSUMPTION 10:   Every district would belong to a region.

DISCUSSION: In the original plan for an ESV-IS system, it was determined to keep the computer and the programs serviced as close to the district as possible.   Thus, the regions were created under the control of local boards representing local school districts.   The concept was to develop a single system that would meet district needs as well as state reporting requirements rather than developing just a reporting system for the state.   This would result in cost savings for both the state and districts through sharing in the staff, software, and hardware costs related to operation of the systems.   Now that micro and minicomputer based systems are becoming available, some districts may be able to operate their own systems for district needs and capture the information that is needed for state reporting at the same time.   This information could then, theoretically, be forwarded to the state and not require the intermediate step of consolidation at the regional level.

For many districts, access to trained accounting and data processing staff is a problem.   In the absence of such staff, reporting data in a uniform, accurate, and timely fashion would be difficult in the absence of service center assistance.   While this assistance could be provided from a central facility, it is arguable that it would be cost effectively performed in light of staff travel and telecommunication cost when geographic distances are involved.   Furthermore, it is not cost effective for many districts to secure individual staff and hardware when options for sharing the cost of these resources are possible.   It should also be noted that state data reporting may not be considered a functional priority by most districts. The fact that all district data is collected, edited, and reported on time is, for the most part, attributable to the efforts of ESV regions in working with district staff, entering data, and providing data back-up and reporting data to the state.

The legislature directed the ESV Computer Council to advise the Commissioner regarding modifications of the requirement that all districts affiliate with a region. Because of the new approved micro and mini ESV-FIN systems and the various private vendor student and personnel/payroll options, considerable flexibility in districts now exists. Districts now have alternatives in addition to the ESV Region for processing. While such alternatives carry with them substantial personnel, software, and maintenance costs as well as hardware costs, districts are free to choose not to use the ESV Regions' processing services. To assure timely and accurate reporting from a reasonable number of units, the ESV Computer Council continues to recommend that all districts transmit their data to the MDE through an ESV Region.

FINDINGS AND CURRENT ASSUMPTIONS

1. The initial review of costs in-district (Brooten #737, Holdingford #738, Ortonville #062, Plainview #810, and Randolph #195) for microcomputer based financial systems have not exceeded the comparative cost of supporting the regional ESV-FIN mainframe system.

2. Many districts will continue to want mainframe computer services and will not desire to operate computer hardware locally.

3. As the state automates student and personnel/payroll data reporting, district needs for computerized reporting support services will increase. This could result in the use of the existing regions as "hubs" for an expanded telecommunications network.

4. Regional services may include operation of a large mainframe computer but do not have to include the large mainframe.

5. District computer support services could not effectively be provided from a centralized facility.

6. As users become more sophisticated in their computer use, needs for training and support services increase rather than decrease.

7. The importance of back-up services provided by regional centers will frequently go unrecognized by districts until needed.

8. Support staff costs will continue to increase, and, for many districts, staff sharing through regional centers will be cost effective.

9. The current number of regional service centers is adequate to meet the support service needs of districts.

ORIGINAL ASSUMPTION 11: UFARS is so complex that a computerized system is mandatory.

DISCUSSION: Four years ago, the state allowed districts to use alternative manual systems to meet the UFARS requirements. One district,

Verdi, applied and received permission to pursue a manual system of keeping UFARS books. That district has since gone to a computerized system using the services offered by Region IV. No other district has requested authorization to use a manual system.

FINDINGS AND CURRENT ASSUMPTIONS

1. UFARS requirements are complex and districts, through necessity, are required to use a computerized system.

2. As long as the UFARS requirements remain, a mandate to use a computerized system is not necessary, because districts will conclude that it is the only way they can get the job done.

3. Because the UFARS requirements are complex, it is necessary for the state to approve any computerized systems that will be used for financial accounting to ensure integrity of data.

ORIGINAL ASSUMPTION 12: UFARS requirements are so complex that specialized training should be provided/supported by the state.

DISCUSSION: Under the original plan to convert all school districts to UFARS requirements, district staff were trained by state funded employees known as UFARS Coordinators. Gradually, this training function role was assumed by the regions and the state resources for the use of the UFARS training were included in the state funds provided to the regions. Each region made its own decision as to how that service would be delivered.

FINDINGS AND CURRENT ASSUMPTIONS

1. Regional service centers are providing UFARS training. This training is combined with training on how to use the computerized system the region offers which meets the UFARS requirements.

2. The state should not provide categorical aid for UFARS training. Because this training is provided by the regions as one of the services that all of the regions provide, it should be covered by the regional support provided by the state.

SECTION III: LONG RANGE GOALS, OBJECTIVES, AND STRATEGIES

1. **GOAL:** Increase effective use of ESV-IS personnel, hardware, software, and communication resources while reducing unit costs and increasing the quality of service.

   1.1. **OBJECTIVE:** Contain the unit costs of participating in ESV regional management information centers through the orderly procurement, replacement, and reallocation of ESV-IS hardware and communication resources.

   STRATEGIES

   1.1.1. Require the review and approval by the state before acquisition of mainframe hardware. This review must include a cost analysis to determine if costs could be further minimized if district affiliation was realigned or if regional processing sites were consolidated.

   1986: Continue.

   1.1.2. Secure legislation establishing a vehicle for regional cooperative purchasing.

   1986: Accomplished through new master contract. Pursued other areas as needs were identified.

   1.1.3. Ensure that statewide communication studies include analysis and recommendations regarding ESV-IS communication needs.

   1986: Continue, such as Telpak leased lines.

   1.1.4. Discontinue. This responsibility is being addressed by the regions.

   1986: Continue similar to student system pilot project.

   1.1.5. While individual districts may consider microcomputer expenditures for administrative computing as a nominal cost, collectively, the amount is substantial. District school boards and administrators should be advised to carefully review and manage the purchase and use of microcomputers for administration.

   1986: Continue.

   1.2. **OBJECTIVE:** Contain the development cost of ESV-IS application software while encouraging the cost effective use of technology to

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meet district needs for information processing, storage and reporting.

STRATEGIES:

1.2.1. Encourage competition in the development of software packages by allowing the use of multiple software packages as long as they meet state reporting requirements.

1986: Continue as with the microcomputer and minicomputer based financial packages. Develop an audit procedure to periodically check the integrity of vendor software.

1.2.2. Provide an incentive for districts and regions to share in the cost of software development through state support of mandated reporting changes on a single mainframe version of ESV-IS software.

1986: Continue mainframe support but not micro or mini.

1.2.3. Require the review and approval by the MDE before acquisition or development of ESV-IS mainframe application software. This review must include a cost analysis to determine if costs could be further minimized if district affiliation was realigned or if regional processing sites were consolidated.

1986: Continue.

1.2.4. Establish a central software review and evaluation function for administrative software necessary for mandated reporting.

1986: Continue as with micro and mini based financial packages.

1.3. OBJECTIVE: Equitably allocate the costs of providing districts with automated information processing support services at ESV Regional Management Information Centers.

STRATEGIES:

1.3.1. Allow the determination of regional fee structures by the regions but require a basis of service use or cost.

1986: Continue.

1.3.2. Establish a process for district appeal to the ESV Computer Council for determination of an appropriate fee if they believe the fee set by the region is inequitable.

1986: Continue. Develop in FY87.

1.3.3. Provide ESV Regional Management Information Centers with a continuation of an adequate base level of state support to compensate for reporting services provided to the state.

1986: Support restoration of FY1984 base funds that were cut during the past biennium.

1.4. OBJECTIVE: Increase the flexibility of regional structures in allowing districts to obtain more economical or efficient services.

STRATEGIES:

1.4.1. Establish a process for approval of district contracting for services from regions other than the region of affiliation when the service desired is not available from the region of affiliation.

1986: Continue.

1.4.2. Establish criteria for the designation of district liability for existing regional debt in the event of an approved transfer of regional affiliation.

1986: Discontinue because this is a contractual matter between ESV Regions and their member districts.

1.4.3. Establish an appeals process to resolve differences when districts transfer from one region to another.

1986: Continue to make available the process that was established during the past two years.

