MARIE MARCHAND

# A FRENCH SUCCESS STORY...

THE
# minitel
SAGA

avec **teletel**
je m'informe et je joue
sur

Larousse

A FRENCH SUCCESS STORY...

THE

# minitel

SAGA

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To Yves Stourdzé

# Foreword

*In France, with over three and a half million sets installed and six million connect hours per month, the MINITEL, which began as a technical and political venture, has become something of a social institution.*

*Marie Marchand opens her vivid account with the developments leading up to the emergence of the MINITEL, writing with the assurance that comes from a full command of the subject. She is to be commented for having heard out all the protagonists before putting pen to paper; natural enough since she was acquainted with virtually all the people involved. She traces the history of French videotex back to its first tentative steps, as it set out in search of an identity and a market. The paths were several and led in different directions; to laboratories, ministries, Parliament, and private companies. The reader will appreciate that Marie Marchand has her facts straight and does not mince words about the actors involved.*

*The MINITEL is both a means and an end. As in the case of any new technological development, the chicken-and-egg conundrum arises: Did a pre-existing consumer demand shape the system's technical character, or did it spring from the drawing boards with no specific application in view? What was the driving force? Take the classic case of the laser, once described as a solution without a problem. No one was waiting for it with bated breath, but once it did appear, people soon knew what to do with it.*

*So it was with the MINITEL. Marie Marchand gives a factural and often humorous account of how consumers and service providers were won over — some like Paul on the road to Damascus, others like doubting Thomas. Providers got off to a slow start but have since made up for lost time, and now thousands of services are accessible through MINITEL, services for banking operations or travel arrangements, shopping or news bulletins, to name just a few. As for consumers, it took them some time to change their habits, to react to old problems in new ways, and to grasp the full extent of the possibilities offered by the emerging medium. The heavy use made by some users of on-line electronic mail services, for instance, points up the latent need for interactive an anonymous communication. Before the advent of the MINITEL, want ads provided the anonymity, and singles club the interactivity, but the on-line chat service is a social development that goes hand in hand with technical progress. Isn't the possibility of going a step further, in both technical and social terms, the very essence of freedom?*

*Will the MINITEL spell the end of the reign of paper? It would seem unlikely, since civilization advances more through adjuncts than substitutions. Radio and TV have not done away with the print medium. The car and airplane have not relegated the train to the museum. The horse-drawn buggy has indeed quit the scene, and it is to be hoped that the new means of electronic communication will put an end to outdated ways of using paper.*

*The incessant demand for increased speed, interactivity, and user friendliness, the coming of age of audiovisual techniques, and the computer revolution have generated new services, of which one of the most spectacular is the MINITEL. The success of French videotex is a source of great satisfaction, which would be all the greater if other countries chose to adopt it — that will be "The MINITEL Saga II"!*

<div align="right">

*Hubert CURIEN*

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They called it Minitel — a little name for a big project. And before anyone knew what was happening, it had come of age. Conceived in the CNET and CCETT laboratories in 1972, the Minitel showed up on the doorsteps of the homes of Vélizy some 10 years later. A 10-year gestation period that included dozens of mock-ups, millions of work hours, all manner of ups and downs, fits of enthusiasm and bouts of doubt. Above all, though, the project brought together people with very different backgrounds, technicians, marketing specialists, political decision makers, builders, publishers, and designers who toiled relentlessly to make Minitel the unique success it is today.

A technological breakthrough is the product of a broad spectrum of skills. But there is no guarantee that the individual assets will jell as a whole. Surprisingly enough it was in France that, for reasons which this book makes clear, things did jell. Only one project among many at the start, videotex prospered in a country that is traditionally rather inept in matters of communication while it fell flat in neighboring countries, which, on the face of it, were better equipped for it.

Only failures go unclaimed. In the case of the Minitel many can claim a share of the credit. So many people have had a hand in shaping French videotex that credit is due to many quarters. Although France Telecom was in fact the prime mover behind the Minitel venture in the early going, the most eager engineers were often graduates of schools other than that of the Telecom, suggesting that innovation could only be brought in by an outside force. The real miracle perhaps was wrought by adventurers of every stripe who believed in the fledgling medium and channeled their energy, talents, and various skills into devising the programs that lent meaning to it.

With more than 8,000 services available, the Minitel delivers anything and everything. Some three and a half million Minitellers use it to communicate, play games, catch up on the latest news, make inquiries, follow sporting and political events in real-time, shop in the comfort of their own homes, answer polls, give their views on TV programs, do their homework, obtain legal counsel, and on and on.

On Minitel, information about everyday activities is on an equal footing with professional data. Callers can engage in on-line conversation with office-mates, old friends, or complete strangers; all such calls are processed alike. There is no hierarchy of communication, i.e no value judgment placed on information. It is just as easy to obtain stock market quotations or horse racing results as it is to consult airline timetables. The same hosts, sometimes the same publishers, offer all manner of services, with the same mode of consultation, ease of access, and information availability.

In addition to being a real-time data base, Minitel is also unique by virtue of the way it is accessed. Callers need not identify themselves, need not present any "credentials". Everything is within Everyman's grasp in the loosely defined realm of videotex where the clever or the curious may discover the latest unexpected service. Anyone can host services. Who would have guessed that people would assert their individuality through the services they consulted, discovered, or created? Or that the intangible goods that are electronic information and communication would, like any other object, have their own codes, their own recognition and signalling patterns. "You key into Aline? I prefer S.M." With these few words insiders immediately know whom they are talking to.

Then there is the thrill of plunging into a world of freedom and adventure where anyone can say anything to anyone with no commitments since no one knows who is who. On Minitel, men and women communicate hidden behind screens and protected by pseudonyms. Quite a marvel at a time when the obsession with security and independence rhyme paradoxically with a desire to keep in constant touch with the world! The Minitel makes it possible to stay "tuned" to the world at all times and to touch base whenever the spirit is willing, an arrangement light years removed from the darned telephone that is always ringing at the wrong times. On Minitel, callers choose their own destination, when they want, at their own pace. Small wonder, then, that some "addicts" prefer a trip on Minitel to a Mediterranean cruise. In a span of two years Minitel has become a social phenomenon. It is the perfect response to the conflicting desires of a generation that wants knowledge at its fingertips and the possibility to communicate at any time, in all freedom. It is the communications and information version of the advent of the Japanese pocket calculators and the offer of effortless, fingertip calculations.

And yet the Minitel almost did not make it. In 1980 it was left for dead, victim of a furious battle and the heavy artillery of local newspaper publishers who saw in it the beginning of the end for them, the death knell of pluralism and democracy. The power of persuasion of these barons of the print medium was such that they swept along the entire political establishment in their wake. Following its 1981 election victory, the left put the Minitel back on track for good. Conciliation was the watchword of the period, during which the PTT Minister sent out peace feelers in all directions in an attempt to safeguard the Minitel's continued existence. At the time caustic wits nicknamed it the "Minitel *rose*", in allusion to the symbol of the Socialist Party, to make light of the left's constant promotion of it, culminating in the "videotexing" of the Versailles Summit of industrialized countries. It is still called "Minitel *rose*" but for other reasons...

And in fact the Minitel might never have existed if anyone had had an inkling that it would be used for romantic on-line rendezvous services. Without a doubt, though, the Minitel owes its success to its communication features, thanks to which it established itself as a fixture of everyday life in France, and not to its data base functions as originally imagined. Still, times change, and the fledgling sector has already undergone considerable metamorphosis. Both a communications and an information tool, the Minitel can shift back and forth from one to the other at a moment's notice.

What impresses outside observers and in particular Americans, who love a winner, is the fact that a profitable business sector has grown up around the Minitel. "French Videotex Makes Money" ran the lead of a 1986 feature article in the Wall Street Journal — obviously taken aback. In France, where succeeding in business is becoming respectable, there is talk of colossal fortunes that have purportedly been amassed on the Minitel, although this is stretching it just a wee bit. Some money has been made, but it is tied up, insofar as in any young sector the worth of a company is often equated with the individual who has founded it.

In fact the coming years will bring their share of radical structural changes in the form of differentiated rates, rental fees for the Minitel, value-added services, a massive influx of advertising, direct marketing, and the like, all of which will likely lead to a stabilization of the sector. We shall then most likely shed a nostalgic tear as the major groups buy out the adventurers who built their enterprises form the ground floor up,

enterprises fallen on hard times or expanding too rapidly. So economic realism will have it. Videotex will then have become a full-fledged medium. France Telecom will have shed its role as pilot and act as a mere carrier. In any event, videotex will certainly have attracted new breeds of professionals.

At once trivial and significant, an object that was called Minitel to play down its technicality had unleashed unparalleled furies. Many regard it as the first of the communication and information machines of the future. It accordingly inspires unwarranted hopes and fears. Today, the Minitel is seeking to carve out its proper niche and realize its full potential — but that's another story.

# of men 1
# and machines

Gérard Théry became general manager of France Telecom in 1974. He had ambitious plans for the administration he was taking over. His goal was to make it a modern structure capable of meeting the challenges that lay ahead in telecommunications. He knew that time was short and the handicaps many. The sorry plight of France's telephone network inspired no one with optimism. New markets were emerging on the frontiers of the phone system and at stake was nothing less than a country's ability to be master of its own telecommunications and to devise a sophisticated communications tool. Throughout his tenure he would constantly strive to accomplish what he had set out to do. His decisions — whether technical or industrial — were to be challenged, as was his person. Today, however, no one can say that his gamble has not paid off.

## Company seeks new people for new projects

The time: shortly before five o'clock, October 20, 1974. The place: the National Center for Telecommunications Studies, the CNET (pronounced k'net), France's equivalent of Bell laboratories. A young graduate from one of the country's top engineering schools, Jean-Pierre

Souviron, climbed out of his car and vanished into the halls of the CNET. He had an appointment with France Telecom's new general manager, Théry, who had just entrusted him with a difficult assignment that was staunchly opposed by every research worker in the house: to set up an industrial affairs division inside France's telecommunications administration, the DGT*, the precursor of France Telecom. At five o'clock Souviron was to move into the executive office, occupied since time immemorial by the CNET's all-powerful director. Barely inside, he saw that the entrance hall was packed with people and abuzz with rumors. The CNET had just gone on strike in response to the previous day's news that it had been "broken up". Curiously enough, the strike coincided with one of the most extensive labor movements France's Postal, Telegraph, and Telephone Administration, the PTT, had ever known, and which had grown out of the mail sorting centers. Union activists had mobilized the personnel and stationed themselves in the entryway after hearing that Telecom's top gun was on his way: they were bent on finding out what was in store for them. The atmosphere was hardly what could be termed cordial, and the disapproving murmurs and resentful looks suggested that matters could get out of hand at any moment.

Did the head of France Telecom — come to greet and enthrone his new man — expect such a welcoming committee? Was Souviron — from whom Théry had never hidden the difficulty of his task — taken aback by such an openly hostile reception? Neither was in the habit of showing his feelings. They had come to do a job and were undaunted by hurdles. Too much so perhaps, as time would tell.

Without batting an eye, Souviron elbowed his way through the assembled multitude and headed up the stairs. He knew only that his office was on the second floor. On reaching the landing he saw two corridors, one leading to the left and one to the right. Asking the way was out of the question and it was obviously not the time to hesitate. Then he noticed on his left, halfway down the hallway, a black upholstered door — the only one of its kind. He went in and found himself face-to-face with a group of grim-looking men standing about who were determined not to look on idly while the power of their institution was whittled away. Rallied round their chief, Jacques

Dondoux, these CNET executives were also waiting for Théry. The animus in this isolated office had peaked; an icy silence had fallen. The minutes leading up to the arrival of Théry, who had been delayed by a short discussion with an employee delegation, seemed to tick by very slowly indeed, and it was only some time later that he was finally able to introduce the new arrival to CNET's top management. Souviron embodied a change in house policy involving a realignment of power between research, whose practitioners formed a veritable caste within the CNET, and its poor cousin, operations, little valued by the great minds and too long neglected by successive Center heads.

## Overcoming the "Asnières 22" complex

In the fall of 1974, Théry had but one thing in mind: to bring the under-developed French telephone system up to par. The telephone system was the laughing stock of the Western world and provided France's funnymen with a made-to-order target. Comedian Fernand Raynaud tickled the funny bone of all of France with his "Asnières 22" routine, the gist of which being that it was easier to place a call from Paris to Asnières, a Paris suburb, via the international phone links (going through New York City, for instance) than via the local area network, which was hopeless. France Telecom engineers, however, were not amused and indeed long suffered from an inferiority complex. Théry had every intention of exploiting that complex to marshal his troops, but his first move was to bolster the authority of the operations division by providing it with a well-developed negotiating framework for its dealings with industry.

Until then, CNET engineers had negotiated directly with industry. Telephone prices had increased relatively slowly and things were running along smoothly, so the lack of formality in contractual relationships mattered little. Emphasis was placed on the technical specifications of the products involved, which were described in excruciating detail. Good researchers that they were, CNET engineers tried out new features on every additional telephone exchange, installing one thing at the exchange in Morlaix, and another at the one in Quimper. As a result of this researcher's reflex — though perfectly reasonable not to say essential in view of the rapidly changing state of the art — dissimilar equipment was installed piecemeal throughout the network. As for industry representa-

tives, they were only too happy to follow instructions to the letter, thereby avoiding responsibility for the services they provided. Furthermore, the lack of sufficiently long and homogeneous production runs that would have enabled them to cut their prices was of little consequence since they were state-run and simply passed on their costs. In point of fact, their only obligation was to perform up to standards where the technical side of business was concerned, and even there they faced no competition. The division of labor was simple: CNET engineers did all the thinking and ran all the technological risks; manufacturers built the products in accordance with the technical blueprints supplied them.

From where Théry was sitting, the fact that there was no contractual framework between France Telecom's research divisions and manufacturers explained in large measure why France lagged behind in telephone development, in that it stymied manufacturer's initiative and narrowly circumscribed their responsibility. Although bearable while things were rolling along nicely, such a situation would become downright intolerable in coming years. Telecom's goal of putting a phone in every home within ten years' time spelled a sharp acceleration in orders for equipment and a scrupulous respect of delivery deadlines. Delays and technical defects were likely to become key problem areas in his recovery program.

Théry thought that setting up the Industrial Affairs Division should solve the problem. A division independent of both research and industry might, he reasoned, be able to mediate impartially between the two. Turning it over to a new man from outside the "family" struck him as a further guarantee of neutrality. Understandably enough, the CNET was none too keen about Théry's reshuffling. It ran counter to the mentality of its engineers, for whom technical research was the be-all and end-all, other considerations being intrinsically secondary. In the process, the CNET lost a substantial share of its authority and vested positions with industry. It may readily be imagined that the CNET regarded the summary transformation, by imperial fiat, of its Director's office to that of the new Director for Industrial Affairs as yet another, gratuitous insult. Théry no doubt saw it as a symbolic affirmation of his decision and an unequivocal demonstration of the importance he attached to the new division.

And so the Industrial and International Affairs Division, the DAII, got off to a rocky start — including a long, bitter strike — and there were very few CNET engineers who wished to work within a set-up they had violently opposed.

In the meantime, the telephone network catch-up program, dubbed "A Phone in Every Home", was approved at a government interagency meeting of April 22, 1975. The planned increase in subscriber connections (almost 14 million lines to be laid over a period of seven years for a total of 20 million by 1982) naturally meant that enormous amounts of money would need to be pumped into the network. In the same year, another interagency council agreed to a "priority action plan" calling for an investment package of some \$17 billion\*, thereby making France's PTT the largest investor in the land. The report did not spell out how the funds were to be raised. International money markets and public savings would be heavily solicited, the former despite the risk of additional unforeseeable costs tied to fluctuations in the rate of the dollar.

France Telecom responded to this financial offensive by ushering in a new way of doing business. The days of spoon-feeding were over: the DAII drew up a type of contract with specifications and terms that were negotiated with industry. The watchword of the day was "manufacturers are of age and have had all their shots" (sic). Competition between companies was now the rule, export potential being a prime criterion in the choice of suppliers. This was quite a novelty for manufacturers who were not accustomed to having to work things out on their own.

It was clear that France Telecom was striving to get industry to grow up, i.e. to become independent and willing to accept responsibility for industrial objectives. It wanted a partner with whom it could weather the coming storms in the area of new information and communication technology which relied on the mass distribution of telephones.

## Laying the groundwork for the communication services of tomorrow

Théry and Souviron well realized they had forced passage of their "A Phone in Every Home" program. Then President Valéry Giscard d'Estaing, whose rule was to post the agenda for all council meetings in a given year, had contemplated no interagency council meeting on the

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\* All figures herein have been calculated using an exchange rate of 6.00 FF to the dollar.

subject. A council on data processing was, however, scheduled for 1975. A round-table discussion had been held on the same issue but had fizzled out for want of clear ideas and well-defined projects from the computer industry. Théry had quite simply taken advantage of the ensuing policy vacuum to put the telephone in the spotlight. He reasoned that "data processing for all" meant no more than a keyboard, a screen, and brainpower. The telephone keyboard was the least expensive and there was already a television screen in the average Frenchman's home. Accordingly, the telephone could rightly be considered the cornerstone of a policy for computerizing the country. "A phone in every home is the cutting edge of a computer in every home", argued Théry before the ministers meeting in council.

"A Phone in Every Home", now a national priority, its financing assured, would not be long in coming. Telecom's spirited general manager and his team were eager to identify those emerging technologies that could be used in conjunction with the phone. The CNET, however, was primarily concerned about imposing its solutions in the area of switching, a sector both up-market and strategic. The great debate, which continues to this day, on the advisability of Théry's and Souviron's choices in matters of space-division switching and time-division switching (and which many experts feel are a great muddle) was raging between the CNET and the DAII and absorbed most of the engineers' energy. What is more, the focus of the DAII people was almost exclusively on the Transpac packet-switching system then being developed; only a few scattered research teams showed any interest in new telephone-related services.

Accordingly, the DAII was handed the assignment of promoting *telematics**, a term later coined by Simon Nora and Alain Minc in their widely publicized report. Souviron needed new recruits and immediately set to work seeking out young, open-minded engineers from other quarters who were inspired by the sense of drive and determination Théry had instilled in his administration.

Alain Bernard, the defense engineer who had developed the RITA field communications system, since sold to the U.S. Army, and Jean-Claude Estournet, who had devised the ticket canceling systems of

* From the French neologism "télématique" designating home and office information systems and services.

the Paris metro (the RATP), joined Souviron's team. Their assignment: to mesh policy and technology and quickly select promising projects for new telephone-related services from among the impressive array under development in the CNET's laboratories — and see them through. While touring the laboratories at Rennes, Lannion, and Issy-les-Moulineaux, they discovered the mock-ups foreshadowing today's home and office information systems and services. Their job was to get them out of the laboratory and onto the market.

# Inventors and innovators

Since 1970 researchers in the CNET's Issy-les-Moulineaux and Lannion laboratories had been on the lookout for new ways to implement the technical systems under development. For instance, what was to be done with "voice-frequency signaling", high-tech for "push-button phone", which has since supplanted the old dial model? How should speech synthesis, i.e. computer-processed speech, be used? The answer was simply a "telephone computing service".

## Tic-tac

In 1970 the pocket calculator was not yet on the market. In the home, the slide rule was the old standby, while in the office, bulky adding machines were used. CNET engineers thought they spied a market for a more light-weight, easy-to-use system. They reasoned that data could be keyed in using the twelve push buttons of the phone. On the other end a computer would do the processing and transmit the answer back through the receiver by speech synthesis. A prototype integrating the telephone and the computer was quickly worked up. A third element, a display screen, was soon added.

And while Christian Carrouge was putting the finishing touches on his prototype telephone calculator, other CNET engineers were setting up an experimental videophone system, in other words a picture-phone system with a telephone receiver incorporating a viewing screen and camera (this network went into full-scale operation in 1984 in Biarritz, France). A sort of cross-fertilization then occurred between the two projects and, at the 1972 Paris Trade Fair for Computers and Office

Automation, SICOB, both telephone-based computing prototypes (speech synthesis and screen display) were unveiled to the public. The screen display seemed the more promising, mainly because of the time factor, i.e. voice-transmitted information disappeared almost as soon as it arrived. Most of all, however, it opened up new vistas in the vast landscape of consultation by telephone of all manner of texts, graphics, and data. The sudden and spectacular advent of American, then Japanese calculators dashed any hopes for a telephone computing service which, feature for feature, was far from affording the same ease of use as a pocket calculator.

