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## Videotex The New Information Systems

### Introduction

*Videotex* and *teletext* are terms that are becoming harder and harder to define, and it is usually necessary to begin by explaining what the terms originally meant. Videotex has been used to refer to computerized information/entertainment systems using telephone lines to tie home television sets to computers. Teletext has been used to refer to computerized information/entertainment systems that send data to home television sets by encoding the data into unused portions of a television signal. At the receiving end—the television set—both videotex and teletext can look identical. And both, from the beginning, employed color and graphics as distinguishing characteristics.

However, both systems are still evolving technically and conceptually. Newer systems have been developed (for example, on cable television installations) which incorporate a little bit of both, as well as features of traditional timesharing computer systems. In many cases, the term *videotex* is used to refer to all of these systems that are designed to bring digital data to television sets or television monitors, usually using color and graphics.

### Background

Since the 1960s, it has been recognized that the computer and telecommunications industries were overlapping more and more. Computer power has become widely accessible via telecommunications, and telecommunications techniques and methods have become computerized. Information services in the form of large online databases, both public and

private, grew during the 1970s into worldwide systems offering access to millions, perhaps billions, of items of digitally stored data. This same general area of development also spawned such distinct services as Picturephone (which dates back to at least 1930, and to a laboratory system in the 1960s) and two-way cable television (which was being tested by a dozen or so companies in the United States during 1971-74).<sup>1</sup> In fact, the first videotex system to gain recognition as such grew out of work in England on computerized reservation systems and on the British version of Picturephone.<sup>2</sup> This first videotex service was initially called "viewdata" and later Prestel. At roughly the same time, perhaps even a little earlier, there also developed in England the first teletext service, which has been named Ceefax and is broadcast by the British Broadcasting Corporation (BBC). It is helpful, then, to review briefly the introduction of videotex and teletext systems in countries around the world.

### Systems in Other Countries

This overview of systems in other countries does not attempt to be exhaustive. Teletext and videotex systems have either been developed or established in such countries as the United Kingdom, France, Canada, Japan, Sweden, the Netherlands, Austria, Switzerland, West Germany, Denmark, Finland, Australia, Hong Kong, and the United States.

The United Kingdom is recognized as the home of videotex and teletext, where the oldest commercial videotex and teletext services are in operation.<sup>3</sup> Teletext was tested in the late 1960s, and first became available on an experimental basis in 1974. Two years later, public teletext service began, with pages of text and graphics encoded into the unused portions of broadcast television signals. There are currently three teletext services available to anyone who has a television set with a teletext decoder. The BBC broadcasts Ceefax on BBC1, and Orbit on BBC2. The Independent Broadcasting Authority broadcasts Oracle as part of their television channel. During the same period, the videotex service known as Prestel was developed by the British Post Office, given a field trial in 1976, and has been offered as a commercial service since 1979.

As of early 1981, there are over 150,000 teletext users in the United Kingdom, and about 10,000 videotex users. (In Britain, after you get a suitably equipped television set, teletext reception is free, while videotex is not.) There are also about 350 users of the London-based Prestel International service, which is a videotex system designed for the international business community, and used by clients in seven countries.

France was probably the second major country to develop videotex and teletext systems.<sup>4</sup> In the mid-1970s, in a massive effort to expand and modernize their telephone system, France began what is called the "Télé-

matique" program. As part of that program, a videotex system called Teletel was created that would permit access by users to the computer databases of any participating company. Unlike the Prestel system in the United Kingdom, the telephone company does not operate the computers used to store the data. However, one exception is the electronic directory service provided by the telephone authorities. This will be the first videotex system to be given a public trial, and will start during 1981.

The teletext system in France is called Antiope, although that name can also refer to the joint videotex/teletext designs produced for France. The initial teletext service in France began in 1977 and consisted of stock market reports broadcast on a television channel that does not carry a "regular" video program (thus, more scan lines can be used for data transmission). A public teletext service was started in 1979, and there are now about 1500 users.

Canada is the third major country to produce its own videotex and teletext system. The Canadian system, known as Telidon, grew out of work on the digital transmission of graphics. Thus, one of the distinguishing features of Telidon is the use of graphic instructions transmitted to a processor at the television set; only a few instruction codes are needed to tell the processor to draw a line, or a rectangle, or an arc, and so on. Telidon, as a name, can refer to both teletext and videotex systems. The Ontario Educational Communications Authority has been testing Telidon as a teletext service since mid-1980 with a small number of users. Also, nearly every provincial telephone company in Canada, and Bell Canada, has begun, or will soon begin, tests of Telidon as a videotex service.