2. GOAL: To effectively satisfy the education information needs of the state while minimizing the Department and local education agency costs caused by information processing, storage and reporting requirements.

2.1. OBJECTIVE: To expand the Department capability to receive data in an automated format from ESV regions.

STRATEGIES:

2.1.1. Supply ESV regions with the SDE-IS data base element dictionary and provide training on its use.

1986: Continue.

2.1.2. Conduct an analysis to determine which SDE-IS required data elements are resident at regional host computers.

1986: Support the MDE's Integrated Data Base Project.

2.1.3. Develop a plan and schedule for automating the transfer of

SDE-IS required data elements currently available at the region to SDE-IS.

1986: Support the MDE's Integrated Data Base Project through ESV Computer Council participation on Task Force and representation of state-wide concerns over impact of IDB project.

2.1.4. Determine what ESV-IS system modifications are required to automate the transfer of SDE-IS required data elements that are not currently incorporated in ESV-IS.

1986: Support the MDE's Integrated Data Base Project.

2.1.5. Develop a plan and schedule for modifiying ESV-IS to include appropriate data elements required by SDE-IS.

1986: Support the MDE's Integrated Data Base Project.

2.1.6. Develop an integrated data base of student and staff data to be retrieved from ESV regions in lieu of manual district reporting for districts using the regional ESV-IS application systems.

1986: Support the MDE's Integrated Data Base Project.

2.1.7. Establish a plan and schedule for district conferences and training sessions regarding available software use and data reporting options.

1986: Discontinue at state level, regional responsibility.

2.2. OBJECTIVE: Contain or reduce the costs associated with imposition of new or changed reporting requirements.

STRATEGIES:

2.2.1. Establish a process and procedure for the development of fiscal notes (cost impact statements) for legislative action requiring changes in data collection and/or processing.

1986: Continue to use Department of Finance procedure.

2.2.2. Develop a process for the exchange of information between Department and Legislative staff regarding predicted information need trends.

1986: Continue.

2.2.3. Publish in the Annual Data Acquisition Calendar an information inventory of core data elements required by MDE data collectors.

1986: Accomplished January 1987.

2.2.4. Develop an SDE-IS integrated data base in areas of student and staff data which can be retrieved from ESV regions in lieu of manual district reporting.

1986: Support the MDE's Integrated Data Base Project.

2.2.5. Conduct a pilot study of the feasibility of shared student data use within the department.

1986: Completed in 1985-86.

2.2.6. Conduct a study of the feasibility of using the teacher licensing system to meet department needs for staff related data.

1986: Scheduled for FY87.

2.2.7. Continue the Data Acquisition Review Committee process for the review and approval of new or changed reporting requirements.

1986: Continue.

2.2.8. Establish a process to review and approve the state plan for SDE-IS components that relate to ESV-IS.

1986: Continue.

3. GOAL: To maximize coordination and planning for desirable information access and processing capabilities so that the state and all districts are provided with a full range of information consistent with their needs.

3.1. OBJECTIVE: Reduce the inefficiencies and costs of accessing education information.

STRATEGIES:

3.1.1. Encourage the linking of microcomputers and mainframes for purposes of up and down loading.

1986: Continue.

3.1.2. Limit the number of alternative system pilot districts reporting directly to SDE-IS.

1986: Continue.

3.1.3. Establish a plan, schedule and procedure for down loading to

district, regions or state education data users subsets of data available within SDE-IS.

1986:   Accomplished as prototype with Region II and III, and will be included in IISAC study of intergovernmental computing systems for replication.

3.2.   OBJECTIVE: Provide for the effective use of education data in education policy analysis and decision making.

3.2.1.   Prepare a plan for downloading subsets of application data to legislative and department staff for use in local micro utility packages.

1986:   The following have been accomplished: 1) Staff data from Personnel Licensing downloaded for staff pilot; 2) Data from Post Secondary system downloaded for SBVTE; 3) Data on Levies downloaded for Education Aids and Levies for Levy System; 4) Download of UFARS table of accounts for MICRO-FIN System; 5) Download Itembank tests for Assessment; 6) Downloading of data through Vision for Region II, Region III, House staff, Senate staff, AMSD, and MDE staff.

3.2.2.   Develop a plan for a comprehensive training program of legislative and department staff regarding report generator software, the data base element dictionary software, inquiry software and other appropriate computer programs.

1986:   Data base access training was presented to select MDE and Legislative staff members during the last 12 months. Before June 1987, staff will be offered training in software that facilitates data base access.

4.   GOAL: Provide effective data systems to support and enhance SDE capability to perform statutory responsibilities relative to the supervision over all matters pertaining to schools.

4.1.   OBJECTIVE: Contain the development cost of SDE-IS application software necessary to meet state education management needs.

STRATEGIES:

4.1.1.   Train department staff regarding the use of microcomputers for data entry, edit, up load and down load.

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1986: Continue. Budget constraints have held up progress.

4.1.2. Train department development staff regarding the use of microcomputers for front end systems development work.

1986: Continue. Budget constraints have held up progress.

4.2. OBJECTIVE: Contain the state development cost of ESV-IS software necessary to meet state reporting needs.

STRATEGIES:

4.2.1. Software modifications for district needs should be paid for by the requesting districts to provide a check and balance system for excessive demand on limited resources.

1986: Continue.

4.2.2. Develop a process for the identification of one mainframe version of each ESV-IS application system for which the state will fund development necessary to meet state reporting requirement changes.

1986: Continue.

4.2.3. Develop a process for the identification of one microcomputer version of each ESV-IS application system for which the state will fund development necessary to meet state reporting requirement changes.

1986: Private vendors have developed ESV-FIN software for mini and microcomputers designed to meet mandated reporting requirements. Three of these systems have been reviewed, tested, and determined to meet state reporting requirements. Additional alternative software for ESV-FIN will be reviewed as requested by private vendors. Furthermore, private vendors have also developed software for student and payroll. Absent state standards, no approval of these software packages were needed.

4.3. OBJECTIVE: Contain the cost of providing mainframe computer capability to the Department.

STRATEGIES:

4.3.1. Develop an overall EDP plan based on the needs of department system users for hardware, staff, software and other data processing support requirements.

1986: MDE completed hardware upgrade in FY87 and participated in MDE-wide plan for Office Automation enhanced data base and

increased access to data by MDE employees.

4.3.2. Establish and maintain a microcomputer utility and application software library for use by department staff when making software acquisition decisions.

1986: Ongoing.

4.3.3. Establish and maintain a hardware demonstration process and lab for use by department staff when making hardware acquisition decisions.

1986: Budget constraints have hindered this accomplishment.

4.3.4. Establish a procedure for volume purchasing of hardware and software resources.

1986: In process.

LONG RANGE PLAN FOR THE
ELEMENTARY–SECONDARY–
VOCATIONAL (ESV) INFORMATION
SYSTEM

DECEMBER 1988 UPDATE

Minnesota Department of Education

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The 1981 Legislature directed the Elementary-Secondary-Vocational (ESV) Computer Council to develop a Systems Architecture and Long Range Plan for the computerized statewide education management information system used by public schools and the Minnesota Department of Education (MDE), and to update that plan each even-numbered year. This statewide system, known as the Elementary Secondary Vocational Information System (ESV-IS), includes three major application systems for districts: a financial accounting and reporting system (ESV-FIN), a personnel-payroll information system (ESV-PPS), and a student records information system (ESV-SSS). The ESV-IS is accessed and used by school districts through seven regional centers. In addition to ESV-IS, the statewide education management information system includes a component operated by MDE and intended to serve their management information needs, known as the State Department of Education Information System (SDE-IS). Although it was originally intended that SDE-IS would be a counterpart to ESV-IS with an information base comprised of data transferred from ESV-IS, this is currently the case only for the financial accounting and reporting application in which ESV-FIN data is transferred to the MDE's counterpart, SDE-FIN. MDE's needs for information in the other application areas are met through manual completion by school districts of approximately 170 paper/pencil forms.