This temporary setback notwithstanding, the project went forward under the name "telephone consultation service". It was diversified to include three components: a 12 push-button telephone as keyboard; a computer, for processing the information; and a screen, for displaying the answers. This same scheme is the granddaddy of videotex as we know it today. It was steadily improved upon and before long consideration was given to replacing the dedicated display — too costly and at the time still hypothetical — with the home TV screen. Television-telephone integration took a further step in 1973-1974 with the addition of a connecting module called Tic-tac (acronym for integrated terminal incorporating television and push-button dialing). The prototype was first demonstrated to the public at the 1974 SICOB. The proposed applications were still rather basic: a directory service, an information service, and that was it. That, however, was already a great deal: behind the apparent scantiness of available services there emerged an entire world of information services based on man-machine communication. Carrouge's small team expanded somewhat in 1975 and set about loading existing data bases into the system and upgrading the consultation and communication procedures. The upshot was new applications such as stock exchange updates, an information service relying on *Agence France Presse* news dispatches, and games (tic-tac-toe and Mastermind).

But who at France Telecom was actually aware of the rich potential of Carrouge's projects? The CNET was locked in mortal combat with Théry and Souviron, and no one had either the time or the inclination to concern themselves with anything other than the "major issues" of the day. All available energy was channeled into one lone objective: telephone exchange technology. Space division vs. time division, that was what it was all about. The stakes were enormous; at issue was the future

of the telephone network, its reliability, its capability to evolve, its adaptability. But the head of the Data Communications and Leased-line Division, Alain Profit, did back the Carrouge team, and the deputy scientific affairs officer, Alain Giraud, set about looking into the future of such new services. He intuitively felt that, along with technical research, studies had to be conducted on the ergonomic, social, economic, and legal aspects supremely ignored by France Telecom. In 1976 he organized, in conjunction with France's National Scientific Research Center, the CNRS, a successful colloquium on these very subjects. Despite impressive sponsorship — then PTT Minister Norbert Ségard delivered the keynote address — the subject remained on the fringe, far removed from the goings-on in a technical research center.

France Telecom's operations people were hardly any more inclined to give any thought to what tomorrow might hold. They were far too busy working on the telephone recovery program, with one aim in view: increase by hook or by crook the number of main subscribers' lines. All executives had their quotas to fill. Thinking about the future was out of the question; the here and now had to be tended to. A young Telecom engineer on the PTT Minister's staff, Hervé Nora, took an interest in the activities of the CNET and France's Center for Broadcasting and Telecommunications Studies, the CCETT, but this was hardly enough to bring about any transition from an experiment- to a production-oriented approach. So, poorly focused research went ahead on Tic-tac, and the team, caught up in pursuing minor developments, lost what edge it had. By 1976, when Souviron realized that installing more phones was pointless unless people used the telephone more, i.e. unless new services were made available, it was already too late in the game to reap any benefit from Tic-tac. In the forefront in 1972, the team had since turned its attention, for lack of material support and clearly defined objectives, to projects that would in all likelihood never be developed into marketable products.

## ANTIOPE, from Moscow to Berlin

When, in 1973, CCETT engineer Yves Guinet (rejoined one year later by Bernard Marti) entered the field of data distribution networks, he was well acquainted with British work on new information and communication services. He knew that in Great Britain the initiative had been taken

by the broadcasting, not the telephone, community. He was familiar with the work of the BBC and the IBA, which had both developed a new information service for television viewers called teletext, whereby "pages" of text were displayed in the slots between the pictures that sweep across a television screen 50 times per second. The BBC system had been christened Ceefax in 1972; IBA's was named Oracle. At the time they were the only advanced projects around. Sam Fedida of the British Post Office did not introduce his Viewdata — the future videotext system Prestel — until 1974.

And CCETT engineers were expecting the worst, sure that the British television industry would be quick to take these developments to market. They reasoned that British industry was in need of new outlets. The British did not purchase their sets, but rented them, so that by 1973 nearly every household was equipped with a color TV set. Since the domestic television market was saturated, something else had to be invented. Why not an integrated decoder for restoring pages of text on the screen and, in the process, offering information services? The British had already been working along these lines, whence the high degree of system integration and the correlative interdependence of the service and network functions.

From the outset Marti and his team chose other avenues of approach. The year 1974 saw the divestiture of France's sole public Radio and Television Broadcasting Administration, the ORTF. The organization's imminent break-up was common knowledge as early as 1973, as was the fact that, overnight, network and service activities were to be separated. All involved would be well advised to make plans for future products. At the same time, the CCETT was developing the packet data transmission network Transpac. Now, remote data communication presupposes network transparency. A data communications network must be capable of transmitting data "oblivious" to what those data represent, whereas broadcasting networks operate on the structure of a television synchronization signal, i.e. on a time base. In the British scheme, it is the time base that controls the system. Each transmitted code is identified by its distance from the image signal synchronization. A line of television is an intangible line and will appear as a line of text in the Ceefax system; so the problem of network "oblivion" to data remains unresolved. Last, but not least, while the Bristish system had no problem writing German, it had difficulties rendering French. It took no

account of accent marks, unthinkable for a mass-market product in France. This concern was taken so seriously in France that the first study commissioned by the team in Rennes was a linguistics research project on the statistical frequency of the use of the various letters and accents in several European languages!

In 1974 the CCETT decided to develop two separate projects: Didon, for data distribution on a television network, and Antiope, for data distribution on any type of network. Didon and Antiope were launched in something of a vacuum, since the French market for TV sets was not saturated, hence that industry's lack of interest in such research. But the fact that they did get under way was primarily due to France's newly established Public Broadcasting Administration, TDF. One of seven spin-offs from the break-up of the ORTF, TDF wished to demonstrate that it was in charge of the television signal and explore new market niches outside the ken of France's television networks.

Owing to its avowed aim of establishing a hold on the television signal, TDF was given funding in early 1976, together with marching orders to show up with original television-based applications at the September 1976 Moscow Trade Fair where the Soviets would be selecting information technology for the 1980 Olympic Games.

Only a few months remained to work out the system and its applications from scratch. The very first Antiope terminal arrived at the CCETT in early 1976. Bernard Marti and his team quickly realized that a system for the Moscow Olympic Games would need to handle Russian, French (the official language of the Olympic Games), and English. What they did not know was what type of information was generated at the Olympics. They dispatched one of their own to that year's winter games in Montreal, with orders to beg a Russian-language magnetic tape of a day at the Olympic Games from any Soviet representative and return to Rennes with a comprehensive report on existing information techniques.

Meanwhile work was going ahead in Rennes. The team had decided to present a simulated day at the Olympic Games replete with news flashes, bio-data on athletes, cultural events of interest, and amenities of the host city. It was the hottest summer in memory, and temperatures in the laboratories soared above 100°. The room housing the composition terminals was so scorching hot that the hardware would not work, except, that is, between 10 p.m. and 10 a.m. Shifts were formed accordingly. A Russian and a Russian-speaking Pole were recruited for the occasion, and

the texts drafted during the day were set at night. The four cabled composition terminals were rigged by hand to introduce the right character generator. Five hundred pages of text were thus composed in the dead of night, within the empty confines of the CCETT in the middle of August.

The truck was set to leave Rennes at dawn on August 17. Only the August 15 holiday weekend remained to "input" the final 100 pages. Everyone had his first day off in months, and Marti decided to do a bit of windsurfing on a nearby lake. Perhaps it was the suddenly rising wind, perhaps the inexperience of the novice windsurfer. Whatever the real cause, Marti's board was soon heading straight for the rockbound shore at top speed. His only concern: not to beat up his hands, which still had two nights' texts to compose. Hitting top speed, the board shattered into pieces on the rocks, sweeping Marti along, his hands upraised. Nothing serious, a few bruises, but his hands were safe and sound. The remaining texts were set on schedule, completing the simulation of one day at the Olympic Games. The truck, its precious cargo intact, headed out. The great premiere could go on as planned.

In Moscow, on its stand located a stone's throw from Tic-tac, the Antiope/Didon mock-up worked like a charm. The operation was designed to encourage radio and television people to replace conventional paper handouts to journalists with Antiope/Didon. Results were not immediately forthcoming, and it was not until the 1982 Versailles summit meeting that an operational videotex system was featured at an international event. However, a seemingly minor encounter at the Moscow Trade Fair would prove to have considerable impact on the development of videotex. A Soviet official asked Marti whether his Antiope system could operate on the telephone network. Confident in his choice of the transparent network Didon, Marti did not hesitate to say yes.

Thus emerged the target for the Berlin Trade Fair scheduled for September 1977. Back in Rennes, CCETT engineers turned to Christian Carrouge, the father of Tic-tac, to ask him to devise the interactive portion of the project (via telephone), while they continued to work on the broadcast angle. But by the spring of 1977 it was already clear that such teamwork was out of the question, not only on technical grounds but, more likely, for the less lofty reasons of competition and jealousy between the two institutions. The Rennes engineers, all six of them,

would have to cope alone with the challenge they had so impetuously issued themselves.

## Berlin : the British on the warpath

It is doubtful that the Rennes crowd, off again for a six-month stint, had the slightest inkling of the British show of force awaiting them in Berlin. They were fairly well informed how far along the British ventures were and knew they had a lead of several years on themselves. However, they were completely unaware that Great Britain had resolved to develop an offensive marketing strategy aimed at capturing foreign markets. And in Berlin, where the British had obviously not gone in for half-way measures, Ceefax was on display at a huge stand. A gigantic wall of more than 40 TV screens poured forth page after page of teletext in the Ceefax format. A swarm of uniformed hostesses explained the system to visitors and handed out sheaves of glossy brochures.

For the visiting Gérard Théry it was a rude awakening. Back at the French stand, where Marti and his team were demonstrating the Titan system, Théry was reduced to asking his engineers — bereft of hostesses, brochures, and wall of screens, with only their technical know-how and sleepless nights to fall back on — to turn off the Sony TV sets (the French-made Thomson sets were in the back, on the blink). Stunned by the imposing British demonstration and the lead they had so brazenly acquired, Théry was too distracted to notice the novel features of the Titan system, developed at the CCETT by Marti and company, and which already foreshadowed — albeit in modest fashion — the future success of French videotex.

The most complicated question facing CCETT engineers at the Berlin Funkaustellung was how to access, from Berlin, the data bases on the CCETT computers at home. Their answer was to invent the videotex access point. They went through a leased line as far as the Transpac node nearest the border and acceded to it by means of their access point. The data were transmitted by packets as far as Rennes and returned the same way to Berlin where a terminal concentrator supplied host pages, menus, and so on. There was a second outstanding innovation on display at the French stand in Berlin, even if its range of applications remained limited: an information service using key words via a keyboard was demonstrated for the first time. The user could type in his request and communicate

with the computer through the network in writing. This new departure was rather a source of amusement for foreign visitors. Their feeling was that the letter requirements — 2 kilobytes of random-access memory (RAM) instead of 7 kilobits for numeric terminals — would mean a steep increase in the price of terminals, already seriously inflated on account of the French choice of microprocessor-based technology.

For a long time, no other videotex system would offer the same feature. To call the British videotex system, Prestel, the user needed to know the number of the service he wished to consult or endure a lengthy tree-structured dialog, using a procedure called a "numerical tree dialog".

# Full steam ahead with videotex!

Was the Berlin trade fair really as wonderful as people paint it nowadays? Did it really inspire France Telecom's managers to go all out in a race against time to overtake the British? Théry had been aware of the existence of the British program. Together with Souviron, he had even paid a visit to the British Post Office in 1976, intent on negotiating a common videotex standard. The talks broke down, though, and the general manager of France Telecom returned home somewhat annoyed. It would appear, however, that he was caught very much off guard by the scope of the British project in Berlin.

In the fall of 1977, seeing that the telephone system in France was making up lost ground, Théry channeled all his energy into convincing French officialdom of the need to launch a major offensive in new communication and information services. He advised the DAII to evaluate the mock-ups of new services being tested in CNET and CCETT laboratories in order to put together a comprehensive plan, one he could then submit to the government. This extensive project was designed to open up new vistas for France Telecom and enable it to make another leap forward. Théry knew his engineers well and was aware that there was nothing like an ambitious project to stir them to action. He was also thinking of the manufacturers of the telecommunications sector. Once the telephone system was up to par, there would be a loss of markets for telephone exchanges and substitutes would have to be found. Théry was

not deluding himself, however, and did not believe for a moment that the Minitel would bridge the market gap. Still, he was convinced that videotex was a locomotive that would pull other cars along with it. Reasoning in terms of a comprehensive plan, he came up with a far-reaching proposal that he submitted for cabinet-level review in November 1978. In addition to videotex, the Ministers looked at five other high-tech sectors.

Théry had long been engaged in a no-holds-barred contest with IBM, and he saw in videotex a weapon to wield against computer people, who he felt were too quick to accept IBM's standards. To IBM's sophisticated dialog and complex maneuvers (which subsequently rendered its products indispensable), he countered with the simplicity and ruggedness of videotex dialogs and procedures. He dreamt of manufacturing real-time equipment that would escape IBM's stranglehold. He championed a simple idea, which he often repeated to his close associates: "Let's be the Japanese of Europe". Start off with a straightforward, basic product, then make it more sophisticated. In the long run such a strategy would, he thought, afford a credible alternative to IBM terminals.

The man who would come to be called, more out of resentment than anything else, the most powerful man in France knew how to fire the imagination of elected officials and was a consummate artist at pressing the right buttons to prompt decisions. During the dire days of the telephone, Théry had devoted a great deal of thought to France Telecom's inability to convince technocratic and political decision makers to make the necessary investments in telecommunications. He had been seared by the humiliation inflicted on generations of Telecom people by the ever popular "Asnières 22" comedy routine. He countered with a finely honed technique for putting together telecommunications "white papers", every bit as effective as those produced by EDF, France's state-run gas and electricity authority. It was no mean task, often involving 20 to 30 revisions and working through the night to confound any and all foreseeable objections and come up with compelling counter-arguments. Those who worked closely with him can remember having started over from the beginning countless times. For engineers who invariably believed that their technical reports were airtight and that those incapable of understanding them had only to make an effort, cultivating the power of persuasion was not easy. It requires a heavy dose of humility to admit in advance of the other's

objections. It sometimes means giving only secondary importance to sacrosanct technology, something not always appreciated by technicians. In essence, France Telecom's sole customer was the world of politicians and technocrats, and it was obliged to come to terms with their wishes and their approaches only.

To oil the wheels, Théry set about establishing direct contact with the highest echelons of the decision-making process. He had already established personal ties with the major players in the days of the telephone recovery program. He had devised a strategy of direct contact with the presidential office and residence at the Élysée palace (called the "short line") which spared him invariably tough negotiations with the Minister of Finance, who tended to sense another Concorde behind every new technology project. Where his new products strategy was concerned, Théry had every intention of continuing to work together with Bernard Trichet, the presidential adviser responsible for the three major technological and industrial projects of Giscard's term: the *Ariane* space-vehicle program; telecommunications; and nuclear power generation. It was Trichet who followed up France Telecom's projects, negotiated them with other governmental bodies, and convened inter-agency meetings whenever arbitration was called for and decisions needed to be taken. His job was facilitated by Valéry Giscard d'Estaing's interest in emerging technology.

## The videotex plan: behind closed doors

For a year Alain Bernard had been hunting about research laboratories trying to ferret out the most worthwhile projects under development. He "selected" the so-called mass-market facsimile device and the videophone already installed in an experimental network at the CNET, and compared notes on Tic-tac and Titan to see which project was farther along. Titan came out the winner and was broken up into two separate programs: the voice-frequency telephone, i.e. today's push-button telephone, which for some years now has been supplanting the dial variety; and home data communications using the Antiope format (the Titan system), which would come to be called *telematics*, a word coined in the Nora-Minc report mentioned earlier. Next came the Télécom 1 satellite program, which was thought sufficiently advanced to

be included in the overall plan. The first working notes from the DAII on these various projects are dated late 1977.

An adviser to then PTT Minister Norbert Ségard was working actively along the same lines. His name was Hervé Nora — not to be confused with Simon Nora, author of the aforementioned report on the *Computerization of Society*, published in 1978, and which was at once a symbolic detonator and cultural happening in France. Nora and his team had for years been studying home data communications and information services. They had reached by parallel paths conclusions similar to those in the Nora-Minc report: the necessary integration of information processing and telecommunications. In the wake of the 1978 legislative elections in France, Théry asked Nora to set up a new department inside France Telecom to assist him in putting together Telecom's "white papers". The new team worked hand in glove with the Telecom staff and found itself in late 1978 attached to the Commercial Affairs Division (DACT), which had been turned over to a young graduate of France's *grande école* for government administration, François Henrot, as engaging as he is efficient.

Sheaves of paper were produced spelling out Telecom's industrial policy for new services pending the November 1978 interagency meeting. In the laboratories, research teams were busy inventing, describing, analyzing differentiated technical solutions, and working up models, whereas little attention was being paid to prices, markets, finished products, industrialization timetables, economies of scale; in short, real industrial policy. This, however, was precisely the job that the DAII had been set up to do, in the epic circumstances related earlier.

Involved was the major responsibility of singling out projects and the equally tricky task of seeing them through and coordinating them. Naturally, the whole business was a bit of a gamble, since it involved forecasting a market for brand-new products conceived outside of any known commercial structure, and an unprecedented challenge as well, since manufacturers had to be persuaded to embark on a new adventure. The unknowns were listed in order of priority. First, a market must be found; it would be the telephone directory. Next, a product: it would initially be called the "electronic directory terminal" (before being renamed Minitel). Lastly, production lines: four manufacturers would be invited to tender bids for building the terminal.

Decoder or stand-alone terminal, the choice had not yet been made. In any event, regardless of the final decision and even assuming the terminal was low-cost, there was no getting around the fact that the public would have to buy it to use any newly marketed home information services. But who would buy equipment not knowing what information and services would be available? To say nothing of the likelihood that they might be slow in coming. If, conversely, services cropped up quickly, there would not be enough terminals for consulting them. All market studies bore out these vague suspicions. They confirmed that the general public would be prepared to use the new services but that no one would be willing to purchase the terminal, even if it cost only around $100 (in fact just that happened in the Federal Republic of Germany and Great Britain). It was the old story of the chicken and the egg. The vicious circle had to be broken. But how? By some sleight of hand the future Minitel had to be distributed free of charge. The first avenue explored was through the banks, which was thought might have a stake in financing terminals for home banking. Mail-order houses were likewise approached. Neither attempt panned out. Negotiations were protracted — and time was short. Above all, though, France Telecom's natural inclination was to go it alone, thereby avoiding involvement in a partnership.

Did the light go on in a plane between Lannion and Paris, in the course of a discussion between Théry and Souviron? Or in the mind of Alain Bernard, who for months had been mulling over the dilemma. In any event, it was an idea whose time had come. Why not distribute terminals free of charge in lieu of paper directories — courtesy of France Telecom! An electronic directory, so to speak, which would be provided, like the telephone book, at no cost.

This solution seemed especially advantageous in view of France Telecom's severe directory assistance problems. The patience of Job was needed when dialing 12 for information, permanently deluged with calls, and research was already being conducted into computerizing the service. The so-called "S 3" system, which called for providing the 4,500 operators (who would number 9,000 in 1985) with a computerized work station, was in the development stage at Lannion. The line between the "S 3" and the electronic directory was thin and promptly crossed. Rather than computerize the operators' job, France Telecom, the thinking went, would be better advised to have telephone subscribers do the work themselves by providing them with the required tools. Furthermore, the

plight of the telephone book was no more encouraging than that of directory assistance. Given the exponential increase in the number of subscribers coupled with printing delays, the phone book was 18 months behind schedule when finally distributed, and a substantial portion of it was hence already out-of-date. And then there was the paper problem — 20,000 metric tons were needed in 1979; it would be 100,000 by 1985. The price of paper would double in those six years, and France Telecom had no intention of making France's state printing house, the *Imprimerie nationale,* a powerful lobby with which it would have to contend at every turn. Besides, the paper directory was running a huge deficit. Why it was in the black in other countries was not really asked. For as long as anyone could remember, the advertising monopoly had been in the hands of France's leading multimedia group, Havas, which did not manage to turn a profit on the printed phone book until 1984, spurred on by the advent of the electronic directory. Lastly, the analysis of Telecom engineers was corroborated by the findings of an ATT report in the United States on the same subject. It concluded that within 10 years it would be less costly to install a terminal than to distribute a phone book free of charge.

The notion of an electronic directory began to take root. Souviron had a look at the figures: the cost price of a paper directory amounted to approximately $15 per unit; it was distributed once a year. It took five years to amortize an electronic terminal, which should accordingly not cost over $75. Alain Bernard's calculations, more drastic and based on a no-frills terminal, showed an "objective" price of $40. This price range would be used as a basis for hardheaded negotiations with manufacturers, who were to claim they could not come in under the upper figure. At this stage in the proceedings, France Telecom could not say what the terminal would consist of. So much was clear, though: there would not be a simple numeric keyboard. No one wanted a remake of Prestel. The keyboard must include letter keys if, in keeping with Telecom's declared mass-market approach, the dialog was to be kept as simple as could be. Once again consideration was given to using the TV set as a display unit. But the objections flew fast and furious. How could television sets be brought into the office? How could anyone use the directory when the family was gathered around the tube? If new information services were launched in quick succession, there would be some knotty conflicts of interest!