Japan has also been developing videotex and teletext systems over the past several years. These systems are unlike the previously mentioned systems in that Japan cannot rely on a character generator built into the decoder in the television set (as the other systems do), because the character generator would have to be able to produce up to 3000 different characters. Instead, the Japanese system, called CAPTAIN, transmits the character patterns themselves for Kanji characters. Again, in contrast to other systems, CAPTAIN displays fifteen characters on a line and eight lines on a screen, while the previously mentioned systems display forty characters on a line and twenty to twenty-four lines on a screen. The CAPTAIN system has been installed on a trial basis since late 1979 and has about 1000 users. Japan has also tested teletext, dating back to 1978, and has conducted several field trials of teletext distributed via coaxial cable and fiber optic cables.<sup>5</sup>

Other countries, primarily in Western Europe, have also begun videotex and teletext services. In West Germany, Bildschirmtext has been available since mid-1980 and has some 6000 users. In the Netherlands, Viditel has 4000 users and has been operational since late 1980. Other countries

with relatively small systems are Finland, Sweden, Norway, Denmark, Belgium, Switzerland, Austria, Italy, Spain, Hong Kong, and Australia.

### Systems in the United States

In the United States the situation is rather complex, because there are many services that contain some of the features of videotex and teletext. Virtually any online database can be accessed via telephone lines and viewed on a television screen, particularly if the terminal is a microcomputer attached to a television set. The only difference between these services and videotex is the color and graphics (and possibly the fact that videotex, by definition, is supposed to be extremely easy to use). However, at least some of the online services are becoming easier to use, and some are adding color and graphics, too.

There are at least three online systems that are considered to be very close to videotex, primarily because they have sought users outside the traditional business and research communities. These three systems are: The Source, CompuServe, and the Dow Jones News/Retrieval Service. All three have designed their systems to be attractive to microcomputer owners, and have marketed their services in cooperation with one or more microcomputer companies. Dow Jones, for example, advertises its service in conjunction with Apple microcomputers. CompuServe has an arrangement with Radio Shack (the TRS-80) for joint selling efforts. The Source has been working with Texas Instruments (the 99/4). All three database services are also providing, or beginning to provide, color and graphics. The Source, for example, has announced a service called Texnet for owners of Texas Instruments' 99/4 microcomputer, which provides color, graphics and even sound. The Dow Jones News/Retrieval Service, available since 1977, has about 15,000 users; the Source and CompuServe have about 10,000 users each, and began service in 1979.

Other videotex systems have been developed by AT&T (currently being tested in Coral Gables, Florida), GTE (tested among a small group of companies), OCLC (tested in Columbus, Ohio), and the U.S. Department of Agriculture (known as the "Green Thumb" project in Kentucky), to name a few.

On the teletext side of the issue, KSL-TV in Salt Lake City has been testing teletext since 1978; CBS has been testing teletext signals in several cities since 1979; and Oak Broadcasting has been operating a trial service in Ft. Lauderdale, Florida, since 1980. Currently, teletext is on the air in Los Angeles (KNXT-TV and KCET-TV) and in Chicago (WFLD-TV and WGN-TV), and very soon will be also in Washington, D.C. (WETA-TV).

In the cable television arena, the distinction between videotex and teletext blurs considerably. Data may be transmitted via cables with or

without being inserted into a portion of a television signal. And even if a television signal is used as the carrier, it could simply be a television-wide signal full of digital traffic. Tocom Inc., for example, a manufacturer of cable television equipment, has developed equipment that provides for teletext signals on fifty-five normal television channels, as well as data transmission independent of the television channels for polling and for limited interactive services. The Qube system, produced by Warner Amex, has recently begun testing the use of home microcomputers as a means of accessing existing online databases via the cable system. Mattel Electronics produces Intellivision, a stand-alone microcomputer for games and educational packages, that can also be used in a service called Playcable, where the games are stored at the cable head end to be accessed on demand by the home terminal.

To make matters a little more confusing, the satellite links among cable television systems have also been used for versions of teletext. Southern Satellite Systems sends a teletext signal (i.e., the data are encoded into unused portions of a regular television signal) carrying UPI and Reuters news to about sixty cable head ends, where the data are decoded and used to create a normal television picture of text and sent down the cable as a normal television channel. Time Inc. has announced that it plans to create a national teletext service using a television-wide signal full of data distributed via satellite to cable television systems. In fact, most major cable television companies have developed, or are preparing to develop, hybrid videotex/teletext services.

## Conclusion

In summary, there are a great many companies in many countries striving to create a mass market for videotex and teletext. When the telephone was just getting started, it was not at all clear how it would be useful.<sup>6</sup> However, in a relatively short time, the business community found that the telephone could indeed be useful, and telephone systems spread, not only in business, but also into almost all homes. Similarly, videotex will no doubt be most successful first in commercial applications. But it will be only a matter of time before videotex and teletext services are mass-market operations.

As the mass markets develop, we can look for social effects similar to those associated with the growth of telephone usage. As the Harvard University Program on Technology and Society concluded, new technologies bring forth social changes "both to take advantage of the new capabilities and to deal with unforeseen consequences."<sup>7</sup> We are not yet able to see all the advantages, nor all the consequences.

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