Since 1984, the intent of the Long Range Plan has been to refocus the various activities of the Legislature, MDE, ESV Regions, and school districts to attain a more comprehensive management information system to meet information needs at the local, state, and federal level. The most significant effort in this direction has been an MDE project referred to as the "Integrated Data Base (IDB)." The authority and direction for this project is found in both the Governor's Action Plan (1987) and Minnesota Statutes, Section 121.932, Subdivision 5:

> "Essential Data. The department shall maintain a list of essential data elements which must be recorded and stored about each pupil, licensed and nonlicensed staff member, and educational program. Each school district shall send the essential data to the ESV regional computer center to which it belongs, where it shall be assembled and transmitted to the department in the form and format prescribed by the department."

The ability to establish a "link" between individual records in two or more different data bases--an integrated data base--is neither a unique nor novel idea. It does require, however, a totally different "level" of reporting. Rather than reporting aggregate numbers, the implementation of an integrated data base at the state level means that school districts must report individual data elements. For example, rather than reporting the number of students at each grade level, districts will report data on each individual student, one element of which will be grade level. It is the ability to derive aggregate statistics from raw data that makes the integrated data base useful for policy analysis by both the districts and the state. It is that same ability, however, that creates the need for districts to change the method by which they capture, store, and report data to the state.

The basic goal of the IDB project is to collect information from school districts in a manner which will permit linkage of staff, student, and finance information at the course or activity level. The IDB will provide answers to numerous questions concerning student enrollment by curriculum offerings, the comparison of districts by curricular and extracurricular offerings, the cost of a course contrasted with the size of the district, and many other questions requiring linkage of staff, student, and cost. It is central to many current questions of accountability for how 27 percent of the annual state budget is spent and an essential tool for analysis of the

coats and benefits of proposed structural changes for schools, districts, and the MDE. The IDB is also the logical outgrowth or extension of work begun twelve years ago with the ESV-IS.

The plan for the future is built on the work of the past twelve years during which the state has invested $40 million in support of the seven ESV Regions, $10 million in support of ESV-IS software, and $14 million in support of management information systems in the Minnesota Department of Education (MDE). In addition to these state appropriated funds, considerable spending was required by the districts to support their own internal needs and their participation in their ESV Region. In FY89, for example, districts budgeted $12.4 million in support of the ESV Regions and the state contributed $3 million. These investments have produced a financial information system capable of accurate, timely, and comparable reporting on K-12 education; the single largest expenditure in the state's annual budget. It is these past investments that helped establish the structural base for developing the IDB, the foundation for future information system plans.

The IDB project is addressed within the context of this Long Range Plan. The Long Range Plan is not dealt with as a separate, isolated policy issue apart from related issues impacting school districts, ESV Regions, the MDE, and state reporting. The inclusion in this Long Range Plan of a list of critical activities required for implementation of the IDB can be used as benchmarks for the next two years.

During 1988, the ESV Computer Council conducted a number of activities to gather information needed to update the Long Range Plan, including a joint meeting with representatives from all of the ESV Regional Boards, special hearings at each of the Regional Board meetings, and staff visits to numerous districts. The intent of the Council is to fulfill the direct charge of the Legislature and to provide recommendations which can be used by policymakers relative to the administrative use of computers in education. Pursuant to legislative direction, the ESV Computer Council will continue to monitor and make recommendations on the service role of ESV Regions, regional computer acquisitions, and the evolving use of in-district computers for administrative purposes. Increasingly, issues of linking or electronically tying the MDE to ESV Regions and their member districts will focus attention on telecommunications.

MISSION

The 1985 Minnesota Legislature adopted the following as the Mission for Public Education:

> "The purpose of public education is to help individuals acquire knowledge, skills, and positive attitudes toward self and others that will enable them to solve problems, think creatively, continue learning, and develop maximum potential for leading productive, fulfilling lives in a complex and changing society."

In order to carry out this mission, the following goals were established by the Minnesota Department of Education (MDE) for public education:

o Public education in Minnesota shall be accountable for verifiable student achievement.

o Public education in Minnesota shall provide systematized opportunities to participate in experiences which lead to personal, social, cultural, career development, and civic responsibility.

o Public education in Minnesota shall make lifelong learning opportunities available to learners of all ages.

o Public education in Minnesota shall allocate its resources so that effective delivery systems guarantee equity in and access to quality education.

o Public education in Minnesota shall be responsive to the changing needs of learners in an increasingly complex society.

o Public education in Minnesota shall communicate its mission, achievements, and impact on Minnesota's future.

A quality educational system must be supported by an effective management information function which assures that needed information is available to facilitate decision making. The mission, therefore, proposed by the ESV Computer Council for the state's management information system is as follows:

> "The mission of the statewide education management information system is to cost-effectively collect, process, store, and make accessible education information needed by school districts, the state, and federal government for governance and administration of elementary, secondary, and vocational public education in the State of Minnesota."

PLAN FOR THE FUTURE

The plan for the future is based on the information needs of the state, MDE, and school districts.

State Needs

The state concern with schools and the quality and cost of instruction argues in favor of a change in state data collection and the scope of what should be reported accurately, timely, and comparably across all Minnesota school districts. The Minnesota Legislature, giving voice to public concern, increasingly asks questions beyond issues of fiscal accountability and now requires that equal attention be given to program data that is descriptive of what the funding produces. The Legislature expects to continue receiving detailed reports on the financial condition of schools (UFARS) but now also expects to receive answers to questions such as:

1. What are the courses Minnesota students are taking (e.g., physics, algebra, music)?

2. What are the characteristics of students taking these courses (e.g. age, sex, handicap)?

3. Where are these courses taken (e.g., in high school, in another school district, interactive TV, etc.)?

4. What are the characteristics of staff teaching the courses (e.g., age, highest degree achieved, years experience)?

5. What is the cost to deliver the courses?

This emerging state need argues for improved staff and student data consistently collected and reported, as the plans for ESV-IS and SDE-IS in the late 1970s had suggested. In the absence of an Integrated Data Base (IDB), state concerns with accountability will encourage a proliferation of special purpose forms required of school districts for program data. Collecting program data by paper will again be duplicative and redundant, and at times, conflicting in the state's description of the status of education in Minnesota school districts.

MDE Needs

Just as the districts have continuing needs relative to the accounting functions within finance, staff and student areas, the MDE has a need to perform its regulatory and aid distribution functions. While there are situations where operational problems occur, it is fair to say that these accounting functions are being satisfactorily accomplished by the existing systems; however, just as the districts need to bring the information from these various systems together to answer questions at the school board policy level, the MDE has a need to bring its systems together to answer policy questions at the State Board and State Legislature levels.

Both the State Board and the Legislature have recognized this need and have adopted plans and legislation necessary to pull this information together into one system. These policy steps were taken following the recommendations of the February 1987 Task Force Report on Implementing an Integrated Data Base System in Minnesota. The Department has been pursuing the following goal as recommended by the Task Force.

" MDE will develop an information system in such a manner so that more accurate, timely, and comparative data are available for analysis and decision-making at the elementary, secondary, and vocational levels. Data will be collected in a manner which will permit 'linkage' of staff, student, and finance information at a minimum. It is desirable for state level reporting to be accomplished as a by-product of school district level data needs through usage of 'core date elements' and automation. The IDB should be operational no later than July 1, 1989."

The 1987 Legislature passed a number of laws to enable the accomplishment of this goal. The first need is to identify and collect the "core data elements" necessary to answer the users' questions and replace redundant forms. This need is being addressed and a document exists which identifies all of the current elements collected by the state; however, there is a continuing need to make sure that the data necessary to answer the users' questions is, in fact, being collected. Second, there is need for training of the users of the system. These users include MDE staff who are fulfilling the regulatory and aid distribution functions, as well as the information resource people who are providing information to MDE management, the State Board and the Legislature. Finally, from a data processing perspective, a significant need exists to be able to link student data with teacher data and activities in a specific SDE-IS system, generate comprehensive reports at the state level and download subsets of data to the ESV Regions and school districts for their individual analysis.