So it was decided that the electronic directory terminal would be outfitted with a stand-alone screen, a control keyboard, and a housing element. In the minds of the select few around Gérard Théry, the Minitel (still known by its code name 'electronic directory terminal') had just taken on substance.

## Go-ahead from government, wait-and-see from industry

The project was finally ready for presentation to the interagency council meeting in November 1978. The general manager of France Telecom outlined his strategy for new consumer information services, spelling out six: the electronic directory project, the experimental phase to be conducted in Ille-et-Vilaine, in Brittany, in the vicinity of the CCETT and its facilities; videotex for the general public, to be experimented in the rather modernist city of Vélizy near Paris; videophone, whose testing site was as yet undetermined, but was to be the city of Biarritz on France's south-Atlantic coast; voice-frequency telephone; consumer facsimile; and, finally, the Télécom 1 satellite. Théry explained that his plan was centered on two combined operations: first, building upon the phone recovery plan, which had received cabinet-level backing in 1975 and had since been successfully completed, by offering new services to bolster telephone use; second, preparing a riposte to IBM's onslaught by securing France a firm foothold in satellite-based data distribution.

The interagency council adopted the distributed data communications portion of the plan in its entirety. It postponed a decision on the Télécom 1 satellite for several months and rejected the consumer facsimile project. The 1974 postal employees' strike was still fresh in the minds of all and no one was keen on unleashing another large-scale labor movement: adoption of the facsimile plan was bound to provoke an uproar among postal employees. It simply did not pay for men of government, regardless of the system, to try to outsmart the mailman. The overriding reason behind the refusal, however, was undoubtedly based on an analysis of the prevailing international environment. The first fruits of deregulation had begun to show, and it was felt that the terminal should not be tied to the line, so that the telephone company (common carriers in the United States) could not dump its terminals and thereby

Rennes, August 1976. Bernard Marti (seated in center) and his team make preparations for the Moscow exhibit and the kick-off of videotex à la française — 500 pages for a day at the Olympics.



February 1983 in Rennes — Jean-Paul Maury demonstrating the electronic directory system to PTT Minister Louis Mexandeau.



"Telecom 75" — First demo of the Tic-Tac system by CNET's Christian Carrouge, with Gérard Théry looking on (at right).

Every Minitel is part computer and part video, and is test run. Here the video portion is adjusted to ensure a sharp picture.

After individual testing, Minitels are stacked on mobile racks and subjected to a temperature-controlled environment.

A semi-automatic assembly line. Without housing, Minitels look like over-sized insects ready to take off.

*and the Minitel is theoretically
ready for use. A final check
will guarantee that no bugs
remain.*

Below:
*Here they are! Fair-goers expect
personalized services, so there's whole
array of Minitels just waiting to go
into action. Consulting "your" service
at your own pace — that's
interactive communication!*

Below:
*CANAL-Espace 1986,
a "run-of-the-mill" professional trade show
in France — with the information
and guide system on videotex.*

Above;
35 "message" points and 250 terminals have been installed throughout the Château de Versailles, a veritable electronic ballet choreographed from these monitors in the control vehicle.

No effort was spared to make a success of the videotex fête at Versailles. PTT Minister Mexandeau and France Telecom's head of marketing François Henrot take a "hands-on" approach to Summit preparations.
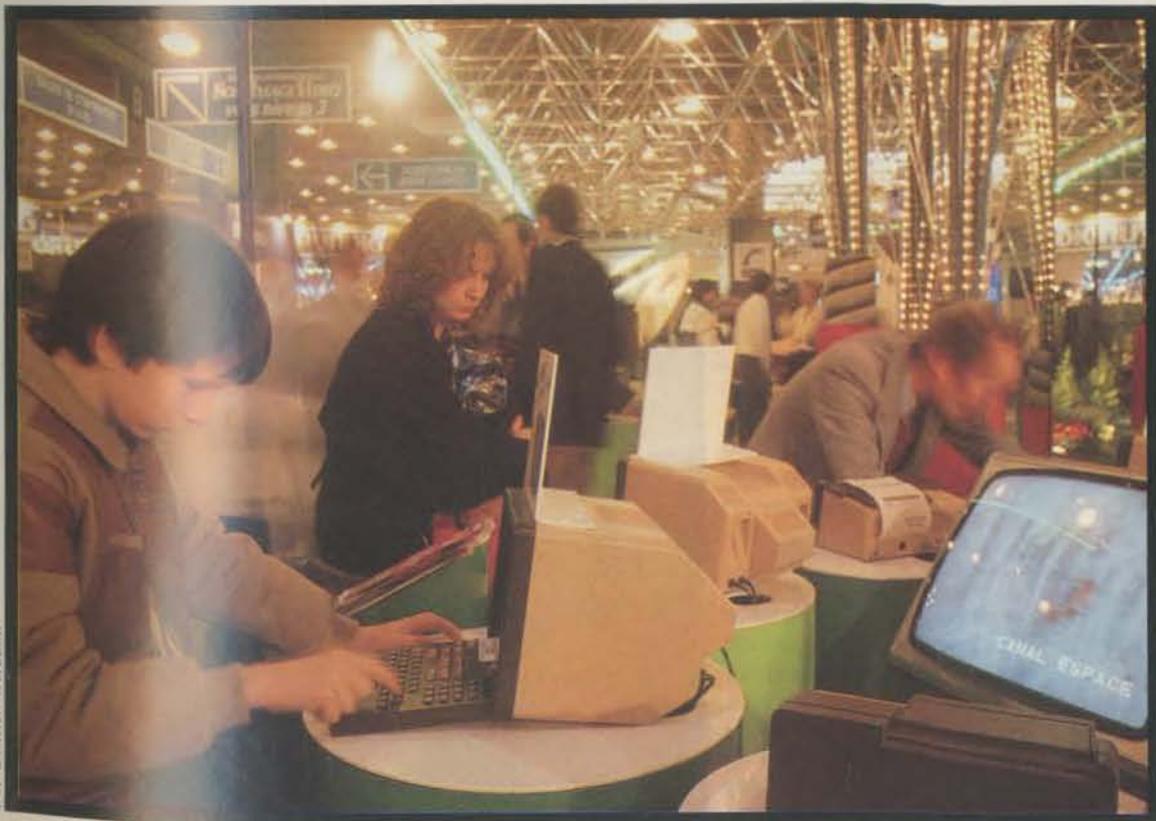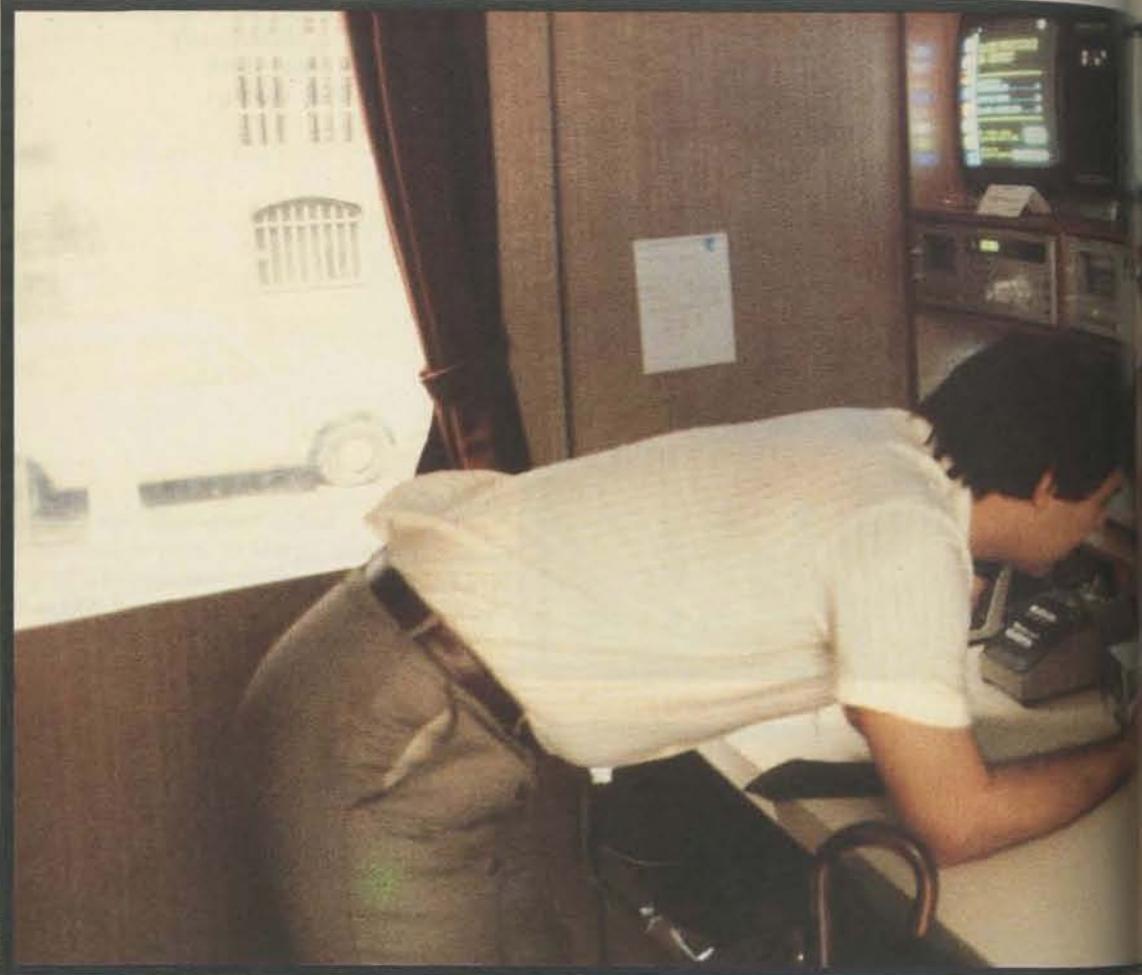
June 1982.
French videotex starred at the Versailles Summit Meeting of the world's most industrialized countries. Louis Mexandeau, Philippe Bodin, and Hervé Nora pay a visit to the videotex control vehicle especially equipped for the occasion by Michel Bouvier.

*Ph. Gontier-V.T.COM.*

*No self-respecting trade fair is now without videotex information centers. The 1987 SICOB was no exception.*

create a captive market. Accordingly, the electronic directory sailed through because it was strictly a telephone-based service; the Vélizy videotex program was approved in its wake. The remainder of the proposed program was turned down, the naysayers mildly satisfied to contain the ambitions of France Telecom, whose overreaching influence was a source of misgiving. When, a few months later, the decision to launch Télécom 1 was made, the powers that be invoked the need to ensure a French alternative to IBM, which had penetrated the satellite-based data distribution market with its SBS. The decision was in line with Théry's determination to see real-time systems independent of IBM's stranglehold.

The go-ahead on distributed datacom, obtained virtually without a shot being fired (the proposals were technically "airtight" but, more than anything else, their political dimension was skillfully brought home), was also certainly attributable to the unprecedented response to the Nora-Minc report. It had been commissioned at the April 1975 interagency meeting at which the telephone catch-up plan was approved. A recognized public figure was to be appointed to analyze "the socio-economic impact of the development of data transmission". Submitted in 1978 and published in 1979, the report was a milestone. Granted, there were no direct ties between France Telecom's proposed "New Services" plan and the studies described in the Nora-Minc report, but they shared a common approach that the papers compiled by the two authors in the course of their enquiry were to buttress further. At the heart of the whole debate was the link between telecommunications and data processing. Although the authors were not at first prepared to acknowledge the fact, it soon became so patent that they concocted a neologism to describe it: *la télématique* or *"telematics"*. Naturally, the propositions put forward in the Nora-Minc report were so much grist for France Telecom's videotex program, but what really set things off was the incredible reception the report received. For the first time in the history of the *Documentation française,* a very matter-of-fact report became a best-seller! Conditions were therefore favorable; the political decision-makers could not resist the ground swell of "modernism" reflected in the report. They were perfectly willing to go along with an operational project that flowed with the current of popular opinion.

Once the plan had been given the government's seal of approval, the trouble was in fact only just beginning. In 1979 Jean-Pierre Souviron sat

down with manufacturers in a first round of negotiations and came away somewhat crestfallen. They announced a price of $250 minimum for the keyboard, as much again for the tube (CRT) and the screen, and slightly more again for cramming all the elements into a housing unit. Total price: about $850. Souviron then brought out the heavy artillery, countering with a figure of 20,000,000 devices to be ordered over a ten-year period, adding that the terminals were disposable products, and pointing out to the speechless representatives of French industry that the keyboards of Hewlett-Packard pocket calculators cost little more than a dime to build in Taiwan and that he was still waiting for a reasonable answer.

Consultation got off the ground in record time for a total of 4,000 terminals. Apart from France Telecom's usual suppliers (CIT-Alcatel and Thomson), two outsiders (Matra and TRT, a Philips subsidiary) were invited to tender. Opening up the bidding process to newcomers was a key element, and a risky one, in the industrial strategy devised by Théry and Souviron. They have been the target of much criticism for their off-the-wall choices in industrial matters, but they wanted to break with past habits that were more the product of a tradition of spoon-feeding than of effective competition or entrepreneurial spirit. New blood might inject some life into the process. They wanted to deal with more offense-minded manufacturers prepared to adopt mass-marketing strategies and capable of an export policy. For France Telecom's managers, the pint-size, down-scale Minitel terminal was only the tip of the iceberg. They expected manufacturers not only to incorporate more sophisticated features — color, storage, multistandards, telephone integration — but also to reason in terms of peripherals — printer, smart card reader, and so on. Lastly, they had in mind the development of other products (keyboard station, videophone, and the like). In this order of things, emphasis was necessarily placed on economies of scale and increased productivity. The core solution called for them to manufacture their own components and automate production.

To say that the reaction of the four manufacturers was unenthusiastic would be an understatement. They were hardly pleased at the prospect of mass producing an unsophisticated terminal that to their way of thinking offered them little hope of acquiring new skills and technology. In their view the prospects of turning a profit were uncertain at best, particularly since the price had already been cut to the bone. As was reportedly suggested in an aside, they would have preferred to "have it

made in South Korea". Which was moreover what they did, to an extent: the secret did out, however, in November 1983, with the publication of a list of Minitel components in the magazine *Sciences et Vie*. Most came from the United States, Japan, Taiwan, and South Korea. The ensuing howls of public indignation were rivaled only by their own when, following the election victory of the left in 1981, it was decided to get the seriously jeopardized videotex plan back on track by distributing the Minitel only to those requesting it, thereby slowing orders for the terminal.

In their defense, it should be borne in mind that the bulk of the manufacturers' activity involved large-scale public programs and that the videotex strategy was seen as a veritable revolution that might spell their undoing. They therefore dragged their feet and adopted the attitude of least risk: wait-and-see. They would provide the terminals in spite of themselves after epic negotiations with the DAII, which never retreated an inch from the concept it had defined: it wanted a basic terminal, both rugged and simple. 4,000 terminals were finally delivered in 1981, following a delay that could be foreseen as early as 1979 given manufacturers' lack of enthusiasm, and this much to the dismay of the "Electronic Directory" people who were wondering whether they would ever have them in time to begin their experiments in Rennes.

## The builders take the field

The hour of the inventors had tolled, even though occasionally, in a pinch, they would be called upon to solve any number of sticky problems. France Telecom's managers had successfully argued their case before the political powers: the future Minitel would be distributed free of charge to telephone subscribers. Moreover, they had succeeded in convincing manufacturers of the necessity of penetrating the terminal market. The time had come for the designers and builders to fall into step and set up shop where the action would be, i.e. on the testing sites.

"To study the possibility of proposing to [France Telecom's] general manager a test evaluating the general public's receptiveness to home information services, I would like to have an opportunity to commission a detailed study of the Vélizy* site, which according to an evaluation

* Western Paris suburb.

conducted in conjunction with the DAII offers a number of highly attractive features (high telephone concentration, proximity to the CNET, both home and office subscribers)... I would like to solicit your approval for the engineers in charge of this study to enter into contact with the Vélizy section of France Telecom." This letter by Souviron, dated December 12, 1977, was addressed to the Ile-de-France regional director. It was to be the first in a series of voluminous correspondence, culminating in a green light to conduct the experiment on the Vélizy site.

It was thus no coincidence when, in defending his project before the November 1987 interagency council, Théry threw out the name of the city of Vélizy. Already for over a year overtures had been made to Velizy's elected officials, and technical studies had been conducted to determine the feasibility of the project. Had the city of Vélizy been singled out because, in addition to certain objective criteria, Alain Bernard happened to live there? Who knows? It was Bernard who in mid-1977 was looking for the ideal city to host France Telecom's industrial-scale testing of all its mock-ups. In 1977, France's telephone administration had on its shelves any number of new services projects, but Bernard felt that a product's feasibility could only be proven through testing under full-scale conditions. He knew his city well; he also knew local officials and it was before them that he laid out his proposals. Vélizy's deputy-mayor, Robert Wagner, who for 17 years had been chairman of the National Assembly's PTT budget committee and prided himself on being a friend of Théry, did not take much convincing. He liked the idea of a test being conducted in his city, stamping it with the kind of sophisticated and avant-garde image that appealed to him.

The technical studies quickly showed that the Vélizy network was more than adequate in terms of quality and the percentage of homes and businesses hooked up to the telephone network. The socio-economic make-up of the city's population was well above average, another encouraging fact. The deal was closed and Vélizy designated to be the cradle of mass-market videotex.

Headed by Philippe Leclercq, a young Telecom engineer specialized in data processing, the project team arrived in Vélizy in the summer of 1977. Its job was to find investment partners willing to participate in testing a new medium, to devise a number of consultation, game, and electronic transaction services, and to try them out on a sample of 2,500

households equipped with terminals by France Telecom; in short, to test run the uses of home information services.

The decision to test the electronic directory in the *département* of Ille-et-Vilaine (Brittany) owed more to the convenient proximity of the CCETT than to any claim the area might have to a kind of representativity. The CCETT is in the city of Rennes, the "county seat" of Ille-et-Vilaine and the entire Brittany region, so the brainpower was already in place, to say nothing of the laboratory infrastructures that were to be used extensively. The data bases used to demonstrate Bernard Marti's Antiope format on the Didon and Titan videotex systems were stored on the CCETT's computer. The local environment was thus favorable to furthering a project whose technological question marks, as all those involved knew full well, would be difficult to resolve.

The project team took up residence. Things were looking up, but it had occured to no one that, in Ille-et-Vilaine, François-Régis Hutin reigned supreme. The owner of the *Ouest-France* newspaper monopolized the regional print medium and was soon doing his utmost to derail the project under the pretext that videotex was a potential competitor which might drive print journalism out of business. Beginning in the summer of 1979, Hutin was to wage a furious battle against France Telecom. He was several times on the verge of carrying the day but would end up losing, ironically enough, for the good of the press as a whole. This victory in defeat did not stop the inveterate scrapper from taking an equally tough stand in 1986 against the proposed introduction of two new privately-owned television stations in France.

# The year of living dangerously

How do you fire a politician's imagination? Gérard Théry is a past master of the art of advancing projects that strike the imagination of the most reluctant listeners. Granted, videotex was proposed in November 1978 to an interagency meeting in lieu of other flawed data processing ventures, but it was approved largely because it was promoted as an answer to IBM's expansionism and as a piece of advanced technology that

was going to radically alter the Frenchman's communication and information habits. Thanks to videotex, the argument went, France would finally escape its chronic backwardness in emerging information technology and gain access to a new wonderland of electronic information and real-time communication. Gone were the days of the paper society and tough luck for those who dealt in it! On February 26, 1979, Théry was in Dallas for the opening of the Intelcom Trade Fair. "We are on the threshold of a far-reaching phenomenon whose significance is equal to that of the advent of the railroad or the airplane" he proclaimed.

To make a splash, France Telecom's managers had promoted videotex as a multi-faceted product. During the glory days of the spring of 1979, they were still thinking mass-market facsimile, persuaded that the politicians would fall for its fascinating aspects. They were thinking videotex with the Teletel interactive videotex project and the electronic directory. But most of all they were thinking Transpac, the flagship of French technology inaugurated in March 1979. It was at the height of its glory as the French X.25 format had just been adopted by the entire world; and IBM, after a no-holds-barred battle, had been forced to yield.

With such an overblown image, videotex was no doubt fascinating. The only danger was that it might throw a scare into people.

## The match of the century: videotex vs. paper

In retrospect, Théry's Dallas speech has an innocent enough ring to it, and it seems surprising that it triggered the uproar it did. In his address Théry naturally attacked the paper society head on, whose days he felt were numbered. "Paper will only be needed at the end of the information processing cycle and then only if the user wants it. This will be a positive development because the transport — by foot, horse, or car — of ever increasing amounts of paper is choking our societies. Moreover, it is a costly resource in every respect, and vulnerable." But at no time did he pronounce the fateful words that were to goad the press into battle: classified ads. It was not so much what he had said as where he had said it that appears to have riled his countrymen. What! Had he really gone to the United States to define French videotex policy, while in France not a soul had been informed of what was afoot?

