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THE TELETEL/MINITEL SYSTEM IN FRANCE

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Abstract—The French videotex service, Teletel/Minitel, has been very successful from the start. The French system is provided through a public packet-switched network called TRANSPAC accessible via the public telephone lines. The French government agency in charge of telecommunications, the *Direction Generale de Telecommunications* (DGT), controls TRANSPAC and the main computers used to provide the Electronic Directory Service (an on-line phone book which also lists occupations) through the Teletel/Minitel system and has the right to approve or disapprove private information services made available through a subsystem of TRANSPAC called *Kiosque*. The DGT decided to make the Minitel terminals widely available to homes and businesses by subsidizing the cost of the terminals.

THE FRENCH VIDEOTEX REVOLUTION

The DGT began distributing Minitel terminals in 1981 on a trial basis. Seven hundred thousand terminals were in service as of April 1, 1985. By the end of 1985, there were 1.3 million terminals in operation. Of the 1.3 million, 1.146 million were loaned to users for no charge; 158,000 were leased from the DGT. The rental fee for Minitel terminals was 85 francs per month (around US$12). About 20,000 personal computer owners were using the system by mid-1986, having adapted their modems and software to provide a suitable interface (more below on terminal emulation software for PCs) ("Facts, Figures and Profits," 1986). It was projected that there would be 2.5 million terminals in service by the end of 1986.

The decision to loan the simplest Minitel terminals to users at no charge was made by Jean Paul Maury, head of videotex development for the DGT. This was probably the single most important reason for the tremendous success of the Minitel/Teletel system.

In 1977, it was expected that the large number of standardized terminals could be produced for around US$50 a unit. Contracts for supplying the terminals were given to the two largest French telecommunications equipment firms: CIT-Alcatel (produced by their Telic-Alcatel subsidiary) and Matra. Now a third company, Radiotechnique, also produces the terminals. The actual price paid by the government for the simplest Minitel terminal (the M1) was around 1,000 francs at the end of 1985, or about US$140. But the goal of making the terminals relatively inexpensive was better met in this program than in any comparable program in the world.

The Minitel M1 terminals are small, as shown in the photograph (Figure 1); the screens are capable of producing reasonably sharp graphics, but only in black and white (whereas Prestel and the U.S. graphics-oriented videotex services all aimed for color images); and the French system uses a completely unique graphics standard called Teletel. Unlike the U.S. standard, NAPLPS, Teletel uses mosaic rather than pixel