District Needs

From the very beginning, the design of the system was based on the concept of directly meeting the information needs of the districts and meeting the information needs for federal and state reporting as a by-product of the automated system. This has not always been accomplished. *Infrequently*

Statewide district user committees were established for each of the user areas. Based on their input over the years, the system has been developed to a point where the basic needs of most of the districts have been satisfactorily addressed. For example, the financial component (ESV-FIN) meets the standard accounting and reporting (UFARS) requirements, generates the checks and other necessary reports to pay bills, provides budgeting and encumbering capabilities, and provides the various reports requested by school boards, auditors, and the state. The same can be said for the personnel-payroll relative to paying and accounting for staff, and for the student system relative to scheduling, attendance, mark reporting, and census.

It is fair to conclude that district user needs are being met when one views the district needs from an accounting or operational perspective. In many districts, however, information to make higher level policy and management decisions is largely unavailable. This inadequacy or need at the district level has several dimensions. One dimension is that in some situations, the needed information is simply not in the system. The most notable example of this situation is student achievement. Other than student courses and grades at the secondary level, student achievement information is not in the system. Another dimension of the need at the district level is the linking of the three components of the system so that reports can be generated that can describe (1) what is happening in a district, (2) who is doing it, and (3) how much does it cost? While there has been some effort and some success in addressing this need, there is still much to be done.

Once this need can be met within a district, the next logical step is to be able to analyze and compare similar information from comparable districts. This implies the

need to be able to step into the state system and extract information about comparable districts. The third dimension of the need at the district level is to relate what the district is doing (process) to what the students are learning (results).

During the 1970s, the State of Minnesota developed and implemented a uniform financial and accounting system for education that provides accurate, timely, and comparable information about the financial condition of school districts in Minnesota. During the remaining 1980s, uniform accounting must be computerized for staff and student information that will be linked to financial information. During the 1990s, this information will be linked and related to student performance. The ability to address information via a computer is the Integrated Data Base (IDB).

Legislative Action Plan

The historical responsibility of state government in Minnesota relative to education has been to provide funding and general policy direction. The funding has been based on a formula to provide general aid for a basic program plus categorical aid to support special need areas and to encourage new policy direction. In keeping with this past role, the following actions should be taken by the Legislature relative to the state's management information systems for education:

1. The state should encourage cooperation among districts by providing financial incentive while allowing the exploration of alternatives in a controlled environment.

2. The state should continue to provide financial aid to the regions. This provides a financial incentive to districts to cooperate through their region.

3. The state should continue to fund state mandated reporting modifications to the state-developed ESV software and require districts and regions to pay for modifications initiated by the districts. This establishes a joint ownership of the software between the state and the districts. It also provides a check and balance system which, in effect, requires the user requesting the software change to pay for it.

4. The state should not provide funds for other management information system software packages which address the same functions as ESV-IS. To do so would discourage cooperation through the regional structure and would proliferate the existence of redundant software packages and greatly increase the cost of training and maintenance.

5. The state should continue to allow the use of alternative packages provided that the software has been proven to meet the state reporting requirements. Vendors of microcomputer or minicomputer software must produce data extract programs in the manner and form prescribed for input of IDB data to regions.

6. The state should continue to require districts to report through the regions. This places the training and data integrity function in the hands of the region/district partnerships, which is closer to the source of the data. By allowing districts to report directly to the state, the MDE would have to add significant numbers of staff and would not be as effective as the regions in addressing individual district needs in collecting, recording, editing, and transmitting IDB data.

7. The state should discourage redundant information systems and data reporting by

requiring MDE (a) to use and maintain a single information system (the Integrated Data Base), and (b) to maintain and regularly publish a catalog of required reporting data elements.

8. The state should encourage automated district reporting by providing a one-time implementation appropriation for initiating the Integrated Data Base. The appropriation should be assigned to MDE and disbursed to the regions on a district-by-district basis. The money should be used by the regions to cover training and data processing implementation costs incurred by their member districts. Districts would be expected to reallocate their resources from the current method of reporting to the new, automated system.

9. State policy should encourage coordination with other information systems following the leadership of the Information Policy Office, Department of Administration.

Minnesota Department of Education Action Plan

The MDE's role must continue to be a regulatory function, as prescribed by statute, and the MDE must continue the distribution of aids. The MDE's SDE-IS must be the source of information to carry out both of these functions. In addition to addressing historical functions, the Minnesota State Board of Education adopted a position paper, Directions For The Future, in August 1987. This paper addresses the effectiveness of the public education systems, student competencies, and accountability. The measuring of achievement and the evaluation of process to attain achievement will only be accomplished through an efficient, effective information system. Consequently, the MDE priority concerns relative to SDE-IS must be in implementing the IDB.

1. MDE should finalize its catalog of required reporting data elements and prepare users to understand that if the data element is not on the list, users will not have the information they desire.

2. MDE should establish an internal plan so that all sections are prepared to use the IDB as their primary source of information. This plan should include training as well as data collection.

3. MDE should plan for and have in place the hardware and the database reporting software needed for the IDB by July 1989.

4. MDE should plan to make available part or all of the IDB to regions and districts for individual analysis at the regional and district level. The MDE should develop easy to use aggregations of the IDB that can be distributed in a variety of methods.

5. MDE should establish access to the IDB and training of legislative research staff so that all policymakers are accessing the same set of data when making decisions.

6. MDE should begin to develop future links of student, staff, and finance data in anticipation of questions related to the effectiveness of the public education system. MDE systems development must remain "open" to support these future enhancements.

7. MDE should anticipate that the IDB will create an expanding client or user base seeking information from the IDB.

ESV Regions Action Plan

The ESV Regions were established as service centers to provide computer processing, training and support for districts. The regions have accomplished this assignment in the financial area through the implementation of UFARS and the ESV-FIN computer system. The remaining challenge lies in the student and staff areas, as these are brought together with financial information in the IDB.

1. Regions should establish training plans for the districts to convert to automated reporting to the IDB.

2. Regions should continue to develop plans as to how they will support their member districts via mainframe, minicomputers, microcomputers, and telecommunication links, based on individual district needs and regional economics. Regions must consider support options for districts selecting in-district processing.

3. Regions must anticipate providing district access and use of IDB data.

District Action Plan

The 434 school districts and other K-12 educational cooperative units in Minnesota have the ultimate responsibility of providing quality education. Therefore, the districts must identify, on a continuous basis, what information they need to run effective programs, as well as meet state reporting requirements in as efficient manner as possible.

1. Districts should begin training their staff to convert to automated IDB reporting.

2. Districts should provide input to the statewide software development teams to ensure that the state's software meets their needs.

3. Districts should develop individual plans to determine what combination of mainframe, mini, micro, and telecommunications best meet their needs.

Systems Architecture Plan

The Systems Architecture Plan can be viewed as the blueprint identifying what kind of computers, software, telecommunications, and data flow will tie all this information together, so that districts have what they need and meet state reporting requirements at the same time.

In 1981, Peat, Marwick and Mitchell (PM&M) developed a Systems Architecture Plan for the state. In their report, they recognized that the state had implemented a monolithic plan--a single way of doing everything for everyone. While this approach was not criticized as a starting point, changes in technology, such as the introduction of the microcomputer, increasing telecommunication costs, and a wide diversity of district needs, pointed the direction to a more flexible architecture.

Recognizing this, PM&M proposed an architecture that continued to use the existing system because it was in place, meeting many of the needs, and represented a significant investment, while beginning to move in the direction of three levels of systems. They proposed one level to address the districts that had relatively simple information needs, another to address intermediate needs, and another to enhance the existing system to meet complex needs. They also proposed the introduction of on-site minis and micros as a means to confront rising telecommunication costs.

In part, due to scarcity of funds, the state did not financially support the

development of three software systems; however, private vendors did express interest and, in fact, have developed alternative mini and micro financial systems that meet state reporting requirements and that are being used by some districts.

A. Today, with the continued advancement of computer technology and private development of software, it is clear that a very open, flexible architecture is necessary. The type and size of hardware a region or district uses should be decided by the region or district based on measurable benefits exceeding measurable costs; however, concern for the total statewide plan requires that the ESV Computer Council continue to monitor and estimate the impact of both district and regional procurements of computer equipment. This oversight is a part of the annual recommendation for approval the Council provides the Minnesota State Board concerning "Plans and Budgets" for each ESV Region.