The people at *Ouest-France* had obviously got wind of the imminent testing of the electronic directory in their backyard of Ille-et-Vilaine.

And no one had even had the common courtesy to discuss the subject face-to-face with the paper's owner, Mr. Hutin! In his March 2, 1979, column H. de Grandmaison wrote: "The news that the subscribers of Ille-et-Vilaine will be equipped starting in 1981 with an advanced directory assistance system called "videotex" has reached them from Dallas... It may be that Mr. Théry's U.S. statement enhances French prestige abroad. But, in Rennes and in Brittany, it smacks of off-handedness." Théry's speech was definitely not to the liking of the owners of local dailies, who since 1968 when television advertising had been ushered in had been operating in a comfortable business environment and winning, year-in year-out, all their battles against the new media. They had carried the day against unlicensed or *pirate* radio stations and had succeeded *in extremis* in preventing the introduction of small-scale cable networks. Everything was coming up roses as far as they were concerned: the amount of advertising allowed on television was strictly controlled, no new medium had made a real breakthrough, and they compensated a slow decline in readership with regular price hikes enabling them to maintain their profit margins. The families that owned the local newspapers were making a decent living and took a dim view of prospects of change.

But 1979 was to be a year of bad tidings for newspaper owners. They sensed the imminent arrival of satellites and, concomitantly, the inexorable introduction of more television stations as well as the fragility of the barriers to advertising they had erected between 1963 and 1968. At the same time, the Ministry of Finance revived the possibility of striking Article 39 (a) from the tax code: Since the end of World War II, it had allowed newspaper publishers to put their profits into a separate account for a period of five years for purposes of modernizing their facilities. Furthermore, they were aware that, despite their resistance, the repeated attempts to set up unauthorized radio stations — invariably nipped in the bud by the government — would one day culminate in government licensing. All of which sent a feeling of uneasiness throughout the profession. These dangers, however, were still only vaguely apprehended, and it was difficult to do battle with shadows.

In the midst of all this, the videotex project arrived. It was a godsend. Newspaper publishers finally had "a sharply defined adversary... who in all innocence sallies forth, exposed, in white gloves, plume, and red trousers," as François Henrot put it. Henrot had been recruited by Théry

to head the Commercial Affairs Division and to help him unravel the intricacies of the anti-videotex plot being hatched before his very eyes.

And the first skirmish occurred May 8, 1979. In his newspaper, *Ouest-France*, Hutin penned an article entitled "Transmission and Communication" in which he vented his spleen (somewhat) against France Telecom. His lead was promptly followed by *Presse-Océan, la Presse de la Manche, la République du Centre-Ouest, la Montagne,* and *Nice-Matin,* all local French dailies. The "radical defiance" movement was born, as Jean-Marie Charon, one of France's foremost videotex and press analysts, termed it. Between May 1979 and July 1980 the champions of this movement fought France Telecom tooth and nail, leaving no stone unturned in justifying the rectitude of their cause: humanism, pluralism, democracy vs. technocracy, bureaucracy, loss of civil rights, and so forth. Charges and countercharges flew back and forth, filling the columns of *Ouest-France* and a number of local newspapers that had rallied to its cause.

The anti-videotex crusaders forged ahead, studding their newspapers with articles that were hardly sanguine about the future of French society. The October 1979 issue of the journal *Téléqual,* directed by Georges Suffert, contained an article entitled "The Match of the Century: Teletext vs. Paper". Three little lines summed up the far-fetched fear haunting this beleaguered crowd: "Whoever controls the telephone is powerful. Whoever controls the telephone and the TV is very powerful. Whoever should one day control the telephone, TV, and the computer would be as powerful as God the Father".

And so behind videotex there loomed the specter of Big Brother. It was an ever effective argument, playing as it did to popular fears. The issue of liberty lost struck a responsive chord in France, land of "liberty", torn between too much and too little government. Good professional newsman that he was, Hutin, who knew how to appeal to the emotions of his readership, took up the cudgels again on March 20, 1980. "Towards Controlled Information?" was his front page teaser in *Ouest-France*. All things considered, the article was quite scathing and was the first salvo in what was now an openly declared war. Until then newspaper articles had been critical, raising the issues of democracy, pluralism, market (was there one for videotex?), and jobs, but they had not yet resorted to violent attacks, preferring instead to mix plays upon people's fears with occasional dashes of irony.

It should be said that the press was not unanimous in its condemnation of videotex. Newspapers like *Sud-Ouest, le Courrier picard, la Dépêche du Midi,* and *la Nouvelle République du Centre-Ouest* were rather in favor of the arrival of a new medium. They realized there was no getting around it and had already adopted various shades of multimedia strategies. They preferred to lay the groundwork for a successful plunge into the new medium. At the *Courrier picard,* Bernard Roux modified his paper's by-laws with just that in mind; at the *Nouvelle République du Centre-Ouest,* Jacques Saint-Cricq set up an *ad hoc* task force for the same purpose. All of them ran articles on videotex that were commendable for their neutrality if nothing else. Still, they were often in an awkward position because of the campaign of denunciation being waged by their fellow newspaper publishers, but they refused to take part in it. From May 9, 1979, onward they repeatedly asserted for the benefit of anyone listening that "the mission of the press was communication, not ink and paper".

On May 8, 1980, two associations of regional dailies, the SNPQR and the USPQR, issued a joint statement following a lunch with the Prime Minister. In it they agreed in principle to participate in the Vélizy venture and called for the designation of a "press-telematics" commission, an idea that met with the Prime Minister's approval. The commission would be a forum for hammering out the terms under which the press would take part in the Vélizy test. Meanwhile, the advocates of compromise were going door-to-door to promote their views and, on June 10, they held talks with the Telematics Commission of the National Assembly. Everything appeared to have been settled. The press had obtained the guarantees it had been lobbying for and, subject to the resolution of some minor reservations, was prepared to take part in the launching of videotex when, in Saint-Malo, Brittany, a bomb went off.

The first test of the electronic directory got under way July 15, 1980, in Saint-Malo, and France Telecom refused to disclose its findings. Two days later, Messrs. Puhl and Bujon, presidents of SNPQR and USPQR, respectively, met with the President of the Republic Valéry Giscard d'Estaing. The meeting was a letdown, and on August 2 France's Telephone Consumer Protection Association, the AFUTT, launched an investigation into the electronic directory. The findings, released October 21, were highly critical of France Telecom. On August 3, 1980, Philippe Gallard's byline led off an article in *Ouest-France* that concluded

most equivocally : "A dictatorial power or invader could quite easily turn off the electronic directory... a system which in all likelihood will be obsolete in five years". Was he implying that totalitarianism or invasion was waiting five years down the road? And supposing the technology was indeed inappropriate and the system bound for the scrap heap in five years' time, wherein lay the danger to the foundations of freedom? But during those dire days, common sense had given way to unbridled faultfinding. Matters were to go from bad to worse when, with uncommon vehemence, politicians spanning the entire political spectrum seized upon the telecommunications issue. Throughout the summer months of 1980, everyone did his bit to fan the fire and the newspaper campaign assumed such outlandish proportions that France Telecom engineers, who were caught completely off guard by the uproar, could not begin to fathom why or how the situation had reached such a pitch.

François Henrot had done his utmost to contain the damage. Nonetheless, whether the result of a youthful error in judgment or a misfired tactical maneuver, he acknowledged he had underestimated the extent of the crisis. To his way of thinking, the apprehension plaguing the world of print journalism stemmed from a distorted view of what videotex could really do. The problem, however, was that a number of newspaper publishers had taken at face value the do-it-all image of videotex that Théry had sold to the government. To them "do-it-all" meant the disappearance of their livelihood. The engineers thus learned the hard way how risky it is to talk out of both sides of one's mouth, to two different audiences, without a head-on collision occurring somewhere along the line. As for Henrot, he harbored no illusions about videotex. He sensed its limits as well as its potential and felt sure that the press had nothing to lose and everything to gain from its introduction — a fact that has moreover been borne out since. Accordingly, he believed that a policy of openness, a willingness to explain, good-faith bargaining, and determination would be enough to extinguish the blaze. But everyone was fanning the coals, including a number of would-be arsonists inside France Telecom itself. There the Dondoux-Du Castel report (only two copies of which had been distributed, though they were fruitful and multiplied thanks to Xerox), gladdened the hearts of all those who disputed the electronic directory in particular, and Théry's policies

in general. What had begun as a brush-fire in no time erupted into a raging, unstoppable forest fire.

It should be added that the much ballyhooed Press-Telematics Commission did not measure up to expectations either. The first meeting on July 7 baffled the representatives of the print medium, who failed to see why the commission had been set up if not to provide a forum for discussion. They tried to lay down conditions, which for them were fundamental: respect of their principles, suspension of testing until a relevant legal framework had been worked out, and confirmation of Giscard's assurances concerning the advertising ban on videotex. They obtained little in the way of satisfactory answers.

The upshot was a spate of virulent editorials in all the newspapers. Olivier Jay, for example, wrote in the July 23, 1980, issue of the *Républicain lorrain*, "Inconsistent and hypocritical... to set up a service which is expected to be used twice a week on average! Inconsistent means wasting public money, and hypocritical means planning to vie with the press in the long run". Even the newspaper *le Monde*, which had stood on the sidelines until then, wondered about the future of the press, which editorialist Claude Durieu depicted as "threatened in its very essence by videotex" in a September 27, 1980, article. A few months later in the same column, Eric Rohde, albeit on a calmer note, referred to "the underside of the electronic directory", thereby raising the issue of who would control the new medium.

The wave of editorials added nothing to what veteran anti-videotex crusaders had been saying for years. What was new was the source. For the first time, those who so far had been favorable to the project enlisted in the ranks of its adversaries.

At the October 8 meeting of the Press-Telematics Commission, the representatives of the press did not obtain a say in the control of videotex as they had requested or the subsidies they had demanded, and their participation came to an end. They had transformed a technological issue into a political one.

It was now Parliament's turn at bat. Beginning in November, relations between the government, France Telecom, and the newspaper owners were placed on a routine footing. Airtight guarantees were given to the press, which maintains them to this day, guarantees that conferred upon it a priviledged, not to say questionable, status on a new, very lucrative medium. The regional press feared competition and wanted no

part of it. In a dubious battle, its cause greatly facilited by France Telecom's contradictory pronouncements and egregious lack of political know-how, the press finally got what it wanted: a near-monopoly on videotex. Lobbies do die hard!

## Parliament goes to bat against France Telecom

In early October 1980, a host of lawmakers were to band together, despite their political differences, to form a united front against videotex. The press campaign appeared moreover to have had a certain impact as early as the October 23 interagency council meeting, at which the Ministry of Finance and Prime Minister Raymond Barre in person asked France Telecom to come up with additional guarantees for its videotex plan before Minitels were ordered.

For their part, deputies and senators were looking to devise a number of coercive measures. They were clearly aiming to obtain assurances that Telecom's videotex activities would be experimental and that they would not develop as a matter of course into a full-fledged commercial enterprise run by the PTT before appropriate legislation had been drafted. On October 28, the neo-Gaullist deputy Robert-André Vivien, chairman of the Finance Committee in the National Assembly, along with fellow deputy, Michel Noir, submitted Amendment 98-182 to end funding (some $83 million) for the PTT's experiments on the grounds that "it would appear indispensable that the ethical ground rules applying to information services using the new instruments be spelled out (probably through legislative revision of the statutes governing the press)".

In the Senate, things were hardly looking any better for Telecom's proposed experimental framework for videotex. On November 4, Jean-Marie Rausch, senator and mayor of the city of Metz*, submitted a bill for designating in the National Assembly and in the Senate "a parliamentary committee on data processing and communications". Senator Louis Perrein was thinking along the same lines when he proposed instituting a high council for data communications.

* Elected officials in France often hold several public offices concurrently.

PTT Minister Norbert Ségard, although seriously ill, tried to counter these various attacks. He stated the case for videotex, building it around the issue of fundamental freedoms. In the preamble he underscored the absolute necessity for France to carry out the planned experiments, without which "needs will not be revealed", and went on to announce five decisions in keeping with Parliament's demands: 1) Testing would be limited to six months and involve 2,500 people. 2) The test would not be conducted in a legal vacuum: publishing laws would be applied. 3) The National Commission on Data Processing and Citizens' Rights (CNIL) would be consulted. 4) A "Press and Telematics" group would be set up by the Prime Minister for the purpose of improving cooperation. 5) No data communications-related decision would be taken without Parliament being fully informed. "Our main concern is to avoid being left out of a world market valued at 15 to 20 billion francs. The fact of the matter is that in the industrialized countries 27 videotex experiments are under way," he added by way of conclusion.

When on November 14 Ségard's successor, Pierre Ribes, walked into the National Assembly for debate on the PTT budget, he suddenly realized that his predecessor's remarks had apparently had no soothing effect and he could read the exasperation on the lawmakers' faces. Attacks were launched from every quarter. Rodolphe Pesce, Socialist, concurred with the views of the neo-Gaullists Vivien and Noir. All three fulminated against the brazen over-reaching of France Telecom, which had covertly developed a system for undermining democracy. And they pulled out all the stops: civil rights, pluralism, respect for citizens, aimlessness of a strategy devised in a legal vacuum and under anarchic circumstances, death of the press, flouting of the citizen's right to know, society's levelling from below. Their aggravation had peaked. Parliament very much resented having been kept in the dark about the technical and political decisions taken by omnipotent France Telecom, whose general manager had moreover a few months before been tagged the most powerful man in France by Vivien. Insults began to rain down, and the extent of the danger dawned on Ribes, who realized that to salvage his administration's videotex policy he would have to compromise. And compromise he did. A commission chaired by government adviser Pierre Huet would be set up to monitor videotex testing. The press would be eligible for start-up subsidies, and consultations would be continued. Lastly, the electronic directory — its contents confined to that of the

printed directory — would not be extended beyond Ille-et-Vilaine until all tests had been evaluated. On the subject of civil rights, Ribes defended the proposals submitted by Ségard a few months earlier.

This package, which had the government backpedaling and confirmed the triumph of the press, had the beneficial effect of defusing a conflict whose resolution had been nowhere in sight. For the time being, though, it had no effect on the members of Parliament, who were loath to let slip by such a glorious opportunity to wrangle. On November 24 Brigitte Gros, left-wing senator from the *département* of the Yvelines, called for a redraft of the statutes regulating the press and repeal of Article 39(a) — a surefire way to stir up the press! She would further have a "Supreme Court for Data Communications", comprising members of Parliament, judges, and civil servants, under the banner "Democracy and Telematics".

On December 2, Édouard Bonnefous, center-right senator from the Yvelines and owner of the newspaper *Toutes les Nouvelles de Versailles*, who until then had sat back while his editorialists and local connections dueled the videotex program (which the scoundrels wanted to impose upon him in his own political backyard!) took the floor during examination of the PTT budget. As chairman of the Senate Finance Committee, his speech took on special significance: "It is about time Telecom spelled out its aims and a standing organization was set up". He contended that Ribes' proposals had not been acted upon, that the commission set up to monitor testing was a figment of someone's imagination, and that it should be given substance and convened regularly. That same day, Jean-Marie Rausch went Bonnefous one better: He proposed nothing less than a policy bill concerning the future of the PTT.

Ribes fired the last salvo in a war that had generated six parliamentary reports and hundreds of newspaper and magazine articles throughout 1980 by announcing on December 12 that "no classified ads will be carried on the Teletel system, a pilot-scale version of which is scheduled to go on-line in June 1981 for 2,500 subscribers in the city of Vélizy". In the process, he granted the press its last unanswered prayer and circumscribed *de facto* the editorial scope of other publishers on the new medium. And so hostilities finally came to an end for lack of ammunition.

The armistice came none too soon in view of the fact that the order for the 300,000 terminals required to test the electronic directory was still hanging fire. It was not to be filled until between the two rounds of the

1981 presidential election. What a relief! For the advocates of videotex, the plan was out of the woods and a rollback was no longer feasible.

Normal relations with the press were not to be restored during the winter of 1980-81. The presidential election was around the corner and the country was locked in a holding pattern. Something of a working relationship nevertheless developed between journalists and the Teletel project team. The only cohesive element, however, was provided by the newly agreed experimental framework and France Telecom's fat subsidies. The left's election victory and the ensuing reorientation of data communications policy were to have a telling effect, finally releasing energy that until then had been pent up by a rearguard movement.

## The standards war

No one is so naive as to believe that a standard is applied because it is the best. The history of the French television standard, SECAM, offers a good object lesson of the truism that there is no point in inventing the highest performance technical standard around if others cannot be persuaded to adopt it. Experts the world over privately concede that SECAM is the Cadillac of television formats. This admission notwithstanding, all other countries, with the obvious exception of the African nations — with their historically close ties to France — and the U.S.S.R., have adopted lower quality standards: PAL in Europe and NTSC in the United States. Today France enjoys its splendid format, and isolation, and is doomed to "compensate" its technical excellence with a dual-standard policy. It is forced to adapt all available television peripherals to the SECAM format. In France, Japanese video cassette recorders are dual-standard (PAL/SECAM) and are that much more expensive for French consumers. When the SECAM standard was invented in France, the television receiver was still a stand-alone apparatus, i.e. no other equipment could be connected to the set. In very short order, television professionals came to suffer the drawbacks of using a minority format. Only later did the general public become aware of the problem, when television sets were first designed to be connected with other equipment, including video tape reorders, computer terminals, video disk players, and video game consoles.

The ins and outs of standardization are subtle, so subtle in fact that a winner can often times be declared only after the dust has settled

— completely. The cleverest spiders often become entangled in their own webs in this game! In the communications sector, where matters of compatibility between types of equipment, hence standards, are of greater significance than in any other, no manufacturer can afford not to know what is being done, where, and by whom when it comes to standardization. Be they large or small, manufacturers have a strategy where standards are concerned. Simply put, though, they do not have the same one.

The major manufacturers produce *de facto* standards in that they develop products in their laboratories which they intend to impose in the marketplace, while they continue to design products in accordance with the standards being discussed in international bodies, whose deliberations they monitor on a daily basis. The sharp manufacturer introduces just the right amount of incompatibility in his products to hold on to captive markets, but not too much, for his competitors could then no longer afford to invest what it takes to make their own equipment compatible with a *de facto* standard or, simply, to save face. What computer today is not, on paper at least, compatible with the IBM PC? Seeing is believing: a simple test will show that such compatibility is a fact, provided, however, that certain conditions are met, i.e. the purchase of conversion equipment.

Small manufacturers, who cannot afford such a strategy, at once offensive and defensive, are destined to feed at the big boys' trough. They have no choice but to manufacture products compatible with something or other. The standardization arena therefore offers them an opportunity to grasp what is happening and, most of all, to see what the major players are up to.

The standardization arena, like any other form of information exchange (only more so given the high stakes and the need for compatibility) is most hospitable to the masters of hype and baiting. Every statement must be weighed, and the observer must realize that every word pronounced and every document distributed can be virtually tantamount to leaking industrial secrets, that silence is a defensive tactic, and that alliances are unmade as quickly as they are made. In the world of standards, Japan reigns supreme. Every Japanese manufacturer is represented in the various standardization organizations by several experts who do not pass up an opportunity to apply the basic rules of the game of *go*, whose complex strategems are unfamiliar to their Western counterparts.

In the history of the standardization of videotex, the French would appear to have been taken for a ride. They made two unforgivable mistakes. First, in the teeth of fierce opposition from IBM, they had achieved a stunning success with the adoption of the X.25 data communications standard at the same time as the Transpac network became operational. It may be noted in passing that IBM was the first to render its equipment compatible with the Transpac network. Second error — and a doozy — they were the last to climb on board as videotex was pulling out of the station. The "victims" of X.25 had had all the time in the world to put up a united front against the French.

In fact, the battle of videotex standards had been raging since the mid-1970s. Already at the time the French, who did not as yet have much to offer but whose technological choices would take shape in the years to come, attempted to derail the British teletext system, Ceefax, and build a consensus around the interactive videotex standard, Viewdata. As related earlier, Gérard Théry had gone to London to discuss a common standard with the representatives of the British Post Office, but negotiations fell through. Since then, the British strategy in Europe's standardization forum, the European Conference of Postal and Telecommunications Administrations (CEPT), which, let it be said, has more in common with international public relations than technical discussions on standards, had paid off. In any event, the British were alone in introducing an operational system in the midst of experts' deliberations. In 1978 in Munich, the videotex club that until then had only two members — the French and the British — admitted a third one, the Canadians, who introduced their videotex standard, Telidon. Unlike the European approaches, which integrate broadcasting and voice and data communications, Telidon is modeled on data processing. At the 1980 meeting of the International Telegraph and Telephone Consultative Committee (CCITT) in Montreal, three standards — Antiope (French), Prestel (British), and Telidon (Canadian) — were adopted as basic international videotex formats. All involved thought they had won, but in actual fact all had lost. It would dawn on them years later. In 1981, at an international colloquium on videotex in Toronto, the United States brazenly announced the NAPLPS format, which had been developed by ATT and introduced as a *de facto* standard.

