THANKS TO THE MEMORIES:
TELEDELIVERY, DOWNLOADING AND THEIR ROLES IN CABLE TV

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ABSTRACT

Teledistribution of video and data software will become an increasingly important part of the cable TV and communications industry. Video-on-demand systems, including hybrid facilities, are being introduced and tested. This paper describes downloading services as well as ones which use constant cycling of data or video, to be retrieved via a home terminal/receiver. Newly installed addressable cable equipment and headend computer/control devices will accelerate the growth of teledistribution, as cable operators seek ways to use facilities for revenue-generating services. This paper also reviews broadcasting and telephone industry activities to develop teledistribution services, notably for games and information.

The success of teledelivery depends on a trade-off between the cost of communications versus the cost of memory. As memory and storage devices drop in price, teledistribution becomes more feasible.

INTRODUCTION

Today's cable industry, eager for revenue-producing lift, may be quick to latch onto the looming concept of "teledelivery." Video-on-demand, telesoftware and a range of other enhanced services are ideally mated to new cable technology. In particular, the new breed of addressable decoders and headend management computers can be put to good use in sending and billing for electronic software.

At the same time, teledelivery of data, video and voice are high on the agendas of telephone, computer and broadcast firms. Downloading of software figures extensively into the videotex plans of companies such as IBM and CBS.

Warner Amex Cable experimented with a hybrid form of video-on-demand to augment or replace the beleaguered Qube system (although a parallel project at Warner Communications was abandonned in January 1984). An impressive Atlanta consortium which includes telephone, power and cable companies and retailing firms is putting together a service called TranstexT to offer interactive residential services, including video-on-demand through cable channels.

The success of teledelivery depends on a number of factors -- mostly technical and economic. Although the concept of electronic transmission and downloading may be attractive, its marketplace impact will depend on how cheaply video or computer data can be stored at the user's site. Currently transmission is cheap, but memory is fairly costly; that is -- it is relatively inexpensive to transmit data when needed, but the storage device to keep and recall material at each customer's home or office is comparatively high priced.

DEFINITIONS AND DIRECTIONS

Teledelivery systems distribute programming via electronic means such as broadcast or cable TV transmission, bypassing traditional sales or rental of a physical product at retail stores. Teledelivery could involve downloading of data or video programming into a home receiver or it could offer constant transmission, with viewers "tuning in" at any point in the cycle to pick up material using a special decoder-converter-receiver. Such programs could be stored in conventional electronics equipment, including VCRs or computer discs.

Teledelivery will take several shapes as the business develops. The concept of teledelivery will become vital to many

segments of the consumer electronics industry. For manufacturers, it will create a new way to control production and operations. Programs -- be they they computer software or video shows -- can be distributed on demand where they are needed, thus avoiding costly manufacturing and shipping steps.

By the end of this decade, tele-delivery will grow into a $10 billion industry. That total will be split among software producers, communications firms and hardware makers, with software companies taking the largest share, probably about 50%.

Communications is the key factor in the development of teledelivery systems. The telephone industry break-up will wreak havoc with rates and services. Tele-delivery via phone lines is only feasible if rates stay reasonable. That is why alternative distribution systems, such as new broadcast channels and cable TV, will be so important.

WHO'S WHO

At least a dozen companies involved with the cable TV business are developing teledelivery schemes. NABU Network has introduced a system in Canada, and will soon begin service in Alexandria, Virginia. Cable Applications Inc. plans to develop a cable-based service called Cabletex. Group W Cable will include such services in its "Request Teletext" venture in California. CBS is expected to experiment with similar services on its Texas cable systems. Jones Futurex is working on data delivery systems.

CHEAPER MEMORY

Developments in storage and memory technology suggest that the balance may shift, however, and when the cost of data and video storage drops, then the era of teledelivery will begin in earnest. This financial balance will also shift because of the expected rise of transmission costs, especially those involving local telephone lines. Indeed, cable's role in teledelivery of data/computer services as well as video programming will escalate thanks to the coming rise in telephone rates.

Cable is not alone in eyeing tele-delivery technology. ABC's broadcast group is already commercially testing its Telelst service in Chicago, a system which offers overnight downloading of pay TV movies to home VCRs. Direct broadcast satellite companies, low power TV stations

and others with spectrum to spare may look to teledistribution as a way to generate new revenue from channels which are otherwise under-utilized. In the process, conventional media (notably FM radio) are being eyed for their capability to transmit telesoftware. Atari and Activision, leading computer videogame firms, are testing a service which will use broadcast sidebands to distribute games -- mainly for previewing and updating data. AT&T has developed a deal with gamemaker Coleco to distribute videogames via phone lines, even permit interactive playing so that users willing to tie up phone lines can play against each other from their home game units. Control Video Corp., a Virginia company has a marketing agreement with BellSouth, the most aggressive of the divested Bell Operating Companies, which will offer CVC videogames and information.

In short, there is great activity as program distributors, communications companies and equipment makers look for a niche in the promising new world of teledelivery. Computer and data processing executives are also eyeing developments which will help them solve their distribution problems, including updates and additions to software. Moreover software programmers are looking for ways ways to download and cycle material directly to homes, bypasssing conventional -- and costly -- retail distribution. It appears that devel-opments, especially technological breakthroughs, in computer software teledelivery will be translated into video and cable distribution.

