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ABSTRACT

Oakland Schools, an Intermediate School District for Administration, operates a Remotely Accessible Management System (RAMS). RAMS is composed of over 100 computer programs, each of which performs procedures on the files of the 28 local school districts comprising the constituency of Oakland Schools. This regional service agency covers 900 square miles in the area north of Detroit, Michigan and encompasses schools with a total of 250,000 students. The central facility includes an IBM 360 Model 50 with 1.4 million bytes of memory, 24 spindles of 2314 type disk storage, a card reader/punch, a line printer, tape drives and other peripherals. Current files are conceptualized around the sub-systems of finance, staff, and students; work is progressing on an instructional file. Each district maintains its own discrete files and multi-programing is used to serve the 28 clients. Nineteen computer personnel operate the central facility; in addition, the agency's various educational consultants who work with the 28 districts are responsible for helping those schools to use the available technology. (PB)

REMOTELY ACCESSIBLE MANAGEMENT SYSTEM (RAMS)

Rex Wood

Oakland Schools (Pontiac, Michigan)

Today's presentation will describe a Remotely Accessible Management System that is currently in operation. My role will be to describe its components: The geography and student population served, the hardware, the software, the inter-relationships, and how it operates.

My colleagues representing two school districts that are users of the system will talk respectively (see the two papers following) about how it operates in one local school district and the impact that its use is having on the management process in another school district.

The acronym RAMS will be substituted for our topic frequently today. RAMS is a program product of Oakland Schools composed of more than one hundred computer programs, each performing procedures on local school district files. The program product includes not only the computer programs on magnetic tape or disk, but also extensive documentation written to provide adequate operator instructions in local district offices.

Oakland Schools, an Intermediate School District for Administration, is a regional service agency providing a variety of consultative and other support services to the 28 local school districts in its constituency.

Oakland Schools employs about 270 persons most of whom are housed in a six story office building located near the center of Oakland County. Oakland County lies just north of Detroit. Covering in excess of 900 square miles, its 28 districts vary from small city, including Pontiac, to rural farm areas.

For purposes of today's discussion, we also serve the city of Saginaw located some 70 miles north and River Rouge, a small school district about 40 miles due south. Washtenaw is mentioned at this time, a neighboring Intermediate School District to Oakland Schools; it is now using the RAMS program product to service its constituency of local school districts. Two more Intermediate School Districts are expected to lease the software sometime during the next school year.

DR. REX L. WOOD's doctoral dissertation, "A Telecommunications Network for Data Processing in Schools -- A Mathematical Model," served as the base for the development of educational data processing in Oakland County. Since 1960 he has been director of administrative services for Oakland Schools. He received a B.S. degree from Alma College, an M.A. degree from the University of Michigan, and an Ed.D. degree from Michigan State University.

The Oakland Schools constituency includes nearly a quarter million school children, they spend annually in the neighborhood of $250 million. The smallest enrollment is near 2000; the biggest, Pontiac, has about 22,000 enrollment. Over a third of the children in the county are bussed to and from school.

The power of computer technology reaches into more than half of these districts over conventional telephone lines. Districts with high speed card reader/line printer terminals have access to the central computer, the RAMS program library, and its own on-line disk files. Districts with these terminals enroll about 3/4 of the students of the county. In addition, Saginaw and River Rouge, are "plugged in" with nearly 30,000 students.

Seven of the twenty-eight districts have typewriter terminals. The typewriter terminals are used for file inquiry, file maintenance and/or student instruction.

The central computing facility includes an IBM 360 Model 50 with 1.4 million bytes of memory, 24 spindles of 2314 type disk storage, card reader/punch, a line printer, four tape drives and other peripherals. For test scoring purposes mostly, an NCS Sentry 70 generates input to the system. Slated for August installation, an IBM 370 Model 158 is projected to be able to provide adequate capacity for another 3 or 4 years of growth.

Local district offices have a variety of hardware devices sending and receiving data. These include the lowly card dialer and touch-tone telephone, teletypes, IBM typewriters, 1130's, 3780's, System 3's, Remcom 2780's and Opscan 17's.

Significant to the remote attribute of the system is the massive data base that remains on-line. The school systems files are accessible 5 days a week, 24 hours a day from the local district terminal. Current files are conceptualized around the sub-systems of finance, staff and students. Work is progressing on an instructional file. Each district has its own discrete files within these sub-systems, said files being protected through password security techniques.

The operation of teleprocessing can be described as a closed loop beginning at the terminal. An operator of the terminal assembles a "batch" of input and places in the card reader, presses appropriate buttons and sends the "input" down the telephone line to the computer where it is placed in an "input" queue. The system's software interprets the input and schedules the job for processing. After being processed the "output" is placed in an output data file and the terminal operator is notified that his output is ready. The operator may call for his output immediately or delay and call for it at his convenience, when received the cycle is completed.

Servicing a large number of small and medium sized school districts with one computer is made possible by multi-programming. In our particular system, main memory is given over exclusively to the management of the jobs that come into the system. The production work is all scheduled into the batch processing partitions using optimizing techniques to get as much throughput as possible. We are in our fifth year of teleprocessing, and contention is becoming extremely troublesome. Our users, however, are very cooperative and are aware that relief is only a few months away.

Finally, you can have a good system, and the hardware may be reliable but to make it all work still takes people. The local school districts man the remote terminals, the expertise at the terminal is important to their success, but they necessarily also have to rely on manpower at the center. In the data processing center the staff is organized into three departments. Three people work just in systems, keeping the Operating System, and the Teleprocessing System alive and attempting to enhance the throughput. Nine senior and junior analysts and programmers are maintaining the production programs and continue to work on programs to enhance the system. About seven operators are needed to keep the hardware running around the clock five days a week. These operators submit for processing, the work of the carry-in users, and work generated within the building.

Oakland Schools has a fairly large number of specialists working as consultants to local school districts. One of their functions in this capacity is to assist districts to use available technology. They actually, in supporting RAMS, go well beyond this role.

For example, the consultant for school finance, is held accountable for the specifications for various programs that make up the finance sub-system. He has the training and experience to qualify him to perform this function, but more importantly he develops and maintains a communication process with local district personnel to assure that the programs meet their needs. Concurrent with this process, are continuous staff development programs to enable local district personnel to exploit computer programs that are presently operational. This example is for the finance sub-system.

Supporting the staff sub-system is our director of personnel. Supporting the student sub-system is our director of student services. Research and curriculum consultants likewise are developing and supporting programs that are a part of the system.