It transpired that adopting three such different standards amounted in reality to deciding nothing. Between 1980 and 1982, the battles among Europeans — each country vying to impose its standard on the others — were to be costly. Especially since the British had in the meantime succeeded in selling Prestel to the Federal Republic of Germany, the Netherlands, Belgium, and Italy. All had purchased terminals and various types of equipment using the Prestel format. They were not about to stand by idly while the French attempted to impose their standard; they would stand united in their rejection of the French and Canadian formats. The Germans, who had had little to say on the subject until then, turned downright hostile in early 1981. They set out to introduce additional features, whose net result was to make French terminals incompatible with German specifications. It signaled the outbreak of a technological state of war that was to last several years. There would be set-tos on the soft alphabet, on matrix size ($10 \times 10$ vs. $6 \times 6$ points), and on all manner of gadgets, the most humorous of which remains the three-sided flashing feature to which the Germans seemed very attached and whose only value is to simulate a turning wheel on the screen. The outcome of these fierce, not to say ridiculous, altercations was a single "European videotex standard", the CEPT format, which covers ten different profiles. Which amounts to adopting not one but ten standards, thereby ensuring the non-compatibility of the various European videotex systems. The upshot is that French videotex, a success, is as unexportable today as British videotex, a failure. It's fine to talk about a united Europe as long as it's always in the future tense!

1980 (and the very beginning of 1981) was the year of living dangerously: battles with the press, hostilities with Parliament, wrangling over standards. Even in retrospect it is difficult to say why the conflict reached the pitch it did, why the data communications program metamorphosed so suddenly into public enemy number one, how France Telecom came to be accused of being a power-grabbing machine run amok. If it is bewildering to consider how the anti-videotex conflict blew up, it is just as surprising to contemplate how quickly this tempest in a teapot subsided. There can be no denying that the left, which took over the reins of government in May 1981, made the right decisions.

# three, two, one, lift off! | 2

Until 1978 some fifteen people at the most at France Telecom, not including inventors, were concerned by the videotex project. They were scattered among the DAII under Jean-Pierre Souviron, Gérard Théry's inner circle of coworkers, and the CNET under Alain Giraud, who had recently set up a "Communications Research Department" specifically tasked to reflect on new services and their impact on society. So the final decision on what the system would be was the result of countless hours of open deliberations, not closed-door negotiations, but for the average engineer it was just as if it had been. True, some had got wind of the projects, but in terms too vague to conjure up anything in particular. The manufacturers had returned to their drawing boards, bent on dragging their feet. The systems and software houses were as yet unaware that these projects involved them and that they would be highly instrumental in seeing them through. The newspaper pundits were lavish in their commentaries on the Nora-Minc report, which had even made the TV news in faraway Singapore, but few had any detailed knowledge of what it had spawned.

France Telecom was not in the habit of communicating with the outside world, in particular because communication was not its line. Its highly technical "telecomese" was as clear as pea soup for most observers, a fact abundantly illustrated by its frays with the press. The problem was that it was hard put to change its style of delivery and, since Giscard had

given the go-ahead, matters were settled as far as it was concerned. What is more, it was locked in an all-out race with the British, who were already toying with the idea of selling Prestel worldwide. In the somewhat secretive house of France Telecom, doing, not talking, had always been paramount; results, it was reasoned, would put any doubts to rest. The project team accordingly set to work in silence, sticking to its local base of operations, with strict instructions to keep a low profile as the national debate turned increasingly acrimonious.

# Preparing for the Grand Opening

France Telecom's top management accounted for very few of the 50-odd people who would have a direct hand in carrying out the videotex experiments. Only the two project heads (for the videotex system in Vélizy and the electronic directory in Ille-et-Vilaine) were veteran house engineers. The others, with few exceptions, would be recruited on the open labor market, with or without the help of headhunters depending on the position, but always on the basis of the non-technical professional skills they possessed. It would be their job to set up partnerships and to devise videotex services for testing, in conjunction with this new-found reservoir of professional talent.

So in 1978 the two ships of French telecommunications set out to sea in rough waters, while the majority of those who had stayed behind on the wharf, where their careers would be less exposed to the elements, looked on somewhat skeptically. The adventurous few, however, took to sea with joy in their hearts, a great project before them, convinced they were toiling for the future, unaware of the difficulties that would punctuate their journey. Had they known, would they have set out? Would they have given so unstintingly of themselves, had they known that France Telecom would show so little appreciation? Would they have put in so many sleepless nights, had they imagined that upon their return — as was the fate of a number of them —they would be left standing with no more baggage than a few memories of their lives as videotex pioneers. True, some turned the experience to good account, especially those who had been shrewd enough to choose the electronic directory

project. But who could predict in 1978 or 1979 that France Telecom would reward its own, those who had worked on its internal project —the electronic directory — by slighting those who had brought about the success of mass-market videotex, of much greater importance in terms of volume?

## Velizy, the cradle of French videotex

It would be baptized *Teletel*. The matter of what to call the Vélizy operation first arose in July 1978. A brainstorming group was convened to come up with a name at once ideal, beautiful, suggestive, likeable, in short a name of distinction, not the usual laboratory-inspired code name. And so Teletel was pulled out of the hat — one of 36 possibilities including such forgettable classics as Tam-tam, Datec, Digiself, Self-Video, Alteritel, Ariagen, to name just a few. The definitive name was chosen in September; a glossy brochure was then printed up that depicted even by today's standards a dreamworld of videotex possibilities. In a word, or so the brochure, Teletel does it all. The user can "communicate, make inquiries, act", it says. Would such a sales brochure sell Teletel or would it be the source of many a letdown? At the time, program volunteers went into the experiment with the conviction that they were being handed the tool of the future. Today Vélizy remains synonymous for many with videotex. In Vélizy a segment of the population came face-to-face for the first time with an unknown technology. 2,500 guinea pigs volunteered for the operation. Some 80 service providers were on-line as early as 1982. Households used the system six times a month on average, consulting 20-odd services for a total connect time of one-and-a-half hours per month.

These overall figures concealed a number of pronounced disparities, however. Age disparity: people under 30 used their terminals more than those over 30. Gender disparity: women used them but little. Class disparity: top executives connected more often than middle management types, who in turn called more often than blue collar workers. Further, a flagrant disparity emerged in terms of services used. Five service providers alone accounted for over half the calls: two electronic journals, an electronic mail service, the French national railway (the SNCF), and one network promotion service, *Teletel 3V*, proposed by the project team. As far back as the Vélizy days, the phenomenon of what the French call

the "closet terminal" or dust collector manifested itself: 30 % of households never used their terminals, while 20 % alone accounted for over 60 % of all calls. Lastly, an analysis of the Vélizy statistics showed a typology of electronic products and target audiences emerging. There were four categories: transaction services, involving only a fraction of subscribers but widely used; electronic mail services, which had their devotees, who the time come would demonstrate their ardent dedication to the service; games, which scored the biggest success, consulted by over half the subscribers; and information services, which made an impressive breakthrough. Mention should likewise be made of the educational services, which achieved more modest scores but which were apparently quite suited to the new medium.

Three years had elapsed between the project team's arrival in Vélizy and its compilation of these initial statistics. Three years of unremitting labor spent perfecting and industrializing the terminals, building up a sample group of volunteers, marshalling service providers, installing the host system, and adapting the network. At first the team's job was made easier by the municipal authorities, fascinated by the new project. It subsequently had to contend with the increasing hostility of the press and elected officialdom.

Some people regarded the Vélizy program as a test of the technology involved on account of the fact that the team often had to grapple with problems of a technical nature. But the Vélizy venture was designed first and foremost to test services, hence the unorthodox choice of terminal equipment that stood in contrast to the decision in Rennes to go with a stand-alone terminal. The videotex services in Vélizy were designed for home entertainment purposes. Accordingly, the TV screen looked like the ideal medium for "playing" videotex since it offered the advantages of color and high picture resolution. The installation of another terminal in the home would also thus be avoided. So the decision was made to use a simple decoder *cum* alphanumeric keyboard. Better yet, this package was designed to be stored away beneath the TV set after use. The device turned out to be a non-starter and would be jettisoned in favor of Minitel on the charge that it compounded television viewing conflicts. What child or, for that matter, what adult would be so ill-mannered as to interrupt a television program being watched by the entire family to indulge in a little electronic video!

But in no time an unexpected technical problem arose. To use the decoder (quickly nicknamed "hot plate" on account of its shape), the TV set needed to be equipped with an accessories socket. In mid-1979 it dawned on the team that there were too few sets in the Vélizy area equipped with this wretched little socket to make for a decent sampling of volunteers. Flabbergasted at the thought that it had overlooked such a minor detail — as silly as it was fundamental — the project team suddenly found itself back at the drawing board. It reasoned that since not enough people had the right kind of TV set in Vélizy the experiment should be expanded to include other neighboring towns to build up a representative sampling, failing which its statistics would be irrelevant. Nearby Versailles was considered, as were the townships of Val-de-Bièvre, Jouy-en-Josas, Les Loges-en-Josas, and Buc.

From the technical standpoint, the idea made sense. Available network capacity and geographical proximity dictated the team's decision, which on the face of it was so logical that it simply neglected to inform local authorities of its intentions. As luck would have it, the center-right senator from the Yvelines, Édouard Bonnefous, chairman of the Senate Finance Committee, and owner of the local daily *Toutes les Nouvelles de Versailles*, would hear nothing of such plans. He was not about to sit on his hands while videotex was forced upon a city in which he virtually monopolized the news. To make matters worse, the mayor, Mr. Damien, and the chairman of the regional council had learned of the planned extension of the videotex project from the newspapers, a way of doing business that struck them as offhand to say the least. The three elected officials found themselves in complete agreement: They would drag their feet throughout the experiment and a few months later help mount an all-out attack on videotex in the press.

Blissfully ignorant of the brewing storm and delighted to have enough volunteers at last, the project team set about recruiting households for sampling. But how to go about composing a sociologically representative sampling when its avowed aim was to court the "population of the year 2,000"? The predicament was compounded by the fact that the services involved lent the operation an elitist image — the term "telematics revolution" was even bandied about — and by the fact that the service providers, who were taking the risks, demanded assurances that the terminals would indeed be used — and not to collect dust. So the beleaguered project team had to come up with something. It opted for a mixed solution, involving two population segments: one

sampling of 1,500 "sociologically" representative households and one "super-sampling" of 1,000 people viewed as potentially heavy users. And that did the trick. The compromise solution was to hold up the time of the experiment. The guinea pigs were completely unaware of any ulterior concerns, and the experimenters would obtain the information they needed. Only outside observers and research workers were to have nothing for their pains. They would never be able to read and understand the statistical readouts, difficult to decipher for those not directly involved in compiling them.

Pragmatism, rapid intervention, volunteerism, and interventionism were the watchwords of Philippe Leclercq and his team. Pragmatism was the order of the day because their work lay outside the bounds of anything that had gone before; as the press never let readers forget, the project was a world's first. Never before had a videotex test been concentrated in one metropolitan area; never before had terminals been distributed to the public free of charge; and never before had it been thought necessary to muster a large number of services for starting up such an operation. In short, only in France — Vélizy to be exact — had an experiment been mounted on such a scale. The project team thus had to contend with the hazards of a premiere, and pragmatism was king.

Rapid intervention was likewise called for because of Telecom's race with the British, who were still cruising along and who might inundate the planet with Prestel if Teletel's feasibility was not demonstrated forthwith. Speed was also of the essence because it is the driving force behind an experiment, its momentum, its tempo. An interruption, a lull, and the spell is broken. All those either intimately involved in the venture — users, service providers, network operatives — or remotely concerned — decision makers, elected officials, journalists — had to have their attention held, indeed riveted.

Volunteerism too was a focus since there was naturally no demand at the outset from local operators or nationwide suppliers for the services involved, even less so from private individuals, who at best were flattered to participate in a test that bore the stamp of something new and modern. It was thus paramount to convince, explain, elicit a sense of commitment to the project, persuade people to get involved, dispel reluctance, confound objections, in short sell an intangible asset — no mean feat.

Hence the project team's interventionism, which would gall more than one, and which might have been handled more adroitly, but without

which in the final analysis videotex would not have got off the ground. The ambient hostility was quick to home in on France Telecom and a team that was laying the groundwork of a videotex plan that had first raised the hackles of all the nation's press in the spring of 1980. By the fall of that same year, politicians of every stripe had jumped on the anti-videotex bandwagon.

Contrary to its usual approach, France Telecom gave Philippe Leclercq relatively free rein in running his project. Free rein, though, did not mean oblivion, and when Théry paid a visit to the Teletel project team in June 1980 he was taken aback by what he saw. There he was thinking that the system was about to go on-line only to realize that nothing was working quite right, that none of the technical programs were making any headway, and, worst of all, that whole sections of the project had not been integrated. The situation was such that Philippe Leclercq was unable to give him a date for the start-up of the Teletel service. The team was overwhelmed by the complexity of the project and, the energy it had invested notwithstanding, could not piece together the various parts of the system.

Now it is true that the technical solutions opted for at Vélizy were directly modeled on the Prestel system, whose salient feature was by no means simplicity since the entire system was in the same tight grip. Moreover, heated discussions had been held between the project team, which wanted the central computer system to play a leading part, and France Telecom's data communications people, who advocated cutting back the number of available functions in favor of the facilities of the software houses involved in the project. According to the Vélizy scheme — something of a compromise between the two approaches — the service companies had to meet such complex standards that, rather than use their own data processing tools, they were better off leasing pages on the Teletel host system (which uses an array of six Mini-6 computers); it was then the project team's responsibility to make the necessary data processing upgrades. Unlike some major, highly computerized companies (La Redoute, a leading French mail-order house; the French national railway, the SNCF; or banks) that use their own data processing systems as so many remote information retrieval centers, the service firms all opted for access to Vélizy's host system. The difficulty involved in carrying out such an operation may readily be imagined, and the

temptation to do everything alone carries with it the danger of doing nothing right.

Somewhat annoyed, and anxious to wrap up the project — with elections in the offing, might someone else inaugurate "his" baby? — Théry tasked Ile-de-France Regional Manager Pierre Lestrade with the technical side of the project. From then on, things really started moving. The operations engineers, who are used to grappling with all manner of complex technical matters, went all out and quickly got Teletel on track.

Liberated from the technical problems that had occupied most of its time, the project team was to focus its energy on devising and marketing videotex services. The problem, however, was that it did not have a typesetting terminal, that little machine which produces videotex pages virtually automatically. What was more, the host system was not yet operational. Team members turned sheepishly to Christian Carrouge, the forgotten father of Tic-tac, and begged for a modicum of storage capacity on his T-1600 computer from the Télémécanique Corporation. Michel Bouvier, not one to wait until solutions are served up on a platter, had been asked to promote videotex à la française throughout the world, and he was out to impress. He agreed to go to the International Racecar Federation's congress in Casablanca, but had no intention whatsoever of presenting the applications that Bernard Marti had concocted for Moscow and that were the only ones then available. He did not think that those wild Moscow nights would capture the interest of car racing aficionados and Moroccan officialdom. He was willing to go to Casablanca, yes, but with applications suitable for the occasion. Because there was no typesetting equipment available, he set the first images directly on Carrouge's T-1600 computer, encoding each *bit* one by one. It was a herculean task, and he would need a week to produce the first image, two days for the second one. But in Casablanca, followed by Toronto, New York City, and Stockholm, he had increasingly sophisticated applications to show. He acquired, for the benefit of the Teletel team, a degree of know-how that was especially valuable in that a number of software companies were very soon involved in videotex as a result. Two experienced firms, Télésystèmes and G-CAM, took over from the old T-1600, underpowered and ill-adapted.

While Bouvier was busy on the international scene, Marti was back in Paris for the big Unesco colloquium of 1979 where the ongoing Franco-British war had taken a preposterous turn with what the British called the "screwdriver affair"; who but the general manager of France Telecom, stung by the imposing British presence, could have ordered their powerlines cut, thereby preventing them from demonstrating their wares. The British, their blank screens staring back at them, could not get over it. The French engineers manning the neighboring stand, all their screens alight, thought it was a cheap move and decided of their own accord to cut their link with the host system in the city of Rennes. Each and every videotex screen was now blank. Within a half hour the affair got back to Théry, who gave the order to re-establish the Paris-Rennes link. A few hours later, the British had their power restored — as if by miracle.

The Teletel team paid little attention to such amusing goings-on; it had deadline worries. It had to develop a host of services with somewhat reluctant providers. Its multiservices approach meant it would have to devise a wide range of applications: system familiarization, electronic mail/mailboxes, data base consultation, transactions. The team turned to people of different backgrounds and corporate mentalities. After all what did the press and the banking community, insurance companies and government agencies have in common except the fact that they could all be present on the same medium? The Teletel team was faced with a language problem in that it had a different pitch for each potential user depending on how it perceived it. Ever the pragmatic one, the team was totally unprepared for the vehemence of the impending national debate on videotex, which would be fueled by France Telecom's so-called internal contradictions.

With deadlines fast approaching, the project team, ever mindful of the stated aims on the Vélizy test (code-named $T\,3V$), assigned top priority to a quantitative approach (the greater the number of services, the better for testing purposes) rather than a qualitative approach (the more sophisticated the services, the more attractive Teletel) once the experiment was extended to include Versailles and Val-de-Bièvre. Its decision would long be a source of controversy, und understandably so since many services in Vélizy were on the critical list, while a handful accounted for the bulk of traffic. Hindsight of course is twenty-twenty, and it was no simple matter to see from the outset that publishing videotex services was a craft in its own right. Putting out a newspaper or magazine did not automatically translate into doing as much on

videotex; a conventional telephone reservation service was one thing, a workable videotex reservation service, another. All the service providers invited to participate in the Vélizy test were to make this painful discovery, which is common knowledge today.

A quantity-oriented, multiservice approach meant lending assistance to a whole host of partners. Typesetting terminals were made available to potential service providers. They were also offered the services, under various terms and conditions, of systems and software houses. France Telecom even went so far as to subsidize certain host systems. In short, potential service providers received technical and financial support in their initiation to the new medium. Vélizy's Teletel system officially went into operation July 9, 1981. 80 service providers had helped publish some 30,000 display "pages" that were stored in the host computer in Vélizy. All that remained was to let the experiment run its course and to draw conclusions.

## EDS start-up in Ille-et-Vilaine

The electronic directory team was put together in the wake of the Vélizy videotex crew. The names of the first two project heads have been lost to posterity. For reasons of ill health, competence and authority — or lack thereof — they were unable to make any headway. In the wings, Mister EDS, Jean-Paul Maury, was awaiting his chance. He had just spent a sabbatical year at the Auguste-Comte Institute within the confines of the *École Polytechnique*, France's premier engineering institute, which had graduated him a few years earlier. He was perfectly prepared to bully both his team and the manufacturers to see the electronic directory through. His instructions included some slight references to experimental aims, but his job was to bring the project on-line. Installing the electronic directory in Ille-et-Vilaine meant hooking up 250,000 people, an operation that dwarfed the "small-scale" samples in Vélizy. The scale of the operation stemmed from the type of service being tested. Callers use an electronic directory service when they want to know someone's telephone number. There is no point in offering an all too limited service, since the information it would then offer would already be available in the caller's memory or address book. An entire *département* seemed a logical choice, and Ille-et-Vilaine happened to be near the CCETT, whose gray matter and technical infrastructures would be heavily solicited, especially in the early going.

Maury was bent on conducting the project his way; he was not one to compromise and was apparently not overly impressed by the work that had gone before him. To hear him tell it, nothing had been accomplished before his arrival. This, however, overlooks the fact that the main features of the electronic directory had been worked out by inventors and incorporated in one shape or another into the prototypes of Christian Carrouge and Bernard Marti. Quite obviously inventors and builders were on entirely different wavelengths, a phenomenon that is as old as the hills, and just as easily explained. Inventors have a marked propensity for constantly fine-tuning their inventions. An invention is something of a child and an inventor's affection for his baby knows no bounds, but then again he is never entirely satisfied with it and so is driven in a never-ending search for perfection. Builders, however, have one-track minds: They want to transform the invention into a product and put it on the market. Builders naturally dismiss out of hand any additional innovation, regardless of its value, that might delay a product's completion. To the inventor's way of thinking, builders deplete their efforts. For builders, inventors are quibblers. But Maury had no time to hem and haw. The first test of the electronic directory was set for no later than the summer of 1980 in the northern coastal town of Saint-Malo. A year remained to clear up four major problem areas.