B. The data captured by the software must be standardized for reporting purposes. The state, therefore, should continue to support the ESV mainframe software to ensure standardization for reporting and to provide an incentive for districts to use it. Alternative financial software should be allowed only after it has been tested and proves to meet state reporting requirements. The maintenance and enhancements of alternative packages should be the responsibility of the vendor.

C. Increasingly, issues of both administrative and instructional linkages between the full array of state education agencies, intermediate service units such as ESV Regional Computer Centers and ECSUs, and a multitude of state, county, and city administrative units call for an open, flexible, statewide architecture for telecommunications. Telecommunications designed to serve all or most state agencies will be most logically accomplished through a statewide data/voice network rather than a series of unique or single-purpose activities. Decisions regarding how regions, districts, and other state, county, and local agencies will access the "backbone" network will best be made at the level of service. Some users will have an on-line connection to their computer, others will use a dial-in service, some will use some type of courier, and still others may decide to have their computer in-house. The ESV Computer Council will work closely in the immediate future with the Information Policy Office and others seeking a comprehensive solution to the challenges of statewide telecommunications.

Impact of Plan

Impact on State:

1. The state level policymakers will have more information in a shorter timeframe than in the past.

2. The state will need to support increased training costs related to using the system.

3. The financial support of the regions should be increased. Data collection/edit and training functions by Regions for IDB data will exceed UFARS tasks.

4. Implementation costs should be handled by a one-time appropriation by the state.

Impact on Department of Education:

1. There will be internal development and training costs. These should be handled through reallocation.

2. A larger computer and a database reporting software package will need to be installed and there will be a need for the employment of additional technical staff.

3. Old systems will be phased out and replaced by reports from the IDB.

4. Fewer manually completed reports will be used.

5. Information requests will increase.

Impact on ESV-Regions:

1. More resources will need to be dedicated to training during the implementation period. As with UFARS, changes in district staffing will require a continuing cycle of training and retraining.

2. Some software modifications will be required and additional continuing operational costs will be incurred.

3. Ways to automate reporting for districts that stay on paper-pencil systems will have to be established.

4. The difficult task of editing and helping member districts clean up data before submission to the MDE will need to be addressed.

5. District requests for reporting information from the IDB will increase.

Impact on Districts:

1. The IDB conversion period will increase cost and work in each district.

2. For those still on manual systems, staff will need training to convert from existing procedures to automated reporting.

3. Manual reporting will substantially decrease.

4. More information will be available to the district.

5. Requests for information from school boards and administrations will increase.

Fiscal Impact/Required New Funding: FY1990-91
                                                        Biennial Increase

1. The MDE will require additional staff and
   additional computer resources to implement and
   operate the IDB.

        * Staffing $214,000
        * Computer hardware, software, and technical
            support $1,121,000

2. The ESV Regions will require additional regional
    center support to produce IDB data 14 times as
    large as the data base for financial data alone.

    * Regional support $2,006,000

3. Additional funds will be required to support
    extensive changes to the ESV-SSS and ESV-PPS
    software that will be used by most districts
    and regions to meet IDB reporting requirements.
    Additional funds in the student system will be
    required to make system modifications for FTE
    membership, grade level reporting, and ethnic
    code reporting during fiscal 1990, and edit
    programs, transportation, health, and special
    education IDB program development during fiscal
    1991. Additional funds in the personnel system
    will be needed for the program to link
    student and personnel data.

    * Software support $389,000

4. Conversion/implementation funds are required to
    assist each school district in Minnesota to
    comply with new IDB report requirements. These
    funds are for this biennium only.

    * Conversion/implementation funds $1,420,000

TOTAL $5,150,000

CRITICAL ACTIVITIES

The following list of critical activities, completion dates, and responsible parties
helps set the direction for the next two years. The goal remains to implement the IDB
by Fall 1989, a diffcult task considering that implementation requires substantive
change at each district and each region. This list or chart helps mark progress
toward implementation of the IDB. It will be an evolving list, shaped and reshaped by
experience in working towards the goal. It is also that part of this Long Range Plan
most easily updated every six months over the next two years.

TASK	MDE	REGIONS	DISTRICTS	DATE
Preliminary definition of MDE processing needs for FY90-91.	X			8-1-88
Technical Advisory Group concludes review of data.	X	X	X	8-15-88
MDE request for proposals for shared computer resource.	X			8-21-88
Technical Advisory Group input on tape format.	X	X		9-23-88
al data capture forms completed.	X	X		10-14-88
Update of data dictionary.	X			10-24-88
Determination of districts and methodology for data capture for fall pilot.	X			10-31-88
Determination of edit requirements.	X			10-31-88
Data capture/forms manual completion.	X			10-31-88
Finalize tape format.	X			11-1-88
Update SDE-IS data sets.	X			11-15-88
Finalize User Manual.	X			11-15-88
ESV Region training on fall pilot - data capture, dissemination of User Manuals.	X	X	X	11-15-88
Bids submitted to MDE for FY90-91 shared system computer resources.	X			11-21-88
Determination of cost benefit for shared computer resource.	X			11-21-88
MDE request for proposals on stand-alone computer (if ermined cost effective).	X			11-30-88
MDE awards contract for shared computer resource (contingent on cost effectiveness and funding availability).	X			11-30-88

TASK	MDE	REGIONS	DISTRICTS	DATE
Completion of Paradox data entry screens and documentation.	X			11-30-88
District/ESV Regions complete preliminary review of options for data capture and reporting.		X	X	12-1-88
ESV Regions, pilot districts receive training on Paradox data entry screens.	X	X	X	12-2-88
Finalize load, edit, and validation programs for SDE-IS.	X			12-19-88
Completion of Paradox "Third Party Vendor" transfer requirements and edits.	X	X	X	12-20-88
Bids submitted to MDE for provision of stand-alone MDE computer resource (if deemed cost effective).	X			12-30-88
Decision on stand-alone MDE computer resource, off-site vs. in-house based upon cost effectiveness factors.	X			12-30-88
MDE awards "stand-alone" contract for off-site location (contingent on cost effectiveness and funding availability).	X			12-30-88
Regions determine options they will support for actual IDB reporting in Fall 1989.		X		12-30-88
Begin process of reviewing vendor products for stand-alone -site computer (if determined cost effective).	X			1-3-89
Regions begin to submit fall pilot data for districts via tape format.	X	X	X	1-3-89
Data due for district fall pilot.	X	X	X	1-15-89
Finalization of IDB/UFARS linkage program.	X			1-15-89
Districts make preliminary indications of one or more IDB reporting options for actual IDB Fall 1989 reporting.			X	1-15-89
Begin review and programming of end of year transfer of IDB pilot data into SDE-IS application systems.	X			1-15-89
ESV Regions establish preliminary IDB implementation plan for member districts for Fall 1989 and actual IDB reporting.		X		1-16-89
MDE loads IDB fall pilot data.	X			1-20-89
Finalization of SDE-IS output reports for fall data usage.	X			1-20-89
ESV Regions present IDB implementation plans to ESV Computer Council for Fall 1989 data capture and transmittal.		X		1-25-89
Edit, update, and reload as necessary for fall pilot data.	X	X	X	2-10-89
Simulation of fall data into SDE-IS application systems.	X			2-10-89