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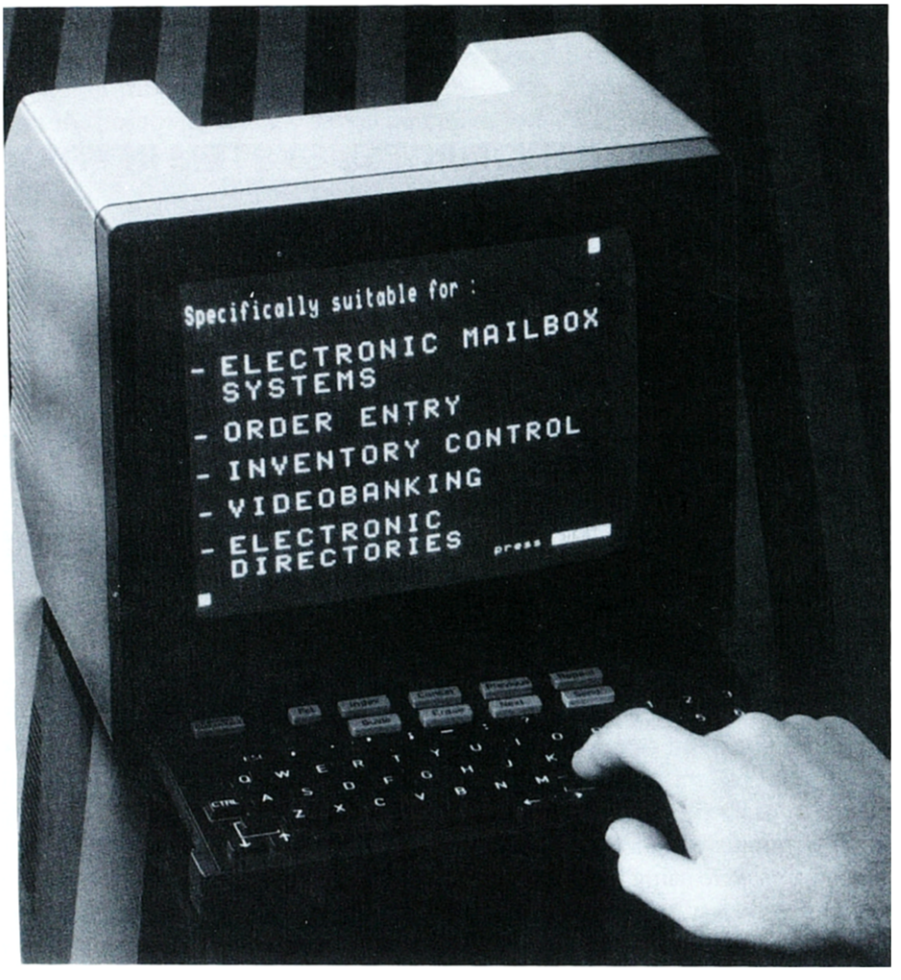


Figure 1. A Minitel M1-B Terminal.

graphics and works with black and white as well as color displays (see examples in Figures 2-4). There are six shades of gray available on the M1 and M10 (which comes with an attached telephone) terminals and all Teletel/Minitel software is designed to work both with the standard black and white and the more expensive color terminals (the MC). Screens are painted rapidly thanks to the simpler mosaic graphics and it is somewhat less difficult to program graphics screens for the Minitel than for NAPLPS services like Viewtron, Gateway, or CompuServe. The main drawback of the smaller M1 and M10 Minitel terminals is the rather cramped chiclet-style keyboard.

Home consumers were given a further incentive to accept the terminals when the DGT announced that it would no longer publish a hard-copy version of its telephone directories. Thus, anyone wishing to access the new Electronic Directory Service would have to use a Minitel terminal, either at home or at the nearest post office. The electronic directory was the most heavily used information service during the initial period of service (about 20 minutes per terminal per month). It had the capability of providing telephone numbers on the basis of name, location, and profession. Some people used the system to locate long-lost friends and relations by doing nationwide

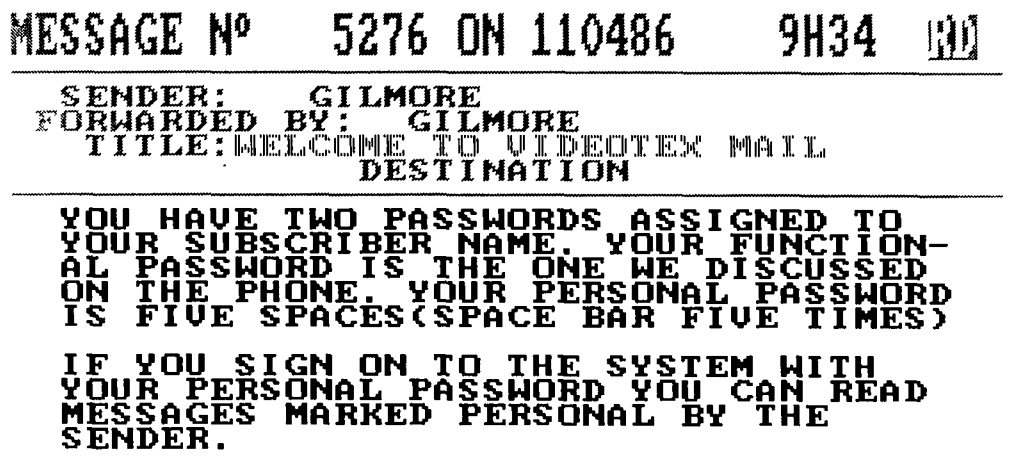


Figure 2. Example Screen of Honeywell's Videotex Support Center Electronic Mail System (using Teletel Standard).

searches on the directory. Others used it to create mailing lists for newsletters and advertisements at very low cost.