Unlike the choice of TV-based videotex in Vélizy, a stand-alone terminal, the future Minitel, had been selected for the electronic directory service in Rennes. Only the most basic features, however, had been settled on: an alphanumeric keyboard and a display screen — nothing else. There remained the matter of ergonomics, i.e. defining the terminal's design and spelling out terms and specifications for the manufacturers. Very early on the problem of man-machine communication reared its ugly head: when consulting a phone-book, the user leafs through it and eventually comes upon the sought-after information. A screen cannot be leafed through and so a dialog suitable for use on a display unit had to be devised from scratch, and over two years went into analyzing the structure and perfecting a form of dialog that is an acknowledged masterpiece today. The third undertaking involved compiling and organizing a data base of 250,000 entries. It was a long shot, especially in view of the fact that the scheme adopted for Ille-et-Vilaine had to be applicable throughout the country. In fact, once it covered all of France, the electronic directory would be the world's largest data base.

Last, but not least, the architecture of the interrogation and information retrieval network had to be worked out, one that could withstand the onslaught of thousands of instantaneous and random calls and process them without delay.

Who would have imagined that it would take months to devise a keyboard? Should the keys be arranged in alphabetical or azerty* order? How much space should there be between them and should they be organized into separate blocks (letter keys, number keys, function keys)? It may not look like much, but concocting a keyboard is complicated business. Research workers first explored the possibility of arranging the keys in alphabetical order. The electronic directory terminal would be distributed free of charge to all consumers and simply supersede the printed directory. But, they argued, not everyone knows how to touch-type and many are ignorant of the azerty keyboard, the most widely used in France. They thus decided to arrange the keys in alphabetical order in the belief that everyone would thereby be placed on an equal footing.

Alain Giraud, who from his perch at the CNET had been an enthusiastic observer of the evolving videotex program, sent Jean-Claude Marcovici, a young Telecom engineer fresh out of one of France's leading technology institutes, the *École Normale Supérieure*, to Great Britain to gather information on new telecommunications services. Upon his return to France, he was assigned to handle research on the keyboard of the future Minitel in conjunction with a research and development consultancy, SERI-Renault, which submitted five keyboard mock-ups, all in alphabetical order, naturally. Giraud asked Marcovici to slip in an "azerty" keyboard just to see what would happen. What happened was that it makes absolutely no difference what order the letters are in for someone with no keyboard experience. But for those who know how to touch-type, however badly, an "abc" keyboard is nothing short of exasperating. (Studies conducted in the United States, in Bell Telephone laboratories, arrived at the same conclusion.) For Marcovici the standard typewriter keyboard was the only choice. He was to be heeded only much later, after users had voiced their displeasure with the "abc" keyboards. For the time

* The most widely used keyboard in France, the first keys on the top letter row being A Z E R T Y.

being, though, they seemed to be the spearhead of Telecom's mass-market strategy and no one wanted to go back on them. Then there was the matter of structuring the keyboard: creating space; setting off blocks for the letters, the figures, and the function keys; arranging the characters in some sort of order; designing an attractive, straightforward keyboard. More easily said than done. The keyboard of the electronic directory terminal was tiny compared with that of conventional typewriters. Carving out space in a small area would be no easy task. In addition, there was the matter of the numbers: they were layed out one way on the pocket calculators widely available at the time and another on the still little known push-button phone. Which was it to be? Several models went by the boards before today's Minitel keyboard, whose design fascinates foreigners, emerged.

Although engrossed in the keyboard dilemma, Marcovici did not lose sight of the need to design the dialogs for the electronic directory. Between the cities of Lannion and Rennes, combatants were girding their loins for the momentous "theological" battles to come. Should the terminal be dedicated to the electronic directory by outfitting it with specific function keys such as 'profession', '*département*', and 'city'? Or should consideration be given to an open-ended terminal designed to connect with other services? After all, the electronic directory terminal was but one option among many in a wide range of services. This second approach carried the day. The user would not communicate with the machine by means of specific function keys on the keyboard; rather he would key in responses to questions or instructions displayed on the screen.

There also arose the question of whether the electronic directory should be a clone of its paper counterpart, with electronic yellow and white pages, or whether its layout should be rethought for the new medium. Marcovici tested all available options throughout the summer of 1980 on the Saint-Malo site. This memorable experiment touched off the regional press' sweeping offensive against supposedly omnipotent France Telecom, which had had the effrontery to test an electronic directory and then withhold the results. Although the Saint-Malo test was a public relations disaster, the experiment generated extremely valuable information, demonstrating that the white/yellow pages approach was unsuitable for electronic consultation, as were the printed phone book's professional listings. It paved the way for dialog specifically adapted to the electronic directory: the single format approach used today.

But most important, the test spotlighted an unsuspected problem arising in connection with the design of the display pages. To the engineer's way of thinking, a page is a page; what matters is not its form or its layout but the information it contains. The user, though, wants to find his bearings in a display page and grasp what it is trying to say. André Hatala had been trained at the school of the great French designer, Roger Tallon (who came up with the name "Minitel"), and he knew what form and layout were all about. Since going to work for France's leading multimedia group, Havas, he had given considerable thought to the matter. He would introduce a specific approach to screen design, on the basis of which research was to resume along more productive lines. He reasoned in terms of how the caller would use the terminal and worked up a hierarchy of utilitarian and esthetic criteria. The display pages he designed would be tested in 1981 on 1,000 people in four townships near Rennes. They are the same pages consulted today on the electronic directory service. Almost three years of persistent effort were required to hit upon a straightforward, easy-to-memorize, effective dialog. In data processing as well as in design, nothing is more complicated than keeping it simple.

Another 18 months were to go by between the "four townships" experiment and the February 4, 1983, inauguration by PTT Minister Louis Mexandeau of the Electronic Directory operation in Ille-et-Vilaine. Why the wait, when everything was apparently working smoothly? Terminals, a data base "manager" run on a CCETT computer, and suitable dialogs, all the component parts of the electronic directory system appeared to be in place. Moreover, Hervé Nora, of France Telecom's Commercial Affairs Division, was pushing to have the system extended posthaste to the rest of the *département*. He ran up against the formal, never-to-be-recanted opposition of J.-P. Maury and his team, who did not wish to run the risk of extending a system that was still nothing more than a large-scale pilot project. They wanted to get off to a good start with a reliable, industry-ripe system. Eighteen months of hard-fought negotiations were in store for them with two industrial consortiums: SESA and CAP-Sogeti.

Maury's enlisting of two consortiums was a novel approach that would turn out to be the key to the successful completion of his project. He apparently hit on the solution in the early going. He realized that it would be difficult to resolve the purely technical difficulties and
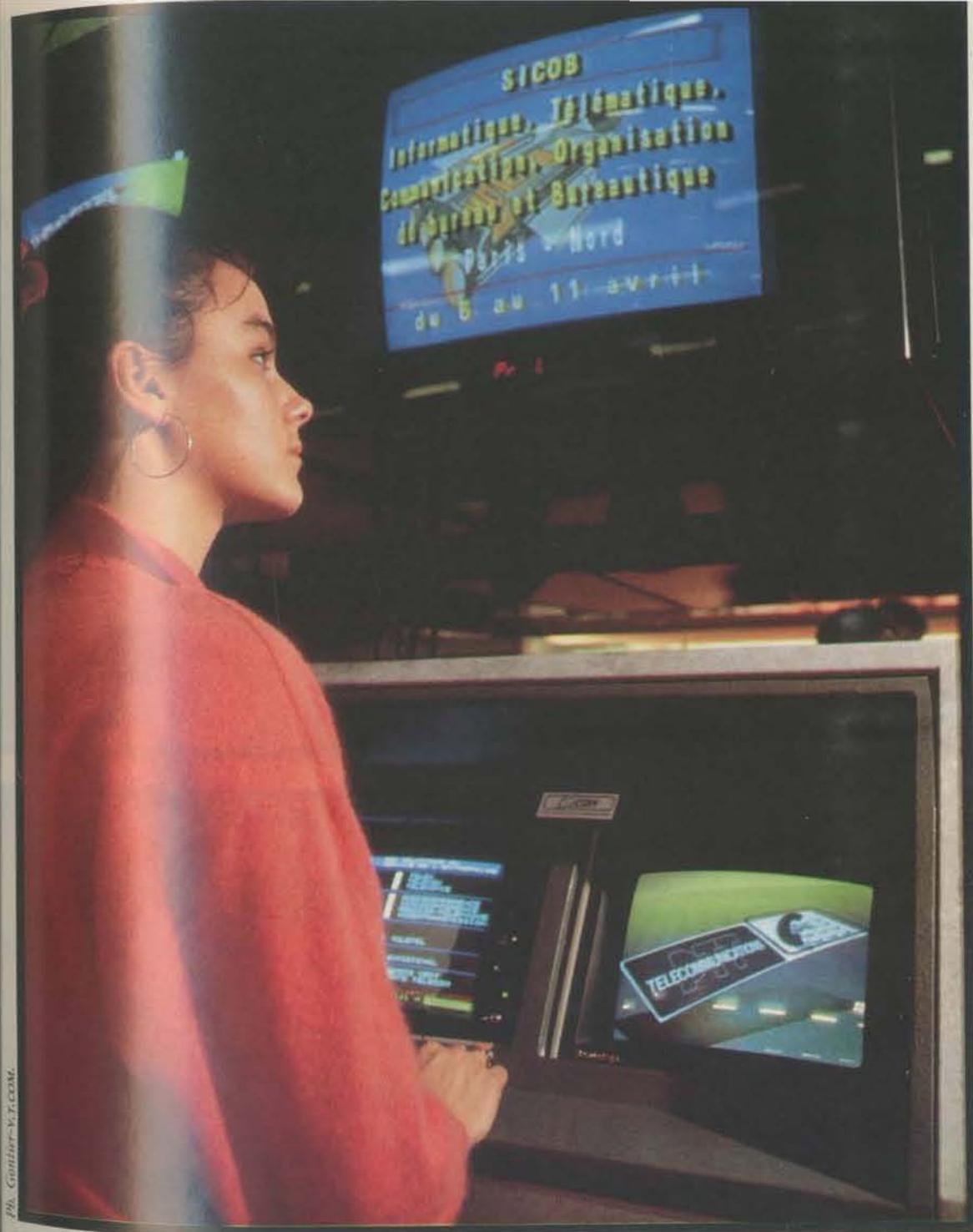
Is there still a trade show that can do without Minitel? It's a guide for visitors, a source of vital information — or simply a way to pass the time.

Above:
*It was years before even public telephones were installed in the Paris metro, but now you can find everything, including Minitels that make life easier for RATP hostesses and information staff.*
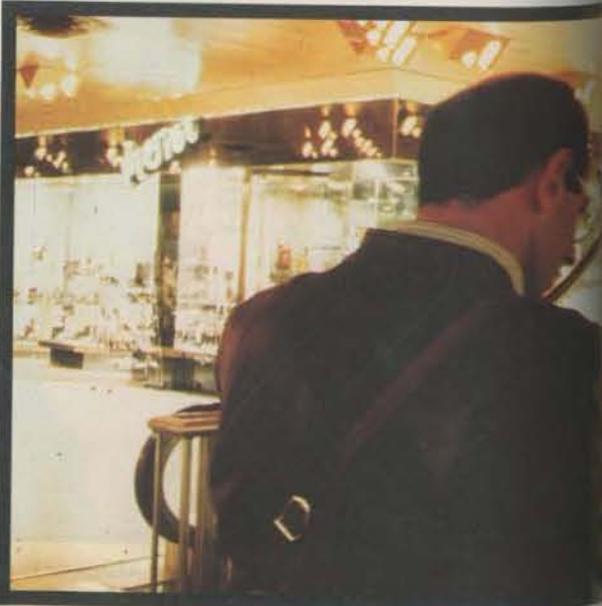
Opposite:
*Videotex services are available in shopping centers and other public places. Here a user checks out the latest developments on the New York Stock Exchange.*

subsequently to industrialize the solutions, and he was determined to involve manufacturers, not researchers, in devising the system. He surrounded himself with a skeleton crew of seven researchers, who in 1980 would have two prototypes of the electronic directory system designed and built by SESA and CAP-Sogeti, each working along different lines. Thus, if all or part of one scheme misfired, he could fall back on all or part of the other. Which was just what happened: the existing electronic directory system incorporates elements of the SESA approach (the concentrator and the retrieval center) and features of the CAP-Sogeti plan (the data base and the documentation center). As the program headed into the home stretch, the only remaining problem was to integrate the two sub-assemblies.

In actual fact, the electronic directory system is relatively easy to understand. The user turns on his Minitel and keys in 11; perhaps hundreds of thousands of callers do likewise at the same time; the system must therefore be able to "concentrate" the traffic. Next the user formulates his request — he wishes to find out the telephone number of so-and-so in the city of Lourdes, for example. As soon as the caller begins to type the person's name and city of residence on the Minitel keyboard, he connects with a retrieval center that manages the request and routes the caller to the documentation center where the relevant information is stored. The number is transmitted directly by the documentation center.

Besides being straightforward, the scheme is cleverly designed. The idea of separating the documentation centers from the retrieval centers injects a high degree of flexibility into the system by preventing one part of it from overloading the other. And indeed the request is barely keyed in when it is automatically rerouted to a documentation center, thereby freeing the retrieval center for further questions. An added precaution: the documentation centers and retrieval centers have not been evenly distributed throughout the country. There are more retrieval centers (about 25) than documentation centers (about 10), and the data have been divided among the various documentation centers.

Therein lies the beauty of the electronic directory, from which it derives its flexibility and reliability. The novelty of it all is to be found in its use of a multipoint network and a distributed data system. Still the only one of its kind in the world, this scheme was extended throughout France from February 1983 to December 1987.



L'IMAGE
—AU BOUT—
—DU FIL—
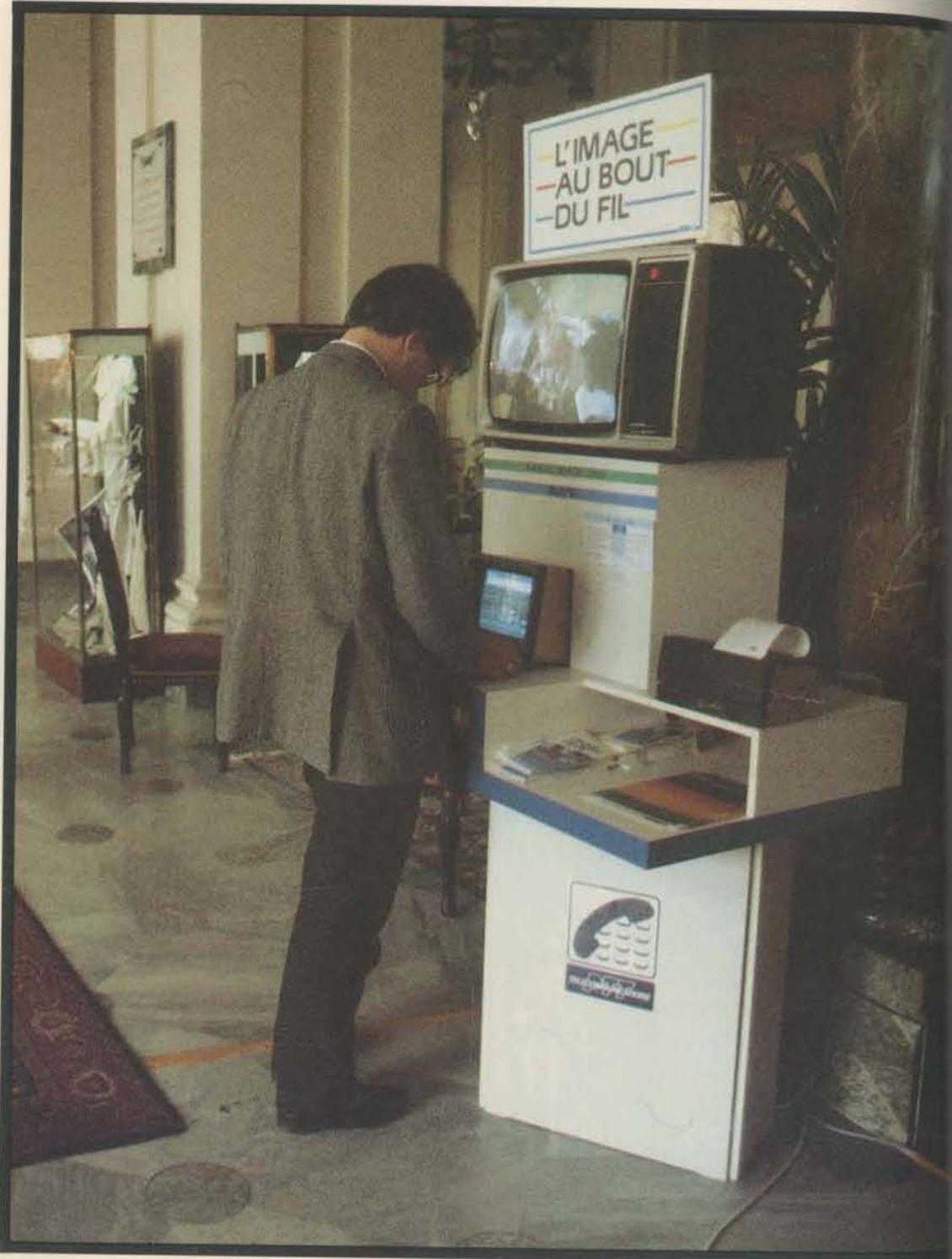
*Ph. Gonier-v.t.com.*

*Biarritz 1983. Here is a videotex center connected to the city's optical-fiber star network.*

# Presidents come and go, but...

Is there any truth to the contention that the videotex project was about to be put to rest in May 1981, when a Socialist president took office? To this day many claim as much. True enough, in the inaugural month of May nothing was operational yet. In Vélizy, where videotex was scheduled to be unveiled in late 1980, nothing was yet on display for the average datacom watcher, even though a great deal had indeed been accomplished. At the time, users had only begun to receive their "hot plates"; some would be provided with a Minitel sometime down the road; and the host system was not yet fully operational. The press, which had recovered much of its composure since the long, hot summer of 1980, still balked at videotex. Service providers, heavily assisted by the project team, were only just putting the finishing touches on the services they were supposed to submit to the public. In Ille-et-Vilaine, the painful memory of the ill-fated Saint-Malo test had not yet been erased by the "four townships" experiment, which was not to get off the ground until the summer of 1981.

Some contend that the possibility of simply shutting down all videotex experiments arose, but that does seem unlikely. What can be asserted without fear of contradiction, however, is that the incomingTT Minister, Louis Mexandeau, had no intention of becoming embroiled in yet another brouhaha. Still fresh in his mind was a ceremony he had witnessed as representative of the Calvados region a few months before the presidential election. At the time he had no idea that he would one day become PTT Minister. In the chockablock main hall of the Exchequer in the city of Caen, François-Régis Hutin had celebrated the ritual putting to death of videotex. In a ranting speech that dwelled on the dangers lurking behind this new means of communication, Hutin called for a citizens' uprising against the videotex plan and powerful France Telecom, the architect of it all.

Ably counseled by Philippe Bodin, his assistant chief of staff, and by Alain Giraud, whom Bodin had recruited as special adviser and who had understood not only what was at stake but also the reasons behind the resistance to the videotex plan, Mexandeau was to go to work on getting it all back on track. He was to stake out in no uncertain terms France Telecom's territory by obtaining the necessary political backing for the

work that François Henrot had been doing for months, both in the field and in the boardrooms where interprofessional bargaining was being conducted. The watchwords of this revamped videotex plan would be volunteerism, office datacom services, and negotiation with the press. The announcement of this new "golden triangle" approach at the inauguration of the Vélizy Teletel experiment spelled the end of hostilities.

The left had managed to adapt the videotex program quite deftly. It found the right safety valves and opened them in time to let off excess steam, in the process providing an opening for pro-videotex members of the press to jump on the bandwagon. True, industrial policy was to suffer from such accommodations in that the emphasis on voluntary participation would mean fewer terminals in the short run. But then France is a country that has often balked at innovation, especially in the field of communications, and its press has had a tendency to abuse its power whenever anyone has so much as laid a hand on any of its priviledges — so the successful introduction of a new medium was the main thrust.

The fate of videotex was to illustrate democratic continuity in France. Conceived under a conservative government that was inventive and dynamic, but a touch authoritarian, the plan was seen through by the first left-wing government in 25 years, which proposed to proceed "more democratically, without impeding ongoing experiments" and which would gradually discover the keys to transforming pilot-scale videotex into a full-fledged sector of the economy.

## Vélizy, the launching pad of videotex

"Naturally, an inauguration is always an occasion for celebration, but it often marks the end of a long wait, the completion of a job... We are here today to celebrate the beginning of a great adventure, an experiment on which, to a certain extent, our future depends." Thus began Louis Mexandeau's inaugural speech of July 9, 1981.

