COMPUTER APPLICATIONS IN CABLE TELEVISION

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The growth of, and changes in, cable television during the past three years have made computer technology cost-effective for cable systems. Computers are no longer optional operational tools, but integral to the conduct of business. Cable management personnel have had to absorb the recent technical and marketing changes in the cable television industry and now have to learn the basis of another technology--the use of the computer. Cable television's management should, therefore, understand available equipment, software, and implementation alternatives sufficiently to successfully apply computer technology. Computer systems, chosen wisely, can help increase penetration, improve operational efficiency, and deliver services that otherwise could not be offered. This discussion highlights the important areas to be explored in the application of computer technology.

New franchise construction is taking place at an unprecedented rate. The volume of record keeping is increasing substantially. Franchises are increasing penetration by adding new services; these services require additional information storage. Many services require close monitoring operationally and from an accounting viewpoint. Computer storage offers the most efficient method of organizing and updating large amounts of detailed information.

Cable is growing so rapidly that there is a lack of experienced personnel to fill available positions. Because cable is becoming more sophisticated the industry is competing for more sophisticated personnel; employees are becoming more expensive. Properly implemented computer technology can maximize each employee's effectiveness and increase the ratio of subscribers per employee.

UNDERSTANDING COMPUTER TECHNOLOGY

Computer-use decisions can have serious effects on growth and profitability. The choice of the wrong computer system can limit growth. Also, the computer that is not reliable and/or underdesigned can decrease profits.

Computer technology is dynamic and, like cable, is still in a stage of rapid growth. Computer technology is not monolithic. It encompasses a continuum of equipment and services, as well as various types of suppliers.

HARDWARE

Availability of cost effective equipment is not a limiting factor to computer applications. There is no other industry with as wide a range of reliable equipment. On-going development continues to reduce initial costs, maintenance costs, energy consumption, and the need for special environmental conditioning. A good hardware base is essential to proper design and implementation. The fundamental issue is the accurate assessment of processing and storage requirements. These requirements will indicate the logical equipment direction--main frame, mini- or micro-computer.

The type of storage technology used--floppy disk, disk cartridge or magnetic tape is closely associated with the company's storage requirements. There is a fundamental relationship between the number of records to be stored, e.g., subscriber records with accumulated payment, work history, and so forth, and the records pertaining to services offered--and the optimum storage technology. The storage technology used represents a significant percentage of equipment costs, and, for data intensive applications, is one of the key issues of good design. Micro computers generally use floppy disks which are low volume storage units, and are used when processing speed or capability is not critical. Random access disk technology is used for applications that are data intensive and require sophisticated manipulation. Magnetic tape drives are associated with applications for which information retrieval speed is not critical but high storage volume is desirable. Main frame and mini-computers are used in large data-processing environments in which both high storage volume and processing speed are important.

SOFTWARE

Software enables the computer to perform specific tasks. For software to be successful, the system designer has to thoroughly understand the industry requirements as well as the equipment's architecture. The development of software is expensive and time consuming. Further, it requires field testing and then commitment on the part of not only software development personnel, but also user personnel in an environment that is a challenge to the application. For each successful computer application three distinct areas of software must be integrated-- operating system, data base management, and application programs.

The operating system is the fundamental software provided to make the computer equipment and its peripherals--disks, printers, magnetic tapes, and the

like--function as an integrated system. This software is generally not apparent to an end user. (An end user is simply a person using a computer's capability without having a fundamental knowledge of computer technology, much as using a telephone requires no understanding of how it transmits.) The operating system determines whether a computer system is batch (where there is no user interaction during program execution) or on-line (permitting user interaction); whether it is multi-user (the computer's resources are shared) and/or multi-tasking (enabling different users to perform different programming tasks concurrently); and whether it has data communication capabilities (the computer can be used from remote locations via telephone, microwave satellite, or other transmission technology) or distributive processing capabilities (a network of computers that perform in an integrated manner).

Operating systems are supplied and supported by the equipment manufacturer; they are integral to the functioning of the equipment. Operating systems can be sophisticated, as in large mainframe computers, or crude and limited, as in home-user microcomputers. Because the operating system uses equipment resources, its size and efficiency determines how much computing capability remains to run the data and application software; it thus determines the system's cost effectiveness.

The data base management software determines the sophistication of information storage and retrieval. Its structure defines record-addressing capacity, record-format flexibility, and how records can be retrieved, updated, and changed.

The application software performs specific end-user tasks. It is usually the only software with which a user interacts. Good application software is defined by the user environment. Proven areas of application software include on-line order entry, work-force scheduling, construction estimating, accounts receivable, and general ledger. New areas of application include data acquisition, such as amplifier monitoring, and data acquisition/signaling, such as addressable taps/converters. These latter applications call for sophisticated software that interfaces electronic equipment to the computer. These areas of software must function smoothly with a minimum of end-user commands.

SUPPLIERS

Equipment manufacturers fall into two broad categories--end user and OEM; some firms occupy both categories. End-user suppliers sell directly to those companies that will be using the systems. Packaged application software exists, but usually for well developed industries and applications. End users who buy directly from the manufacturer usually bear the responsibility and cost of application programming specific to their needs.

An alternative is to buy a packaged product. This means accepting an organization's solution to a specific set of problems, but usually eliminates the need for any programming by the user. In this instance, the OEM equipment supplier sells to software and systems companies; these companies add special software and/or hardware to meet specific application requirements.

A third alternative is to use computer service bureaus. The user buys specific services. The user deals not with the computer system but with the service bureau which supplies specific application sources, such as accounts receivable and invoice generation.

ASSESSING CABLE OPERATING PARAMETERS

A company should accurately assess its expected growth for at least three years. Implementing computer technology means long-range planning. This is the only way to ensure the company's investment.

The size and geographical distribution of the company's franchises and the services these franchises offer are important in determining the scope of the application.

The geographic distribution of operations poses the problem of how to implement an application that can serve all facilities in the most cost-effective manner. Cable management must analyze communication costs, additional equipment costs, the operational logistics involved with managing remote offices, etc. Certain decisions are dependent on a company's profit/loss operating philosophy. Where should such functions as invoice printing, payment processing, and collection activity take place?

A parallel of where the cable industry is today with computer applications can be made with the telephone companies and their use of the computer only 10 years ago. In 1969, digital computers were mainly used for billing and solving engineering problems. Most applications were traditional batch programming. Today sophisticated digital switches (another term for computer) are being installed in central offices almost as quickly as manpower permits.

The computer industry and the telephone companies saw the potential and made the investment. Supplier competition helped change the entire technology of telephone transmission. This same kind of competition is helping to change the technology of the cable television industry.

Making the correct long range decisions on implementing computer applications in light of the rate of change taking place in cable will not be easy, but, by making the effort to get educated, seeking information and advice from proven suppliers and in the finality making a commitment to use the technology, the cable operation will continue to help advance cable's dynamic growth.