TASK	MDE	REGIONS	DISTRICTS	DATE
Simulate and test IDB/UFARS linkage and fall IDB data.	X			2-10-89
~ulate and test SDE-IS Report Generator, SPSS, EZ-SPEC, ~d VISION options.	X			2-28-89
Compare IDB data to actual fall data.	X			2-28-89
Completion of analysis for end of year transfer of IDB data to SDE-IS application systems.	X			3-9-89
Final report on fall pilot.				3-9-89
Fall pilot sample output to regions and districts.	X	X	X	3-9-89
Definition of adjustments to data dictionary, tape format, capture forms, Paradox entry screens, SDE-IS data sets, edit criteria, and user materials for actual Fall 1989 IDB implementation.	X			3-15-89
Completion of IDB to SDE-IS application systems programming.	X			4-1-89
Completion of output development for end of year pilot data.				4-1-89
Update of data dictionary, tape format, capture forms, Paradox entry screens, SDE-IS data sets, edit criteria, and user materials for actual Fall 1989 IDB reporting.	X			4-30-89
~pletion of ESV Region training for end of year pilot ~ actual Fall 1989 IDB reporting. Release of all user materials to districts.	X	X		5-11-89
Capture of IDB end of year pilot data by districts.			X	6-30-89
MDE switches to new computer resource.	X			7-1-89
Transfer of end of year data to MDE.	X	X	X	7-15-89
Loading of end of year pilot data.	X			7-30-89
Edit correction of end of year pilot data.	X	X	X	8-15-89
End of year pilot data transferred to SDE-IS application systems.	X			8-30-89
Simulate and test IDB/UFARS linkage with end of year data.	X			9-15-89
Simulate and test SDE-IS Report Generator, SPSS, EZ-SPEC, and VISION options.	X			9-15-89
Compare end of year pilot data to actual data.				9-15-89
Definition of adjustments to IDB data dictionary, tape format, capture forms, Paradox entry screens, SDE-IS data sets, edit criteria, and user material.	X			9-30-89
~nedule future update of data dictionary, tape format, capture forms, Paradox entry screens, SDE-IS data sets, edit criteria, and user manual.	X			9-30-89

TASK	MDE	REGIONS	DISTRICTS	DATE
Final report on end of year pilot.	X			9-30-89
Release of any IDB capture adjustments to ESV Regions and districts.	X	X		9-30-89
ESV Region training on IDB capture adjustments.	X	X		9-30-89
Determination of successful pilot districts who do not submit paper.	X		X	9-30-89
Fall data submitted to MDE for all districts.	X	X	X	11-15-89
Run MDE edit program.	X	X		11-20-89
MDE user edit process.	X	X		12-15-89
Update of data by districts and regions.		X	X	1-15-90
IDB data correctly loaded on SDE-IS.		X	X	1-30-90
Compare IDB data to actual data.	X			3-1-90
Resolution of issues associated with any incapability to supply data.	X			3-15-90
Training of ESV Regions for spring collection.	X	X		
Submission of data by ESV Regions for end of year data.		X	X	7-15-90
Run MDE edit on IDB data.	X	X		7-20-90
MDE user edit process.	X			8-10-90
Regional district update of IDB data.		X	X	8-30-90
IDB end of year correct on SDE-IS.	X			9-5-90
Comparison of actual data to IDB.	X			9-30-90
Data turnaround to regions and districts.	X	X	X	9-30-90
Successful districts do not submit manually completed forms.	X	X	X	9-1-90
Train ESV Regions for fall collection.	X	X		9-1-90
Fall data submitted to MDE for all districts.		X	X	11-15-90
Run MDE edit program.	X	X		11-20-90
MDE user edit process.	X			12-15-90
Update of data by districts and regions.	X	X	X	1-15-91
IDB data correctly loaded on SDE-IS.	X			1-30-91
Compare IDB data to actual data (staff data, student data,				

TASK	MDE	REGIONS	DISTRICTS	DATE
child count).	X			3-1-91
olution of issues associated with any incapability to ..pply data.	X			3-15-91
Training of regions for spring collection.	X	X		4-15-91
Submission of data by regions for end of year data.		X	X	7-15-91
Run MDE edit on IDB data.	X	X		7-20-91
MDE user edit process.	X			8-10-91
Regional and district update of IDB data.		X	X	8-30-91
IDB end of year correct on SDE-IS.	X			9-5-91
Comparison of actual data to IDB.	X			9-30-91
Data turnaround to regions and districts.	X	X	X	9-30-91
All manually completed forms covered by IDB cease to exist by September 1991.	X			9-30-91
Fall data submitted to MDE by all districts.		X	X	11-15-91
Run MDE edit program.	X	X		11-20-91
users edit process.	X			12-15-91
Update of data by districts and regions.		X	X	1-15-92
IDB data correctly loaded on SDE-IS.	X			1-30-92

The Development of ESV-IS

Based on a number of studies conducted by statewide steering committees and governor's task forces in the early 1970s, development of a statewide education management information system was proposed.

In July 1973, the Minnesota Educational Computing Consortium (MECC) was established as a joint powers organization pursuant to Minnesota Statutes Section 471.59, to coordinate and provide service related to using computers in education in Minnesota. The creation of MECC was a result of recommendations by the Governor's Task Force on Educational Computing in a report issued in February 1973. One of the needs identified by the Minnesota Department of Education (MDE) was an administrative data processing system for elementary, secondary, and vocational schools in Minnesota. It was determined that MECC would perform the tasks related to the development and implementation of the management information system and that the services to the districts would be provided through seven independent, regionally-based, service centers throughout the state. In addition to a need for information processing capability for districts, MDE needs for information to satisfy their own information processing and reporting requirements were also considered. It was anticipated that these MDE information requirements could be fulfilled as a by-product of district use of the systems to be developed--information would transfer from the regional centers providing computer support services for the districts to "mirror image" systems developed and maintained at the MDE.

A statewide steering committee was established to provide policy direction during the development of the statewide education management information system. From the committee's activity, the following system development guidelines emerged:

1. There should be one common core system for the entire state.

2. The system should address needs identified through statewide application advisory committees.

3. The system must meet state and federal reporting requirements.

4. The TIES (the first regional center) system should be used as a model.

5. The system should use vendor supported system software where possible.

6. System and user documentation standards should be established and followed.

Based on these guidelines, MECC established a Management Information Systems (MIS) division and hired staff to address the project. Statewide advisory committees were established. A comprehensive needs assessment resulted in a design document which was reviewed and approved by the statewide advisory committees. From this effort, MECC developed two components (ESV-FIN and ESV-PPS) and began development of a third component (ESV-SSS) of the Elementary-Secondary-Vocational Information System (ESV-IS). The MDE developed the State Department of Education Information System (SDE-IS), which included the creation of SDE-FIN as the MDE's counterpart to ESV-FIN.

Implementation of ESV-IS

Seven independent, regionally-based centers were designated, each with the responsibility of providing access to all ESV-IS systems for its member districts. The ESV Regions established were: I (operating from Moorhead), II (operating from Duluth), III (operating from St. Cloud), IV (operating from Marshall), V (originally operating from Rochester then moved to Mankato), VI or METRO II (operating from St. Paul) and VII or TIES (operating from Roseville). By 1970, TIES had finance, personnel-payroll, and student services for its member districts and served as the model for the other six regions.

MECC provided training, technical assistance, and planning assistance to the regions according to their local needs. In addition to these "people" services, MECC provided "product" resources which included computer programs, vendor software, user manuals, system documentation, statewide standards, and training materials. These were used, and in some cases modified, by the regions on an individual basis to address the unique needs of each region.

The ESV-FIN (finance system) was officially released in October 1977 with four METRO II districts converting to it that first year. Gradually, the system was implemented throughout the state in anticipation of the July 1, 1981 legislative mandate. The implementation schedule was determined primarily on the basis of what the individual districts wanted. The exception to this procedure was TIES (ESV Region VII), which adapted ESV-FIN for its districts during fiscal 1980, and converted its entire region at one time to avoid problems of running two systems. The ESV-FIN system is currently maintained by METRO II under contract with the state.