Over three years had passed since the project team had enthusiastically set up quarters in Vélizy; almost 10 years since the first public demonstration of Tic-tac. Between conception and production there is invariably a long row to hoe, and many more hurdles were yet to come. But there was joy in the air as Jacques Dondoux, future general manager of France Telecom but on that day in Vélizy just another face in the

crowd, listened to his Minister. Mexandeau had just given the assurances of continuity that the project team had been expecting for months. All were sure the operation was going to succeed. They were bound and determined to make a success of the test, giving as much of themselves to bring it off as they had to prepare it. They knew full well that a workable technology was not enough to win out in the end. The decisive factor was service content, its ongoing development, and its adaptation to market trends, in short, the implementation of a high-caliber publishing policy. They were also aware that even though it was free of charge, they would have to "sell" the new product to users. This would be impossible unless consumer desire was awakened, not with mere advertising slogans but through the kind of hard work that would make the product original and attractive, easy-to-use, and continuously adapted to user needs. User anonymity was another consideration of special importance to the new Minister.

If the success of the Teletel project in Vélizy was to be complete, i.e. culminate in the extension of videotex to all Frenchmen, it had to be more than a technological victory, although that was a prerequisite. It had to be a social success as well, in other words it had to translate into the widespread use of a new medium. The objective was clear and, during the three years the test was to run, everything would be done to accomplish it.

From a list of 1,200 companies Philippe Leclercq and his team selected 300 firms they thought capable of developing videotex services. They were brought together in the PLM-Saint Jacques Hotel in May 1980 for a distinguished get-together at which the project heads announced the definitive ground rules of the experiment. In the end, 190 service providers agreed to take part in the operation, a good size number given the trammels they would be saddled with, both technological and financial. The service provider was expected to handle the technical side of things as well as cover high investment and maintenance costs. Intellectual resources was also key, since success would depend on publication know-how. All of which goes to show that the scene was daunting for the newcomer to the world of videotex. The project team's dual capacity as persuasive salesman and understanding guidance counselor was to prove of prime importance throughout the test. For, once the initial phases of service conception were completed, the offerings would have to be continually upgraded, updated as necessary, and adjusted to accommodate consumer expectations.

Set up in 1980, the Association of Teletel Service Providers, APST, was highly instrumental in promoting this approach, even if member service providers did not always appreciate the project team's prodding. For them, the idea of "user expectations" was a two-edged sword. The project team's engineering consultants justified their claim to a say in service content by pointing to traffic count statistics and in-house qualitative studies, a move that further roiled the service providers, who disputed France Telecom's monopoly of evaluations of the experiment. In the face of a rising tide of resentment, France Telecom made a number of concessions. Service providers were allowed to conduct their own studies, while France Telecom resorted to another means of persuasion, the newly minted Association of Teletel Users, AAT 3V, which was to represent videotex users. In France Telecom's view, the members of this organization had a great deal to say, they could not be wrong, and they should be heard out by the service providers.

Contrary to its experience with services published by nationwide providers, the project team's attempt to break into the area of local communication came to naught. Terminals had been distributed on a volunteer basis — with, in addition, a view to putting together a somewhat representative sample population — while ignoring pre-existing social networks based on certain affinities such as profession, age, and so on. It is a fact that people subscribe to a telephone service to communicate with other people, but in the initial phase of the Teletel experiment callers used their videotex terminal to communicate with a machine. So researchers quickly ran up against a fact of life, that local calls are generally person-to-person. There was no real solution, and local services would have no lasting impact, amounting to nothing more than inventories of association activities and tennis court reservations. Sorry results when considering the importance of local social interaction.

However, throughout the test a premium was placed on educating the "consumer". Five years earlier, no one had even seen a videotex consultation terminal, and those who had used a microcomputer were few and far between. Everything had to be learned from scratch, including the basics of man-machine communication, which at first glance is tedious. The learning and hands-on training phase with a terminal and a service is of paramount importance. Each of the participating

2,500 households was offered one or more at-home training sessions. Users were faced with the most unexpected problems, ranging from installing their terminals and using the function keys, to understanding the logic behind electronic services, which was the most obvious source of consternation for researchers. Users frequently lost their way in the services, stuck in the middle of a dialog, with no hope of exiting, no less seeing the process through to the end. They would adopt a "grin-and-bear-it" attitude, and to extricate themselves when stuck had no qualms about shutting the terminal off right in the middle of a dialog and reconnecting later for a second shot. Home videotex was not as simple as it looked. The layout of a service did not register so easily with the run-of-the-mill user. The dust collector fate of most terminals was already foreseeable.

As to those who came through the training phase with flying colors, there remained the matter of piquing their interest in the experiment, but many new services, including the educational variety, were not available until the spring of 1980. The project team then launched an all-out campaign revolving around on-line services, designed to endear Teletel to the public and to inform users of the latest developments; a trade publication, la Lettre de Teletel 3V; an electronic mail service, M 3V, which was a round-the-clock communications crossroads. Originally designed merely to channel user feedback to the project team, the electronic mail service promptly took on a life of its own as a communications activity among groups with shared interests, held in check, however, by the fact that callers did not communicate in real time. This rudimentary mailbox system foreshadowed the mind-boggling success in France of on-line chat services, today's "messageries roses" or romantic rendezvous services.

The project team achieved three things in Vélizy. Because it kept in constant touch with users, the team was able to identify the features of videotex that got the best response and, together with service providers, to test what struck it as the most appropriate types of services. The team took its multiservices strategy to its logical conclusion, a strategy since partially abandoned, however, with each service provider having opted for an intensive rather than extensive approach, but which might make a comeback with the introduction of a more flexible rate structure in 1987. But above all, the project team played a leading part in involving the professional sectors that are videotex users today.

Misfires included the disappointment of users who expected, official

pronouncements still ringing in their ears, miracles and who found themselves with a not entirely bug-free tool offering mundane services that did not measure up to expectations. Leclercq's team did not grasp the local dimension and develop good-neighbor relations with local political, social, and cultural officials, thereby giving its enterprise a bad name, which was reinforced by the Vélizy crew's penchant for secrecy. Having lived through the great scare of 1980, knowing that someone (or something) was always lying in wait, involved in a catch-up contest with the British that too often drove it to anticipate results, wanting above all else to demonstrate its engineers' ability to get a full-scale operation going, the team's liking for secrecy did not jibe with what was really a social experiment. However justified they may be, though, such charges in no way detract from the value of an experiment without which mass-market videotex would in all likelihood not have seen the light of day in France.

Apart from videotex itself, it is probably safe to say that the big winner to emerge from Vélizy was the press. Howls of anger had met the government's announcement that it intended to give videotex a try; then came the vehement campaign against a medium that the press had sized up as a competitor. The intensity of the 1980 outburst was matched only by France Telecom's liberality in showering priviledges on the press. Not only did France Telecom offer the press a number of exclusives — something it did for no other — it further made considerable financial concessions through the Interprofessional Technical Committee for Research, the CTIR, acting on behalf of 84 dailies. Liberally subsidized by France Telecom, the CTIR set up in Vélizy a now defunct news service called French Electronic News (JEF) which was an undisputed hit with users and which — another exception to the rule in Vélizy — was available on a pay-per-use basis. The Paris daily, le Parisien libéré, took advantage of the attractive start-up terms to open its own news service, which to this day remains one of the most solicited videotex services in France.

With Vélizy, a number of legal stumbling blocks on the path to incipient videotex were removed. There had been the infamous "legal vacuum" incessantly invoked by journalists during the long, hot summer of 1980 and into which lawmakers had been sucked in the fall of the same year. To fill a vacuum that rankled so many, PTT Minister Pierre Ribes had proposed setting up a commission for monitoring videotex

experiments to be chaired by government adviser Pierre Huet and which was supposed to submit draft legal solutions for videotex. The commission closely monitored goings-on at Vélizy and issued its report in January 1986.

But Mexandeau's staff had not waited until this late in the game to begin considering the neatest way to go about filling the infamous legal vacuum. Under the supervision of Philippe Bodin and Alain Giraud, whose aim it was to formulate a more all-embracing legal approach to communications, staff engineers working in the PTT Ministry drafted a number of bills which are now French law since their incorporation by the 1986 Léotard Act, following related 1982 legislation. Videotex services were thereby placed on the same footing as broadcasting services, with, however, one difference owing to the fact that videotex services are not shackled by a finite medium. Videotex services would be as unfettered as the press, and providers would accordingly simply have to declare them, whereas those wishing to offer broadcasting services, which require the attribution of frequencies, need to apply for authorization. The legal transition (authorization request until 1986, simple declaration thereafter) was thus deftly handled, sparing everyone an involved debate on videotex, which would certainly have meant making lasting concessions to the pressure groups bent on curbing the use of Minitel. The implementing legislation took account of the Huet commission's findings and did not call for the creation of any parliamentary body or other "high council for videotex".

## Ille-et-Vilaine, the electronic *département*

The electronic directory was unveiled February 4, 1983, in Rennes, before a select gathering of ministers, deputies, local officials, and journalists, all there to witness the launching of a project that had been the talk of the town for so long and sparked so much protest. No one wanted to miss the opportunity to see the strange beast up close, one that had several times been left for dead but had bounced back from each onslaught. Moreover, PTT Minister Mexandeau who like his predecessors had stood resolutely by the venture and done his utmost to see it implemented, was beaming. "The event that brings us together today concerns the Ille-et-Vilaine *département*. But it concerns all Brittany as well and, more broadly, our entire country, and even many foreign countries: it is a world's first."

There we go again: "a world's first". France was back at it, showing the world that it could outdo the rest of the world; that come hell or high water it could come up with the boldest technological strategies; that France can go it alone, with no international help; that its engineers are the best, and can accomplish any project, so long as it seems impossible — the "more" impossible the better. Precisely therein lies their glory — and indeed there was glory to go around, because no one would have bet the farm on the electronic directory. No one had really been so bold as to believe that it would be possible from a string of access points, with infinitesimal response times, to manage the world's largest data base!

Once the electronic directory was extended throughout France, outside observers would be lavish with praise. The American press devoted considerable space to this French success story. But the system was not to be sold abroad, its good press notwithstanding. After all, have the French ever really been interested in the challenge of selling? Had it ever occurred to them that, to sell, technological excellence has to be played down, not paraded about like a flag? Do they not have a nasty habit of thinking that because their products are the best they will be bought, salesmanship or no salesmanship? "The TGV* is bought, not sold," the man in charge of exporting the SNCF's TGV is reported to have said to one of his negotiators en route for the United States, where a high-speed train was to be selected from among Japanese, French, and German offers. The Japanese, who know how to sell even a poor product, carried the bidding against the French, who were convinced their product needed no selling since it was the best. Today, Americans ride Japanese and have no electronic directory, despite a number of overtures and a few test runs, such as the one in Big Bear, north of Los Angeles, which the French conducted on American soil — in vain. It is hard for the French to admit that the sales process is often longer and tougher than the creative process, so much more highly esteemed in French society.

Jean-Paul Maury and his team would not be short on esteem. In five years they had accomplished what they had set out to do: design and build from the ground floor up an electronic directory system.

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* Train à Grande Vitesse, France's high-speed train.

## THE MINITEL SAGA

Appreciation would be forthcoming. Once the Vélizy test had run its course, they would be selected to conduct France Telecom's videotex policy in its entirety. But on that February day in 1983, they too were beaming. They had survived daunting trials. In the teeth of the doomsayers, they had devised the system being unveiled to the public. They had summoned up the strength to overcome the handicap of the Saint-Malo test, which in 1980 had shaken the entire project to its very foundations. Day in, day out they had forged ahead. First, they had tested in 1981 an upgraded version of the system in four townships around Rennes. Next they had conducted successive experiments, while seeing to the industrial development of the system. In 1983 they knew the system's architecture could be extended. Thereafter, other *départements* would be able to hook up to the system without any major modifications. All of which did not prevent them from heaving a collective sigh of relief when at the 1981 Vélizy inauguration the Minister announced that the electronic directory service would be accessed on a volunteer basis. As a result the pace of extending the service would slacken, a fact that would make everyone's life easier, above all the engineers'. The team could thus focus its attention on reinforcing system reliability as it was extended.

But France Telecom still has its work cut out for it. Today, three years after the service was started up, the network's control system is not yet operational. True, data are available but they must be randomly gleaned from mountains of listings; such information should, moreover, be displayed on a control board. This network monitoring function was included in the two prototype schemes Maury ordered in 1979 from CAP-Sogeti and SESA. But the final decision to mesh parts of each system meant that a dialog protocol needed to be established between the two series of elements, failing which no monitoring system could function. The protocol was completed in late 1987. The most pressing problem today, however, is not network surveillance, but updating the reference files, i.e. user registrations, which is expected to be finished more quickly in the future than at the current pace.

But on that inaugural day in February, proof was offered that there was no going back on nation-wide extension of the project. In addition, Mexandeau confirmed that he had just signed for a second large order

of Minitels. There would be a total of 600,000 for the regions[*] that volunteered. It might be added that this region-by-region approach, whereby the regional councils were given free rein to decide whether or not they wished to hook into the EDS, gave rise to some comical situations. The PTT Minister did no more than rubber-stamp the regional councils' decisions by setting projected dates for directory start-up in each region. When an electronic directory map of France showing the opening date for each region was published in the Socialist Party's bulletin, the Auvergne region — former President Valéry Giscard d'Estaing's home turf — appeared white and unblemished, something like the Congo on the world maps of the 19th century. *Terra incognita.* Had the regional council of Auvergne overlooked the notice? failed to understand it? forgotten to process it? In any invent, since no reply had made its way back to Paris, no date had been scheduled for opening the electronic directory in Auvergne. The oversight was remedied a few months later, to the great satisfaction of Auvergne's elected officials, who were on the verge of crying discrimination.

For the time being, the die was cast. After Ille-et-Vilaine, the directory would be operational in Ile-de-France and Picardy. In 1984 the regions of Lower Normandy, Nord-Pas-de-Calais, Alsace, and Provence-Côte d'Azur were next in line. Since December 31, 1987, all the regions are able to access videotex from their Minitels, via the electronic directory service.

Indeed not until inauguration day — when the hatchet was buried for good — did France Telecom dare admit that electronic directory and videotex were two sides of the same coin. Until then it had skirted the issue of their obvious complementarity to avoid providing more grist for its opponents' mill. It had even gone out of its way to make a number of convoluted and incomprehensible pronouncements on the subject, which just goes to show that it is no easy matter to deny the obvious. Today, in 1988, their complementarity is a matter of record; no one takes exception to it, least of all François-Régis Hutin of the daily newspaper *Ouest-France*, who for over a year now has been busy preparing videotex

[*] France is divided into 22 administrative regions.

services as part of a *groupement d'intérêt économique** that France Telecom has backed in word and in deed, that is to say financially.

But despite the euphoria of the moment in Rennes, the issue of establishing a rate schedule for the electronic directory service would not be raised. A wise precaution on the part of Mexandeau? Indeed! Think of all the ink the newspapers would have spilled on the subject. What! Make telephone subscribers pay for directory assistance when the phone book is free! At the time everyone had the delicacy to overlook the fact that directory assistance, obtained by dialing 12, was a pay service, as were the phone books of other *départements*.

The avowed aim of charging for both the electronic directory service and the phone book had made life all but impossible for the project's engineers. Basing the rate structure of the electronic directory service on that of the phone book gave rise to two major difficulties. To make sure that calls requesting directory information in the "home" *département* were free of charge and those asking for assistance relative to other *départements* were fee-based, the source number and the target number must be identified. To do so meant installing a recognition device in the terminal, thereby increasing its price. And, moreover, how could the anonymity of the caller and the callee be preserved in the process, a condition prescribed by law and the National Commission for Data Processing and Citizens' Rights, the CNIL? The engineers were caught on the horns of a dilemma, with no solution in sight. Months would be spent trying to find a way round the problem — in vain. No technical solution proved workable.

The right combination was not found until the directory service went on-line in Ile-de-France in December 1983. Jacques Dondoux, general manager of France Telecom, had long felt that calls should be billed on the basis of time, not distance. All the rate changes he made between 1981 and 1986 were in keeping with this approach. All the network configurations he submitted were designed accordingly. In the same vein, he decided to use Transpac, the packet-switched data network that takes no account of distance, to expand mass-market videotex throughout France. The same would hold true for the electronic directory. When the

* Groupement d'intérêt économique: type of joint venture in France equivalent to, but not identical with, a consortium.

service was connected to Ile-de-France, the decision was made to charge by the minute, although — *noblesse oblige* — the first two minutes, subsequently increased to three following renewed skirmishing with the press, were free of charge. It was only after this initial period that the meter started running.

The electronic directory's viability was contingent not only on a suitable rate structure but also to a great extent on advertising. Advertising, another bone of contention between France Telecom and the press, had not yet made its mark on the new medium. Conventional wisdom has it that videotex, even its electronic directory facet, is a "perishable commodity". Advertising on videotex, like any piece of information, must therefore be renewed regularly. In the phone book, this is done once a year; in the electronic directory, renewal has to be much more frequent. To this day, however, the tools for updating the directory are inadequate to change advertising inserts as often as necessary for selling space on videotex. A further question mark was whether space should be leased by the week or month, as is current in billboard advertising. The issue is up in the air, but this order of magnitude is most certainly appropriate. A space on the screen that can be updated for displaying a trade or corporate name was to be available by the end of 1987.

In his speech inaugurating the electronic directory, Mexandeau said that "a first-class technological success should be matched by its successful insertion into society" — and such has been the case. The electronic directory has become a part of daily life, so much so in fact that those who are still without it (the mass distribution plan was to have run its course by the end of 1987) are quite unhappy about it. From something that was forced on people, the Minitel has become an object of desire. Isn't this the true success story? Mexandeau did not want the PTT to pursue a policy of imposing videotex, the way for instance France's state-owned power and gas authority, EDF, had enforced a policy of nuclear power generation, paying no heed whatsoever to negative feedback. His heart was set on applying the fundamental rules of democracy, and he furthermore realized that coercion was no way to win the public over to innovation, and that once people were convinced, videotex would expand much faster than it might otherwise. The phone book still exists, but the electronic directory is gradually supplanting the old medium, which, since the advent of videotex, has been forced to stop

writing its balance sheets in red ink. Today, the number of phone books distributed is steadily dropping. "100 % videotex" may not be long in coming, and it will be accomplished with public support.

# The Tour de France of videotex

In 1983 videotex in France was by no means limited to the Paris-Rennes axis. The national airing of views on videotex, the attraction of a novelty item, and the medium's potential all contributed to the development of a number of ventures independent of France Telecom's operations. France's telecommunications administration did of course go to some lengths to back them and often helped raise the necessary start-up capital, but these ventures relied exclusively on the enterprising spirit of their local promoters. The most sophisticated or original pioneer projects included the *Claire* program in the city of Grenoble, the *Telem* project in the city of Nantes, and the *Gretel* system devised by the newspaper *les Dernières Nouvelles d'Alsace* in Strasbourg, which caused a sensation at the time and clearly foreshadowed what videotex was to become after Vélizy.

These three services, unveiled in 1982, differed in terms of their conception, aims, and implementation. Was this on account of specific local concerns, or the different ways the promoters went about their business? Or was it a consequence of the often eccentric personalities of the project heads, or simply of different visions of what videotex could and should do? In any event, between 1980, when thought was first given to them, and 1982, when they became operational, "a thousand flowers blossomed".

## *Claire* lights the way

Daniel Populus is a man with a yen for communication. It was he who set up Grenoble's cable network, victim of Valéry Giscard d'Estaing's 1977 executive order banning cable television in France. The TV monopoly lasted until 1982, when the socialist government's legislation

on broadcasting was passed. As for Populus, he was on the lookout for any openings and got involved in videotex at the very outset. The mayor of his city was Hubert Dubedout, a died-in-the-wool Socialist who had long run Grenoble's affairs and who would go down to defeat in 1983, taking the Claire system down with him. His Honor was a man of measure but had a pronounced weakness for all things modern. He had given his city an unequaled stamp of modernity, which was crowned by the hosting of the 1968 Winter Olympics. The University of Grenoble was the first fruit of French decentralization. The city thinks of itself as a vital part of the Lyon-Milan-Grenoble triangle, and takes seriously its role as the cultural capital of its region. It has one of France's leading cultural centers and boasts sports and entertainment facilities that are on quite a scale for a city its size.

The other side of the coin was a high municipal tax rate (which was probably responsible for the election of neo-Gaullist Alain Carignon to city hall in 1983), and a number of problems in disseminating information. City hall and its annexes were constantly besieged, and staff members had to cope with a thousand and one questions. Populus regarded videotex as the obvious remedy to the city's information gridlock, and also as a way to supply information more reliable than that served up by overworked municipal employees. Already in 1980 Dubedout was won over by the project and agreed to have Grenoble's municipal and local information made available on videotex.

Protracted negotiations got under way on what type of system should be used. Some leaned toward a self-service approach, whereby people would operate the terminals themselves. Others recommended providing municipal employees with a videotex system and having them pass on the information to the public. The self-service vs. professional service debate was very heated in 1980, a time when no videotex system was yet available. Many held that the public at large would not know how to operate a terminal, no matter how simple, since it would encounter difficulties in manipulating the terminal as well as understanding the instructions displayed on the screen. Only employees specialized in information, they argued, would be able to find their bearings in a data communications system. And it was this school of thought that carried the day. The municipal employees lobby obviously had a hand in the final outcome. They were not about to allow themselves to be made

superfluous, and felt that new, high-class equipment would serve to enhance their somewhat tarnished image.