But the directory was not the only service available. The DGT was wise enough to encourage a wide number of private firms to establish information services by setting up a simple billing mechanism for private information services called *Kiosque*, making approval for *Kiosque* services relatively easy, by subsidizing the establishment of new services by providing assistance for videotex programming, etc. As of the end of 1984 there were already 1,000 data bases available through the systems. Roughly 700 of these were for professional use; the remainder were for residential or private uses. By the end of April 1986, there were 1,900 data bases on line. *Kiosque* revenues increased from about 10 million francs (about US$1.3 million) in January–February 1985 to over

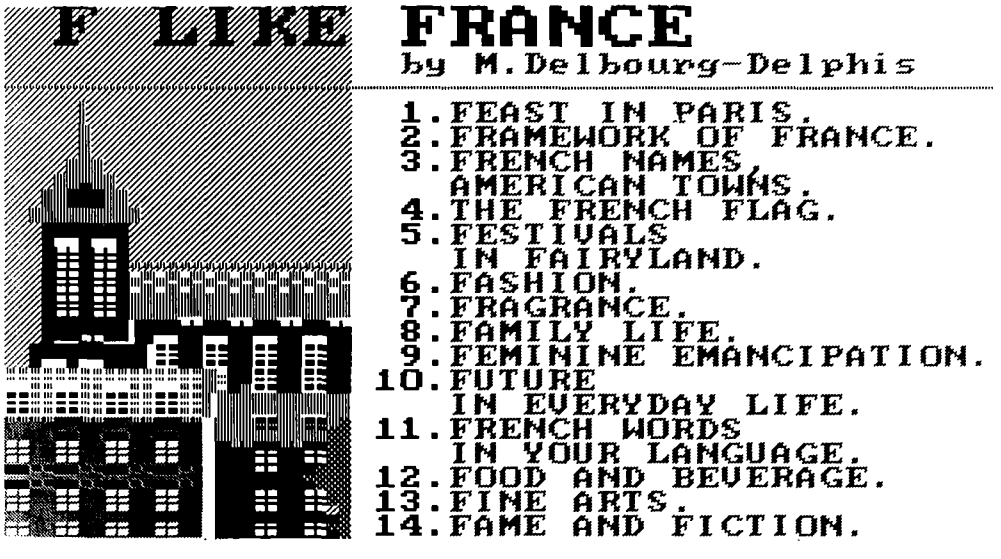


Figure 3. Example of Teletel Mosaic Graphics Screen on Honeywell Videotex System.