HYBRIDS

Hybrid systems using combinations of telephone and cable facilities appear very attractive. Cable's broadband capacity and time-insensitive pricing encourages telesoftware purveyors to transmit large quantities of data at relatively high-speed.

Requests for specific programs or interactive transactions can be handled by using a conventional telephone connection for upstream communications.

Hybrid versions of teledelivery are already available in the retail videogame environment. At least four electronic distribution systems are available. Retailers are still wary about how such systems fit into their profit scheme. In the ideal world, electronic delivery could be an answer to the expensive

mistakes of inventory control (i.e. overstocking a turkey title but not getting enough copies of a sleeper hit program). In the retail environment, copies of programs would be made on demand through high-speed duplication of a program while the customer waits about three or four minutes in the store. The electronic distribution systems involve expensive hardware at the store; each has a slightly different arrangement for sending master copies of the programs to the duplication device, as well as deals to give a commission to the retailer.

For now, these retail-oriented electronic schemes are aimed primarily at delivery of videogames and computer programs. But the technology could be expanded to involve video shows, although economics of all sorts then become a more massive problem. Not the least of these problems are concerns about piracy and unauthorized access.

OPTIMISTIC FEATURES

Teledelivery has the ability to transmit updated, and refreshed information, making it valuable as a way to generate a continuing revenue stream.

It can be used as a sales tool to preview and promote new software. Subscribers would have the opportunity to sample new material, which they then could buy in a store or order via electronic transmission.

Coding for anti-piracy protection and "timely" sales raise other issues. The potential of unauthorized duplication may deter the quick development of teledelivery. Equally important, some software companies express interest in ways to license software on a usage basis, vaguely akin to pay-per-view concept of video programming.

The solution to this may be in time coding processes already available in computer software. Indeed, ABC's Telelst uses a similar approach in its downloaded video programming. Certain new movies are encoded so that they can only be played back during a limited time period. Through a complicated time-coding system, ABC (and the studios and producers) can control how often or during what time span the Telelst shows can be played back. Some of the newest movies, are coded so that they must be viewed within a two or three week span, otherwise the tape won't play back. For other shows,

with less timely box office appeal, the encoding may permit endless reruns over a period of months or years.

The growth of pay-per-view technology in the cable TV industry should help the cause of teledistribution. By familiarizing viewers with a per-show viewing arrangement, cable is building the foundation for a market which involves selling individual programs directly into homes. The addressable facilities being developed for such services will create an important technical resource for other teledelivery projects, setting up procedures for encoding, authorizing and billing electronic delivery.

ADDITIONAL CONSIDERATIONS

Development of teledelivery services will raise many financial and technical problems, starting with compensation and affiliate relationships. The issue of unauthorized duplication is the most vital concern, especially for program producers who already are victimized by video piracy. By giving their blessing to a system which sends programs through the airwaves, they may be contributing to the problem which cuts to their wallets. That's why addressable technology and encoding systems are so high on the agendas of teledistribution pioneers -- along with formats that can assure instant billing and tracking of who has copies of each program.

WHAT'S AHEAD

Video-on-demand systems are the next important stage of teledelivery. Creating such services may be more complex -- but infinitely more rewarding. The objective is to use as much bandwidth as necesary to send programs to viewers when they want to see them. In a cable system of unlimited capacity, any subscriber could log into any program at any time he had the impulse to see it. Realistically such a situation would lead to drastic problems -- starting with the barrier of shows not being available at the cable headend. A more frequent problem would arise over the issue of "contention" if every home decided at the same hour to call up a different show. Even in a state-of-the-art 100-channel system, channel capacity would quickly be exceeded.

That is why efforts are underway to develop hybrid teledistribution systems. Problems could arise if too many users queue up for certain programs. That is,

they will be offered a large menu of programs they could see -- but they might have to wait in line for the material to be transmitted to their receiver. In the case of feature length movies that might mean overnight delivery, downloaded into a home receiver set-up akin to Telelst. In other cases, when technology permits high-speed video transmission, it's conceivable that shows could be sent into the home receiver for later playback the same evening.

Integrated Communications Systems, which is planning the Atlanta TranstexT service, conceives of teledelivery as part of a larger package offering energy management, teleshopping and the vast range of services now planned for two-way cable systems. Using a hybrid format of cable linked to telephone lines, ICS foresees downloading of a variety of video and data material, which can be processed through a "gray box" at customers homes.

Warner Amex had been working on interactive projects, including tele-delivery, with GTE and Bank of America.

The project, which was abandoned in early 1984, used sub-hubs, based around cable's headend hub principle. In theory the package would have involved a series of neighborhood cable centers, each equipped with a bank of videodisc players or other video devices. When cable subscribers within a neighborhood wanted to call up a specific program, they would be directed to the video center with available capacity, thus drawing the load off a single megacenter -- and presumably allowing users in different parts of town to use the same channel simultaneously (e.g. customers in different neighborhoods could all be seeing different shows on their own channel 65 at the same time).

Teledelivery is an idea whose time has not quite yet come. But the eager activity and the potential benefits it can offer throughout the electronics business suggest a promising future -- and offer further reasons why so many organizations are working so hard to make teledelivery a part of the new electronic environment.