The ESV-PPS (Personnel-Payroll System) was officially released in January 1979; however, due to service needs and commitments, a number of districts implemented the system before it was thoroughly documented and debugged. Due to these problems, and the usual problems of bringing up a new system, a high level of dissatisfaction was expressed concerning the system. A Peat, Marwick, Mitchell & Co. evaluation ordered by the Legislature was in part a result of user dissatisfaction during the early implementation of this system. Gradually, the ESV-PPS system was documented and stabilized. Because there was no mandate to use the system, implementation was a district and regional decision. By July 1, 1981, five of the seven regions had installed ESV-PPS, with approximately 160 districts using the system. As the larger districts in METRO II reviewed the capabilities of the system and as TIES reviewed the system for its districts, both METRO II and TIES determined that significant enhancements to the system would be necessary before all of their districts could use it. As a result, in 1982, a state decision was made to freeze the current version of the system and to concentrate all development resources on an enhanced version. This effort was begun with METRO II and MECC working on the Payroll portion of the system and TIES working on the Personnel portion. When state funds were cut due to the state's financial problems in 1983, MECC's role in development of the "new" system was terminated; however, METRO II and TIES separately continued the development of new personnel-payroll systems on their own. Today, four outstate regions use the original version of ESV-PPS with software support coming from METRO II through a state contract.

Region II (Duluth) is currently in the process of converting its districts to the new METRO II system and METRO II continues to offer the new system to any other region at no charge. Consequently, there are four regions with 251 reporting units using the state supported version of ESV-PPS, Region II and METRO II with 46 districts using an enhanced version of ESV-PPS, and TIES with 53 districts using its version of PPS.

The ESV-SSS implementation began as a live pilot at METRO II for the St. Paul School District. St. Paul went on a live production mode in January 1979, with several other METRO II districts following shortly thereafter. During 1979-1980, the pilot

implementation was expanded to Region III (St. Cloud), with the understanding that the system would have to be "generalized"; moving from the concept of "making it work in a district" to "making it work in a region"--in this case, a region that had more similarities with other outstate regions. Region III was a live production pilot for the 1979-80 and 1980-81 school years. Due to problems associated with state hiring and retaining staff persons qualified to participate in this complicated development, MECC delegated continued development of the system to METRO II.

During the 1980-81 school year, Region II (Duluth) began to install the system, intending to pilot test and see if it would meet their districts' needs. The state system was released for Regions I and IV to operate on the Moorhead based computer for the 1981-82 school year. TIES continued to use their own version of a student system, first released in 1969. In 1983, when the state funds were cut that resulted in limiting the support for development of the new ESV-PPS, the decision was made to discontinue all state funding for ESV-SSS development.

When the funding was partially restored, it was possible to make some additional enhancements to the ESV-SSS, though the level of support has not been sufficient to meet many needs. Like the PPS and FIN systems, ESV-SSS is maintained by METRO II under a contract agreement. Currently, three outstate regions (Duluth, St. Cloud and Moorhead), and one metropolitan region, METRO II, with 40 reporting units, are using the ESV-SSS, while TIES, with 51 reporting units, is using its own system.

Underlying Purpose and Assumptions for ESV-IS

The development and maintenance of the statewide education management information system (ESV-IS and SDE-IS) was and is intended to serve the following specific purposes as set forth in Minnesota Statutes Section 121.931, Subdivision. 2:

(a) To provide comparable and accurate education information in a manner which is timely and economical;

(b) To provide a computerized research capability for analysis of education information;

(c) To provide school districts with an education information system capability which will meet school district management information needs; and

(d) To provide a capability for the collection and processing of education information in order to meet the management needs of the State of Minnesota.

To accomplish these purposes, a series of plans were developed and implemented based on a set of assumptions believed valid at the time. While there is no single document that contains all of the original assumptions for the state's education management information system plans, the assumptions on which the existing hardware, software, and support service network were based can be constructed or deduced by reviewing the early Task Force recommendations and subsequent legislation, as well as the actual activities of the MDE, MECC, and the seven ESV Regions. This review produces the following list of assumptions which were the basis of the major hardware, software, and support service decisions during the early years of ESV-IS:

(a) Hardware

1. Large mainframe computers will be needed to operate ESV-IS.

2. A single brand of mainframe hardware should be used so that common software can be developed and data can be reported in a compatible format by each of

the regions.

   3. Significant savings can be realized by establishing a master contract for
       hardware procurement.

(b) Software

   4. A single set of software can be developed to meet the needs of the
       districts.

   5. Centralized development of application software is the most economical
       approach.

   6. Use of vendor system software would be more cost-effective than developing
       local system software.

(c) Support Services

   7. Most districts do not have the knowledge necessary for successful operation
       of a computer system.

   8. The state should provide the financial resources necessary to support the
       application software to guarantee the integrity of the data reported to the
       state.

   9. The state should subsidize the regions because part of the cost is due to
       state reporting requirements.

   10. Every district would belong to a region.

   11. UFARS requirements are so complex that a computerized system is mandatory.

   12. UFARS requirements are so complex that specialized training should be
       provided/supported by the state.

Decision to Rewrite the Long Range Plan

A review of each of these assumptions and a determination of the current validity was
the basis for developing the 1986 update to the Long Range Plan. Because the 1986
effort revealed that a number of the assumptions were no longer valid and both needs
and technology have changed significantly, it was decided to draft a new document for
the 1989-90 version of the Long Range Plan. This document could then be the basis for
future biennial updates as prescribed by the Legislature.

Existing Legislation

A major portion of the legislation affecting the statewide educational management
information system was passed in 1980. Since that time, modifications have been
passed which have addressed new issues as well as provided direction relative to the
Integrated Data Base (IDB). The current legislation provides purpose and definition,
identifies specific requirements, and states that alternatives are allowed. The
legislation establishes the ESV Computer Council as an advisory council to the State
Board and defines membership on the Council. In addition, the legislation requires a
Systems Architecture Plan and a Long Range Plan. The Long Range Plan is to be updated
every two years.

The legislation also requires the State Board to provide for development of ESV-IS and

SDE-IS software, and to adopt rules containing data standards. Related to data standards, the MDE must maintain a data element dictionary and a data acquisition calendar. The MDE must also maintain a list of essential data elements which the districts must maintain and report through the regions to the state.
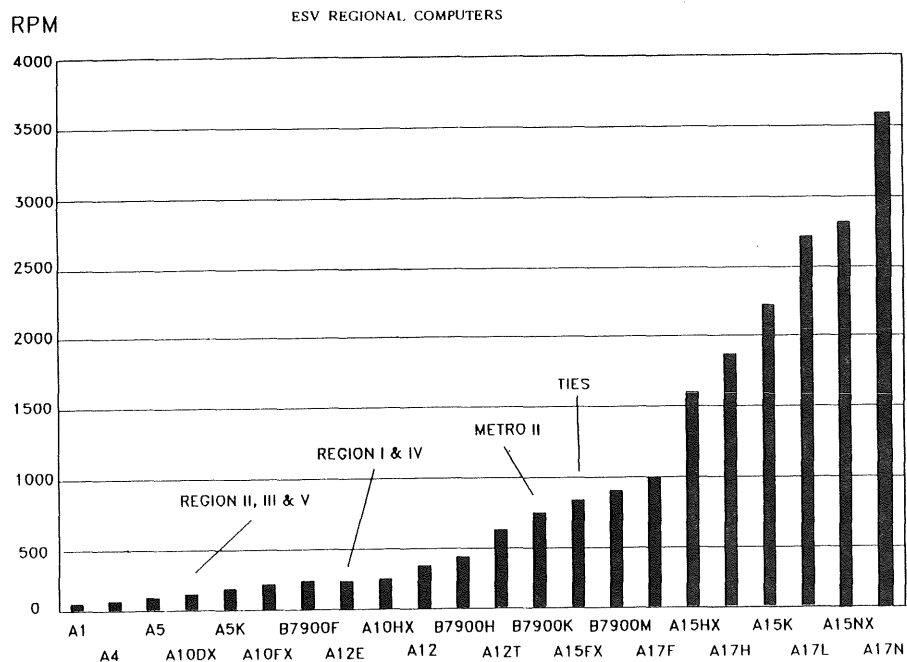
All districts are required to be affiliated with an ESV Region and all regions are required to submit annual plans and budgets to the State Board. Upon approval of their plan and budget, regions are provided with an annual reporting subsidy. The legislation allows, but does not require, state support for alternative software packages. It also allows for creation of new regions, transfer of districts from one region to another, use of approved alternative financial systems that meet established criteria, and direct reporting to the state for pilot districts.