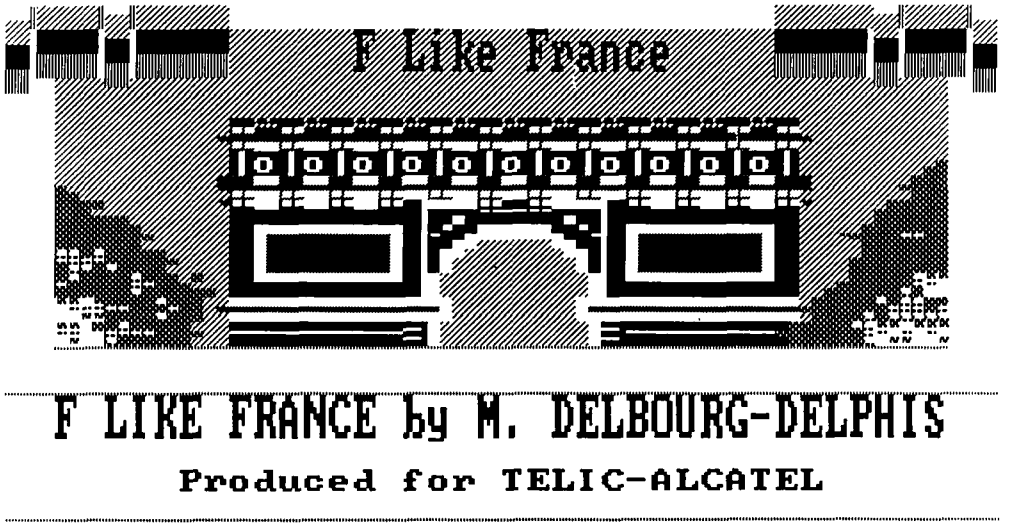


Figure 4. Example of Teletel Mosaic Graphics Screen on Honeywell Videotex System.

80 million francs (US$10.1 million) in November-December 1985 ("Facts, Figures and Profits," 1986).

Examples of services available on *Kiosque* are:

- SNCF—lists all the schedules of the French national train system and allows you to make on-line reservations
- ARGUS—lists information about automobiles (the on-line counterpart of the excellent automotive publication called *L'Argus de l'Automobile*)
- Tel'Ecole—provides on-line instruction in computers, foreign languages, sciences, health, OPEC trade, etc.
- OBS—an on-line version of the popular magazine, *Le Nouvel Observateur*
- LOGITEL—home banking for customers of the Societe Generale
- CADITEL—gift-purchasing and delivery service
- 3 Suisses—videotex shopping at one of France's largest department stores
- Vinitel—direct purchasing of wines from vineyards, with detailed information about varieties, vintages, and prices (there is also a mailbox for vintners)
- Professeur Susan—probably the most unusual service offered, an on-line instructional system for medical students with some artificial intelligence capabilities
- QUESTEL Enterprise—data base containing information about 75,000 enterprises in France
- FUNITEL—games and jokes (including a number of tasteless ones like on-line Russian roulette)
- CRACJ—games, CB-type interactive dialogues, bulletin board
- CANAL CONVIVIAL—information service for arranging a *rendez vous*

These items were taken directly from *LISTEL*—the directory of Teletel services—of December 1985. This directory, which is reasonably comprehensive, costs a mere 20 francs and is sold at newsstands. It listed around 1,000 services in the December 1985 issue. There are also a number of very useful publications widely available for Teletel/Minitel users: e.g., *Telematique News, La Revue du Minitel*, and *Minitel Magazine*.

Roughly 40% of the traffic on the Teletel/Minitel system concerned banking or financial data and 20% concerned news or information about the media. A larger number of individuals than expected used the system to read news headlines from the more important newspapers and news services. The DGT consciously encouraged the establishment of news-oriented information services as a way of convincing media critics of the system (news services were among the earliest to be approved).*

The growth in Teletel/Minitel related telephone traffic has been enormous. In 1985, Teletel traffic was increasing at the rate of 250% a year. Total connect time for the Minitel network (Teletel 1, 2, and 3) was 13 million hours in the first 6 months of 1986, up from 11.7 million hours for all of 1985. *Kiosque* accounts for over 70% of the calls on the Minitel network. The demand for *Kiosque* services was particularly problematic because people would come home from work and simultaneously call the various leisure-time services. In June 1985, the entire TRANSPAC network failed because it did not have sufficient capacity to handle the rapidly increasing load. Apparently the digital switches of TRANSPAC became overloaded when people who were unable to get through to the information services kept redialing the access numbers. While the DGT increased its peak computing capacity, the delivery of Minitel terminals was slowed and users were asked to avoid calling at peak hours. The failure of the DGT to anticipate the collapse of TRANSPAC became another item in the general campaign of telecommunications users to speed the deregulation of the system ("TRANSPAC," 1985).

Despite these problems, however, the Teletel/Minitel videotex experiment has been very successful. Since most of the *Kiosque* services create revenues directly for the DGT (roughly 30% of the fees charged to users for information services go to the DGT in exchange for its provision of billing services and access to the public-switched network), the DGT will rapidly recover the cost of buying Minitel terminals for leasing and selective free distribution.

The private information services are doing well financially also. Total *Kiosque* revenues in 1985 were 278.4 million francs or about US$38 million. Revenues for the first 6 months of 1986 were around US$54 million. The rate of increase in the number of services has been very impressive: 414 out of the total 2,000 videotex services in France are available on *Kiosque* ("French Expert Spells Out," 1986).

Initially it was estimated that it would take five years for revenues from Teletel/Minitel to pay for the subsidized terminals, but that estimate has been shortened to four years in light of higher than projected revenue flows. But perhaps the most important success has been in winning over the French public to the idea of using advanced telecommunications technology in their homes, thus reducing the barriers for the further spread of information technology in the French economy and society.

MINITEL COMES TO THE UNITED STATES

Honeywell Information Systems was the first company to offer a Teletel videotex service in the United States. This service requires that the user have access to an American version of the French Minitel terminals. The Honeywell system, which oper-

*Most of the data on Teletel/Minitel cited here are from a presentation made to a CIT-Alcatel Sales Meeting in Charlottesville, Virginia, on July 15–18, 1985, based on data collected by Intelematique. I would like to thank Georges Nahon on Intelematique and Bernard Tilge of CIT-Alcatel for sharing these data with me. See also Epstein (1986).

ates out of Chicago, offers sample graphics screens (provided by Telic-Alcatel) and an electronic mail system as shown in Figures 2–4.

In April 1986, Intelmatique, a subsidiary of France Telecom chartered by the DGT to promote and sell Minitel/Teletel videotex systems internationally, announced that a new Minitel terminal (the M1B) would be available which was compatible with both the 40-column Teletel videotex systems and with 40- or 80-column ASCII systems. They expected that this would help improve the prospects for sales of Minitel terminals worldwide, and especially in the United States. They discovered, in their French operations, that many heavy users of videotex did not want elaborate graphics capabilities, but rather preferred the faster screen painting of text- or number-based information services.

Those with IBM mainframes can get a Teletel/Minitel compatible server or receiver with a product called TSV 5000 offered by a firm called Videodial in New York. However, the price for this product is around US$20,000. Videodial is working with C. Itoh and Company in a joint venture called Manifex, Inc., to provide turnkey videotex systems in the United States.

IBM France is also marketing a similar product in Europe called Generalized Transaction Monitor, or GTM. IBM waited two years before deciding to support the Teletel/Minitel system, presumably to see how the market would accept it.

There is not yet a simple way for microcomputer users to access the French Teletel/Minitel system from the United States. There are a number of roadblocks. First, the Teletel/Minitel system relies on the V.23 standard for modems, which is a 1200/75 baud system—outgoing signals are transmitted at 1,200 baud and answering signals are received at 75 baud.* The standard Hayes-compatible modems sold in the United States will not work. What is needed is a protocol conversion system on both ends to make the incompatible communications protocols compatible. Computer Sciences Corporation in Los Angeles is working in collaboration with the DGT and Baseline in New York to offer Minitel access via Infonet.

The MTEL series of software, written in France by a small firm called MCOM, allows users to emulate Minitel terminals with their PCs. The MTEL3 software requires the user to have a Minitel terminal next to his or her IBM-PC. This software was used to print the graphics pages in Figures 2–4. MTEL4 and MTEL5 are two newer products from MCOM which combine terminal emulation software with modem cards (built by Matra) which eliminate the need to connect a PC to a Minitel terminal. MTEL4 and MTEL5 both allow users to access Teletel videotex systems from anywhere in the world, and MTEL5 provides the additional feature of supporting the British Prestel videotex standard as well. Another unusual feature of the MTEL products is the MTEL online session programming language which allows users to, for example, produce mailing lists automatically with the Electronic Directory System. MCOM has been stronger on product development than on product marketing and documentation, however, so it may be a while before American users discover and begin to use their products successfully. MTEL3 costs 1,800 French Francs (around US$ 250) and MTEL4 and MTEL5 cost approximately US$600 (exact prices were not available).