Computer Hardware and Software

All of the regions are providing service on a UNISYS (formerly Burroughs) mainframe. Each of the regions has its own center and mainframe with the exception of Regions I and IV (Moorhead and Marshall) who are sharing a center which is located in Moorhead. The model and year of installation for the various mainframes are identified in the following chart:

REGION	SYSTEM	ACQUIRED	MEMORY	DISK	RELATIVE PERFORMANCE MEASURE*	DISTRICT TERMINALS/MICRO LINKED TO REGIONAL MAIN-FRAME
Region I & IV	1-A12E	July 1988 (est.)	24MB	6,000MB	420 RPM	83 14
Region II	1-A10DX	January 1988	12MB	2,000MB	110 RPM	45
Region III	1-A10DX	January 1988	12MB	2,000MB	110 RPM	33
Region V	1-A10DX	July 1987	12MB	2,000MB	110 RPM	16
Region VI	3-B7900	2 - January 1986 1 - January 1987	24MB	14,000MB	700 RPM	320
Region VII	1-A15F	April 1987	36MB	13,900MB	840 RPM	485

* RPM is an International Data Corporation Standard for measuring the relative performance of computers from different vendors; IBM 370-158, Model 3 = RPM 45.

ESV REGIONAL COMPUTERS

The following districts are operating a minicomputer and approved ESV-FIN alternative:

DISTRICT	MINICOMPUTER	SOFTWARE
Albany	IBM 36	Comprehensive Information Management System
Lake Superior	IBM 36	Comprehensive Information Management System
Rochester	IBM 36-38	Comprehensive Information Management System
Worthington	IBM 36	Comprehensive Information Management System

A second minicomputer alternative, Computer Accounting and Student Terminal System (CASTS), is also available on the UNISYS A-Series.

Microcomputers can be found in nearly every district in the state. For ESV-IS and SDE-IS purposes, they are used primarily for terminal emulation and file transfer. Micros are also used in a stand-alone mode for financial processing using one of several approved alternative software packages. Currently, the following districts are using one of three stand-alone packages:

DISTRICT	MICROCOMPUTER	SOFTWARE
Brooten	IBM PC XT or AT	Software Library (MECC)
Holdingford	Any IBM compatible	
Ortonville	Any hardware running	
Oslo	on MS/DOS 2.1	
Plainview		
Randolph		
Roseau		
Sartell		
South Koochiching		

	IBM PC XT, AT, PS-2	National Computer Systems*
Backus	Any IBM compatible	
Clinton		
Danube		
Graceville		
Granite Falls		
Little Falls		
Marshall	*In September 1988, NCS discontinued maintenance/	
Mid-State Educational	enhancement support for this product. ESV Computer	
Cooperative	Council action on November 10, 1988 approved Banyon	
Milroy	Data Systems to take over support for this alternative	
Minnesota River Valley	system.	
Special Education		
Cooperative		
Minneota		
Montevideo		
Pine River		
Renville-Sacred Heart		
Sanborn-Lamberton		
Tracy		
Wabasso		

Staples	UNISYS B25, 28, 38	School Administration
	XE Series	Software, Inc. (SASI)

REGION	NUMBER OF DISTRICTS/ INTERMEDIATE DISTRICTS	ENROLLMENT	USE OF SYSTEMS			
			MANDATED ESV-PIN		OPTIONAL REGIONALLY SUPPORTED SERVICE	
			REGIONAL MAINFRAME	DISTRICT ALTERNATIVE	PER/PAY	STUDENT
I	91	62,150	89	2	77	10
II	35	56,439	34	1	30	14
III	69	90,058	63	6	58	8
IV	87	49,022	72	15	50	1
V	98	99,604	97	1	72	0
VI	7	124,274	7	0	6	6
VII	51	246,094	50	1	49	49
TOTAL	438	734,641	412	26	342	88

<u>SDE-IS</u>

The Education Data Systems Section (EDSS) of the Minnesota Department of Education
(MDE) has developed and is operating the computer systems that are utilized for
maintaining many of the MDE's legislated functions.

Educational data and activities are traditionally described in five categories:
Students, Staff, Finance, Instructional Programs, and Facilities. The SDE-IS and its
databases have been designed, in general, to respond to these functional areas.

Students:

The student functional area of the SDE-IS deals with summaries of student
attendance and membership by school and district. In some areas, additional
characteristics (ethnic group, handicapped, etc.) give additional specificity to
the summaries. Student summary data is used by a number of other functional
areas to support the calculation of aids and levy limits as well as the
statistical analysis of the population served by each district and the state.
Accuracy and timeliness are very important factors in these uses of student data.
Other uses of data about students are concerned with the determination of general
trends and compliance with statutory requirements.

Staff:

Currently, the majority of data and applications on the SDE-IS that fit into the
staff functional area are associated with licensed district staff. This data is
the product of the teacher licensing and assignment process and programs. This
data is organized into a database which is structured by year. The SDE-IS
provides direct access to these users. This data also provides the MDE with some
limited indication of the educational program of each district and its change
over time.

Finance:

The financial applications in the SDE-IS are primarily associated with the data
reported by the districts each year concerning their financial activities, with
the data necessary to calculate each district's levy limitations, and with the
calculations and accounting of the various state aids paid to the districts.
There is also an area of financial data and applications specific to vocational
education.

Beginning July 1980, all school districts in the state were required by the
legislature to change their financial accounting to a multi-dimensional method,
following the Uniform Financial Accounting and Reporting Standards (UFARS). The
district-level financial application implemented in the regional ESV-IS
centers--ESV-FIN--was designed to support the UFARS requirements. The state
level part of this reporting process is the SDE-FIN application.

Facilities:

The SDE-IS does not presently contain any detailed information about district
physical plants, equipment, and facilities other than that collected and
maintained manually by the School Facilities Section. If policymakers show
concern for the condition of buildings and other facility related issues,
facility data could be added to the SDE-IS.

Instructional Programs:

Currently, the only information on instructional programs within SDE-IS is found in the Civil Rights Information System, the Fall Teacher Assignment Report, and the Elementary/Secondary Curriculum Reporting System. This data pertains to compliance with federal and state discrimination laws and compliance by districts to State Board of Education mandates pertaining to the number of hours of instruction districts provide by subject areas. No detailed data exists which reflects the specific courses and instructional programs in which Minnesota students participate. This is mainly due to the lack of standardized definitions, terms and codes for course/curriculum, and past funding practices that did not require this type of program data. The Data Acquisition Unit has been assigned the task of standardizing instructional terminology. When this has been achieved, the addition of curriculum data into the SDE-IS will become a top priority.

With the exception of finance data, the data used within the SDE-IS is collected from school districts primarily by manually completed forms. The current Annual Data Acquisition Calendar (ADAC) lists 174 forms used by MDE to collect data. These forms can be categorized as follows:

Applications/Requests	51
Progress/Completion Reports	32
Budget/Expenditure Forms	34
Statistical Reports	37
Survey/Compliance Forms	17
Other	3
TOTAL	174

Not all school districts are required to complete each of the 174 forms. Completion of the forms is dependent upon school district participation in specific program areas. Approximately 50 statistical forms are required for completion by all school districts. These forms also constitute the majority of the data which is placed in the SDE-IS, and thus classifies it as a primarily forms driven system.

Specific data requirements for collection from the school districts are determined by MDE staff, who interpret the legislative intent of the laws specific to program areas and create the data collection forms to provide for program funding and regulation. This data is usually summary level data specific to a program area. Data is also placed into the SDE-IS in summary format. Creation of data requirements by individual MDE program areas, coupled with the fact that the data is usually in summary format, have resulted in large scale redundancy in data collection from school districts. Furthermore, the current summary format of data in the SDE-IS does not allow the flexibility to link the majority of SDE-IS applications.

An important function associated with MDE data collection is the Data Acquisition Review Committee (DARC). The DARC is composed of five MDE staff, one regional staff, and five district staff, and have met regularly over the past five years to review and approve the collection of data from school districts. The DARC has been a major factor in continuing the reduction in the number of forms required of districts.