Another French firm offering a software and modem card combination is Kortex International. Their product, called X-Tel, also works with an IBM-PC to emulate a Minitel terminal. The cost of this product is 5,950 Francs.

Another terminal emulation program available to American microcomputer users is

*In May 1986, the DGT added a Teletel/Minitel complex with 1,200 baud full duplex ports.

called Mimics. Mimics was written for (and is distributed by) Intelmatique for less than US$50 and allows users with IBM-PCs and Hayes Smartmodems to access the Minitel/Teletel system through an X3.PAD. PC-users with V.23 modems can call the French system directly with Mimics. Mimics will also be compatible with the Infonet link to Minitel/Teletel.

WHY SHOULD THE REST OF THE WORLD BE INTERESTED IN MINITEL?

The French system is the first truly successful, mass-market-oriented, graphics-based videotex system in the world. U.S. systems based on NAPLPS graphics have been largely unsuccessful commercially. Viewtron and Gateway recently shut down operations because of insufficient interest on the part of advertisers. Usage of those two systems remained low after more than two years of operation. Although Trintex (IBM/Sears/CBS), Grassroots, and the NAPLPS part of CompuServe remain in the market, it is not clear how successful they will be.

A large number of interesting information services have been developed for the *Kiosque* and other Teletel/Minitel services, which are bound to be attractive for U.S.-based users as well as other Europeans. While the United States has a very great edge in ASCII-based information services, as vendors move toward more user friendly videotex systems, services with graphics capabilities may have a competitive advantage, especially for mass markets, over ASCII systems.

A number of large multinational firms are implementing Teletel-compatible systems in Europe: for example, Honda, Mazda, Agfa-Gevaert, Corning Glass, IBM France, Mobil, and BMW of France. Intelmatique believes that its most likely customers in the United States, aside from multinational firms, will be the regional Bell operating companies.

The main lessons to be learned from the Minitel/Teletel experience concern the importance of reducing the entry costs for users and producers is mass consumer-oriented information services. What the French have done is to reduce the cost of terminals to users (by direct subsidies), reduce the cost of setting up a new information service (by providing assistance with software and billing), increase the variety of information services (by allowing just about anyone to set up a new service if they have the initial investment), and reduce the costs of learning how to access information services by creating a standardized and highly user-friendly software interface. The experience with Videotex in the United States, Britain, Germany, and Japan has been much less exciting thanks to high entry costs for users and providers.

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French expert spells out reasons why Minitel videotex succeeded. (1986, May 6). Press release. (Available from Young and Associates, Rockville, MD).

APPENDIX
NAMES, ADDRESSES, AND PHONE NUMBERS OF MENTIONED FIRMS

MCOM
16 rue Larrey
75005 Paris, France
tel (1)45-87-35-50

Videodial, Inc.
1700 Broadway
New York, NY 10019
(212)307-5005

Intelmatique
98 Rue de Sevres
75007 Paris, France
tel (1)43-06-16-36

Young and Associates, Inc. (U.S. agent for Intelmatique)
6187 Executive Blvd.
Rockville, MD 20852
(301)984-8556

La Revue du Minitel
5 rue Coq-Heron
75001 Paris, France

Computer Sciences Corporation
2100 E. Grand Avenue
El Segundo, CA 90245
(213)615-0311

Baseline
838 Broadway, 4th Floor
New York, NY 10003
(212)254-8235

Kortex International
29, avenue de 8-Mai-1945
95200 Sarcelles
tel (3)994-02-05