So it was decided to go with a system for professionals with all the consequences that implied in terms not only of terminals and peripherals (printers and so forth) but also of architecture and file contents; a documentation-based system was accordingly used. In the annals of municipal videotex, Claire is one of a kind, the only one to be dedicated to professionals. When Claire became operational, 25 terminals were in service in city hall, the regional administrative building, the social services centers, the tourist office, in short, all the government "branch offices", where they were integrated in the municipal employees' work stations.

But what should be fed into an information system? Where is the line to be drawn between useful and useless information? What is useful information anyway? No one had a clue. There was no available information distribution analysis that might give an indication of the scope of the problem and the way to approach it. There was a danger of either missing the mark completely or conceiving a monster that contained everything but in whose entrails the user would invariably lose his way. The difficulty of designing such a system — compounded by the fact that another "premiere" was involved — called for close cooperation between the employees, whose stock-in-trade was giving out information over the counter, and the videotex project team, who had the technical know-how. But in Grenoble, like anywhere else whenever something new is involved, people balked and refused to cooperate. The innovators were bent on going it alone, prescribing the miracle cure, and thereupon retiring to a secluded retreat to contemplate their next challenge. The users were just as determined not to lift a finger and ignore the system they would be supplied with.

Throughout the world, but especially in France, innovation is only accomplished in spite of those it is designed to serve. From the outset Claire was perceived as something of a "put-up job" imposed on the others involved. Computer experts, information specialists, government agency representatives were all kept in the dark (unless, that is, they turned out the light themselves) about a project that concerned them as well. The team responsible for setting up Claire, like any group whose legitimacy is tied to the success of its enterprise, was determined to proceed at a fast pace. To do so, it dismissed all objections, however well grounded, that might impede execution. No sand in the works, please.

In fact, although potential partners were kept abreast of developments, they were not brought into the project. What if they had ideas! And the gap between systems designers and future users yawned wider with every passing day, until it was too late.

Populus' personality, though not entirely to blame, of course, was partially responsible for this state of affairs. He is a man who likes to present people with *faits accomplis*, to succeed in spite of everyone and everything. Persuaded that he knows the truth because his powers of imagination are boundless, he is naturally little inclined to take account of the so-called real world. He believed that with a small close-knit team, practiced in the arts of proceeding at a fast clip and taking risks, any venture could be made palatable, through coercion if need be. Populus was an advocate of 'small is beautiful' in a sector — communications — where the major players tend to be behemoths (municipalities, television stations, France Telecom, TDF, ministries), and he never had second thoughts about it, confident that the prince's (or mayor's) backing was enough to ensure lines of communication between his commando unit and its theater of operations.

It would be rash to infer that the Claire information system was a failure, even if Grenoble's new mayor Alain Carignon did decide, barely sworn in, to close it down. It was most likely a politically motivated move: To admit that the left had done a good job was probably more than he could bear, especially in view of the fact that he and his rival had played real hardball during the election campaign. Shutting down Claire, which had been operational for only a few months and which had a direct impact on few people, was a politically safe move. Moreover, as was his wont, Populus had launched Claire amidst much media fanfare. Not a municipal or council meeting went by without Claire coming up for discussion. So the project had a high profile, involved only a handful of people, did not really enjoy the backing of municipal employees, and was accused of swallowing too much of the taxpayers' money; and it would surely have encountered funding problems somewhere along the line. For a young, newly elected mayor determined to show that things were going to be different in Grenoble, it was too good an opportunity to pass up.

Although like a rose blossom, Claire lived only the time of a morning, it nonetheless served to point up fundamental issues concerning videotex. Who should be responsible for editorial content? Could such responsibility be shared or should it be wielded by one person? To what

extent could information gathering and publishing be decentralized? How could a system be made homogenous, without simplifying information to the point that it was devoid of all meaning? The Claire team's response was rather to centralize, although a compromise was found by splitting the thesaurus into two sub-assemblies: the administrative data base, a videotex version of France's well-known guide to citizens' rights and where to turn for redress, and the local resources data base, which contained everything you always wanted to know about municipal facilities, from childrens' day care to tennis lessons, from dance classes to computer clubs!

Thanks to Claire, researchers could at last estimate more accurately the cost of putting together and opening a videotex information system. With its 12,000 display "pages" of information, Claire would be the largest municipal videotex information system around — had it lived. In any event, it cost the city of Grenoble some $500,000.

But the project's major contribution was to heighten local officials' awareness of the importance of an information policy. On this score Claire may now be regarded as the catalyst that led communities to change their whole approach to the matter, encompassing appearances on local radio stations, systematic use of toll-free numbers, distribution of leaflets free of charge, cable television networks, and all manner of events and multimedia campaigns. Putting a city on the map is also important in economic terms. Metz, Toulouse, Montpellier, and Grenoble — to name just those which deliberately chose to chart such a course — come up year after year with various media blitzes to stay in competition, and to keep and attract companies and brainpower, the *sine qua non* for securing tomorrow's well-being.

## *Telem* in Nantes

The Telem videotex program was inaugurated in February 1982, on the heels of the Vélizy project. The mayor of Nantes and his deputy, Maurice Jeanneau, were dead set on having it so. They were obsessed with starting up before Grenoble. Exasperated by the hyping of the Grenoble project, which for months had stolen everyone's thunder, they had decided on a simple counterattack requiring no media resources: be the first to open up.

When Louis Mexandeau arrived in Nantes in February 1982 to inaugurate the Telem system, he was probably startled to find that he had been taken at his word. He had floated the idea of municipal videotex in 1981, part of the reason being that he himself was an elected official and aware of the significance of local information, but mainly because a videotex spin-off had to be found to silence the press.

And so today municipal videotex exists in the city of Nantes. Here again the go-ahead had been given to relieve the congestion of information distribution that plagued municipal services. But the approach differed from the one taken in Grenoble. In Nantes a self-service system is open to the public; the users themselves tinkle the terminal keyboard to obtain the information they want. Did greater confidence in the ability of the public to use the information terminals win out in the end? Was it the fact that the project was headed by local officials and that they did not need to bargain with municipal employees, who this time were in favor of the city fathers' plans? In any event, the decision sailed through. No complaints were heard, because it was perceived to be in response to a widely-held desire to relieve the town's frazzled information services.

And so the terminals were to be directly accessed by the public. But where should they be placed? Local officials, who wished to take advantage of the operation to revitalize their city's public buildings, decided to station the terminals there. Thirty terminals were installed in the Nantes city hall, the main post office, the train station, the public housing office, the youth centers, and so forth. In short, in those areas where the public at large could consult them with or without the aid of nearby hostesses. This approach was meant to provide an alternative to the Vélizy test where everything happened in the home, the hope being to foster community life, to get citizens to take advantage of available facilities, and by so doing to give a boost to the local scene, jeopardized by the television-induced couch potato culture.

But what exactly are public buildings for? It turned out that in people's minds they were tied to specific purposes, and that it would never occur to anyone to look for school registration information in the post office, for instance. Breaking old habits, changing long-held, deep-seated perceptions is no mean task, and not one that is going to be accomplished by a little information machine, no matter how attractive.

It is worth the effort to observe the behavior of people, often in

couples, entering a government building to ask for information. The interaction between couples can be quite amusing. There is the husband, in a foul mood and determined to go to any lengths to get the information he has come for, and his charming and conciliatory wife flashing a fixed smile at the clerk, as if to ask forgiveness for her testy husband. Or the woman who hesitates, looking to be reassured about every bit of information, and her girlfriend, who is letting the clerk know by repeated facial contorsions that she has got it, that her friend is really slow on the uptake, and that she will explain everything to her outside.

The fact is that entering a public building is not as straightforward as it seems, and everyone has a personal way of going about it. Admire the man striding confidently up the middle of the hall, his shout to the clerk ringing throughout the building. What does this man, who thinks the world is his oyster, have in common with the hesitating little old lady who, intimidated from the start, hugs the wall as she makes her way to the window, pulls herself up to the clerk to ask, short of breath and excuses at the ready, for the tiny bit of information she needs? God help her if another user, struggling with a worn-out clerk, demands that she bear witness to the shabby way he is being treated!

All these different attitudes, visible to the watchful observer, are so many reactions to the unease felt when entering public buildings and subjecting oneself to the looks of others, and to the feeling of insecurity stemming from the complex relationship between government agencies and their representatives and the public.

How would things go with an information machine located in a public place? What new tactics would result from confrontation with the new instrument? Would those who were cocksure yesterday be self-conscious and insecure tomorrow? Would user attitudes change?

The story of Telem gives some insight into what would happen. It provides an opportunity to read the behavioral patterns that emerged from an explosive and unprecedented comparison between people's interaction with a machine and their behavior in public places. Three main types of approaches were identified at the close of several weeks spent observing people operating the Telem system.

First, the technical hotshot's approach, the main attraction being the opportunity to compete with the machine. This type of user could not care less about the message, except as evidence that he knows how to operate the apparatus. He explores the machine's possibilities, evaluates

them, and practices going faster and faster, often vying with friends for top honors. He wants to prove his mastery of the system to himself and to others. That and no more. It is the syndrome of one-upmanship already diagnosed among microcomputer fanatics. He plays with the machine, beats it, breaks it, and, when the dust has settled, lets it be known that he cuts the mustard. No one can predict that he will not one day ask for information but, for now, he is only interested in manufacturing an image as a high-tech hotshot.

Then there are those who want to know what the machine is made of. Thus they ask questions to which they know the answers to see whether the apparatus is up to the challenge. If the machine gives a different answer, they think they have cornered it. If it confirms what they already know, then the machine must be right, too. Their first move is to see whether they are in the machine. If they come across their name or that of their company, they voice their approval to no one in particular or flash a smile of satisfaction and promptly acknowledge that the machine does indeed work. They infer therefrom that it knows the other names as well as they do. And Telem is given the user's seal of approval.

Lastly, there are those practical souls who quickly get down to business and use the system for what it is designed to do: supply information. They immediately set about looking for the information they need. There were very few examples of this critter in Nantes, the total novelty of the system driving people to experiment with it. The species has nonetheless proliferated. Such people will be the customers of tomorrow's more sophisticated services.

A further novel feature of Telem, besides the fact that the machines were installed in public places for use by the general public, was its content policy. The partner information providers were constantly sounded, and none were forced to get involved, an approach that was especially wise as they were hard put to see the point of the new medium. They were not accustomed to dealing with multi-corporate or multi-organizational information systems. They were still living in the age of providing their customers with information by newsletter or telephone. They had a hard time picturing their niche in a system that concentrated information from various sources and they feared losing their identity or image. All of which did not smooth the way for Maurice Jeanneau and his team to win them over.

However, the Telem team's slogan, "a public service in the service

of the public", did have a bandwagon effect. The hard core of promoters — government agencies for youth, urban development, social programs, and education — quickly ballooned with the arrival of the "guests of honor" that were France's national railway (the SNCF), the PTT, the National Consumer Protection Agency (the INC), the National Unemployment Office (the ANPE), and Nantes' local transit authority. The "opportunists" would climb on board a bit later, when the operation had been lent credibility by the arrival of the major government agencies. A few opportunities went awry with information providers who had been rubbed the wrong way or who had weaved themselves a cocoon in their desire not to take part, but that was not the worst of it. Some partnerships are more painful than others. The mayor's office in Nantes had no intention of relinquishing its editorial control and those wanting more say-so did not always appreciate the fact. But at all events, Telem was off and running!

In the final analysis Telem's most striking feature was its homogeneity. Missing was user friendliness. Its tree-structured consultation system made communication long and tedious. Likewise sorely missed was "human certification", considered crucial to this day for all mediatized, i.e. machine-based information systems. It is like the difference between getting a good response and getting the right response. With Telem, they got a response but no kind of guarantee. Does information have meaning when the supplier remains unknown? Behind this apparently innocuous question lies the fundamental problem of the world of data bases. Telem was no exception to the rule, and the people of Nantes would long continue to rely on conventional sources of information for important matters. For the time being, they used Telem for minor inquiries or to lead up to the major ones, which they would verify from authorized sources.

Telem opened in February 1982 with 5,000 display "pages". Unlike what happened in Grenoble, the election of a mayor of another political stripe had no impact on service continuity. Today this continuously upgraded system continues to function in Nantes and the number of access points has jumped dramatically. Nantes' city fathers are now looking into cable to round off their information policy.

## GRETEL, the innovation long shot

One almost needs to know Michel Landaret to understand what took place in Strasbourg (Alsace) in 1982. As soon as the subject turns to computers and communication, his eyes light up and he launches into endless considerations on what remains to be invented. His mind is brimming over with projects and, a rare commodity, he channels as much enthusiasm and energy into the production phase as the original concept. At the risk of dealing a blow to his natural sense of modesty, it must be said that he ranks among the outstanding pioneers of videotex. Not that he lays claim to being an inventor, in the usual sense of the word, rigging up some kind of prototype in a laboratory. Landaret's hallmark is an entirely different sort of invention, much more venturesome than the laboratory variety. It involves the ability to watch people in action and to follow them by stepping into their shoes, in order to tailor design something new for them, something that whets their appetite for novelty. Landaret accomplished an unprecedented feat in France's Cartesian culture: He let himself be guided by society's pulse, adjusted accordingly, and proposed the optimum technical response to imperfectly defined needs.

And yet when, as a computer engineer, Landaret was put in charge of working up a videotex service at the Alsatian daily *les Dernières Nouvelles d'Alsace*, nothing in his background predisposed him to such an undertaking. True enough, he was not starting from square one, since he "inherited" a project previously run by a neighborhood association in Strasbourg that used videotex for local activities. This might have been a factor in Gretel's amazing success, in that listening to what people had to say was a main concern from the start. How far was Landaret prepared to go along with plans that were not his? He had been instructed to devise a "conventional" videotex service replete with local practical information, more general interest information of the timetable variety, banking services, classified job ads, and so forth. In short, a "normal" service for a newspaper no different from any other. In compliance with the terms of Landaret's contract, all these services were available when Gretel was opened to the public.

Gretel's true value, however, was to be found neither there nor in the stripes it had won in the videotex campaign. It resided rather in a small in-house electronic mail service at the newspaper, which was designed

to enable the Gretel team to go to the rescue of users lost inside the service. Landaret stood by silently as the Strasbourgeois broke into the newspaper's assistance service, let them go about their business to see what he would see, saw, fine-tuned his service on the basis of what he had seen, and ended up making it the forerunner of France's on-line rendezvous services that are all the rage today on Minitel.

But to begin at the beginning, when the Alsatian newspaper decided to embark on the road to videotex, it applied to France Telecom's regional office for funding, which was granted in the form of technical and financial aid. With France Telecom's backing and a host computer suited to his needs, Landaret was able to tackle the job of designing his Gretel system. He realized from the outset that it was not enough simply to drop an information system on the market; users would have to be guided in their initiation to a new form of communication. "We realized we needed to be able to explain to people who had lost their way how to find their bearings again. We devised an in-house electronic mail service; they discovered it; they used it; and then the flood gates opened." This electronic mail service was initially a one-way street, running from host computer to user. But it already contained the seeds of what would become interactive communication on the network.

Since the architects of Gretel were expected to respond on-line to lost users, the system was designed for real-time communication. Therein lay the novelty. As related earlier, the Vélizy electronic mail service operated both ways, but in delayed time using a mailbox set-up. Minitellers left their messages in a mailbox, where some time later they found a reply or another message. The promoter's decision to provide real-time, personalized information on the medium and by the medium is the brainchild of Michel Landaret. Credit goes to the Strasbourgeois for having made it a tool for circulating and exchanging information to the delight of "daddy Gretel", as this most affable promoter was nicknamed. "As for the hackers, they didn't worry us. By and large they went about it very well and taught us a thing or two. And they never put the system out of commission. But then we had devised a number of safeguards to prevent just that. It was a 10 year-old kid experimenting with his dad's Apple who connected it to the Minitel and wreaked havoc with the whole password system. He programmed it in a loop. At first we didn't pay any attention to it. We let people key in their passwords."

Was the hacker of Gretel, who went by the name of "Big Panther",

really 10 years old — like in American TV series? At any rate, legend would have it so. Hacking perpetrated by children is so much more endearing; it lends it a certain innocence. It is hard to get worked up when youngsters play a few pranks. Landaret deserves credit for sitting back and simply letting things unfold, even though this meant that hackers would break into the system at night after the newspaper's computer service had been closed down. The next morning it looked as though a tornado had passed through. Gretel's computer people were increasingly hard-pressed to cope with the situation and it was decided to disconnect the modems at night. With that, the users, protected by their nicknames, were to bargain with the promoters through the now interactive electronic mail service to transform the Gretel system into a truly interactive communication apparatus organized into a network.

Whether the hacking was perpetrated by that 10 year-old towhead tinkering with his father's Apple or adults fiddling with the Minitels they had purchased at their local telephone dealer, one thing is sure: none of it would have been possible without the newspaper's experimental communications software, whose shortcomings actually made matters that much easier. Nevertheless, as the first raids were launched, the newspaper's staffers began to fret over what would happen next. They were torn between letting things ride a little longer — coming to terms with a new mode of interactive communication — and incorporating it into a system — and re-establishing their control over the system by locking it up.

Exhilarated by the challenge, Landaret opted for the first approach and found himself caught up in a slightly madcap operation. "We had to gradually fine-tune the electronic mail service to match user speed. At first they crept along, but the faster they went, the less suitable the original software was. In fact, it weighed the service down somewhat and we had to upgrade it to adjust to the speed of execution," Landaret explained, adding modestly, "Given the circumstances, we had to design increasingly faster software. We went through loads of different electronic mail services. The changes were self-evident, but it must be borne in mind that most designers are users as well. We spent hours using the system to see people's reactions."

Was Landaret's strategy as deliberate as he claims? Some of Gretel's users contend that he was totally overmatched by his own system, and that the ever-expanding horde of users systematically outflanked the

system's newly introduced checks. A game of leapfrog between benevo-lent hackers and Gretel's sorcerer's apprentice? There is undoubtedly some truth to this insofar as the situation must not have been simple for Landaret, who after all worked for a newspaper with an image to uphold. The commonly held view is that he seesawed between a permissive view of what the service would be and an urge to curb its excesses.

In the final analysis, Strasbourg had been a living videotex laboratory for over a year. Unlike an official experiment, with national or international ambitions, the Strasbourg operation involved no samples, no striving for representativity, no statistical tallies, no reputation to uphold. Here an entirely different approach was put into practice: the ongoing observation of unidentifiable users. For Gretel, the gamble paid off. Upgrading the system in response to the observed behavior of users spawned the prototype of on-line electronic mail services. To Landaret's way of thinking it was a stroke of luck that the interactive mail dimension of the medium had escaped the grasp of France Telecom, which would most likely have clamped down on it for reasons of "corporate" image. He was perhaps alluding to the chat services that France Telecom never intended to mass-market on the grounds that such informal networks were home to epistolary mores that it found shocking. And yet it was its faculty for bringing people into contact, and no other, that catapulted videotex to success. Would videotex even have existed without it?

But what was the great attraction of Gretel? What prompted people from all over France to try for hours on end to access the service? Nothing more than the opportunity to communicate. But communication of a third kind: anonymous, instantaneous, fleeting. It was communication in a vacuum, for the pleasure of simply having someone on-line at all times to say something to. Trifles to be sure. Nothing earthshaking, as "earnest" people pointed out. Identity games, asserted sociologists who had observed Gretel and who had been struck by the extreme vitality of this anonymous forum and the mask games that were played there.

In 1982, for the first time ever, a caller could converse one-on-one in real time with any one of 36 other people on Gretel — with no threat of censorship. The state of the art, however, was such that exchanges were limited to three lines of text. That notwithstanding, no other medium, except citizens band, offered the possibility of calling upon one of 36 unknown souls and sending him or her a little message. No other

medium offered callers the opportunity to change identity and conversa-tional partner whenever the spirit moved them. What an incredible haven of freedom that made it possible, sight unseen, to enter into a chance encounter, with the final option of saying yes or no! And then there was the abiding hope that something might come of it sooner or later. That a fellow traveler, fellow gamester, partner of a lifetime, or personal jester might be found. Or a momentary remedy for loneliness. And all this at the speed of light, since several conversations could be initiated simultaneously.

Moreover, Gretel's book of records offers proof, if proof be needed, of the system's appeal: 72 hours for the longest uninterrupted conversa-tion, 630 pages for the longest videotex letter, 200 hours for the longest total connect time in one month, 10 characters per second for the fastest typing speed on a Minitel keyboard.

But who were these people living through and for Gretel, and who felt that a trip on Minitel was worth all the Mediterranean cruises combined? In September 1983, a researcher at the University of Strasbourg conducted a poll by Minitel to get a more detailed picture of Gretel's clientele. Of 2,000 subscribers, 1,109 replied. Thus it turned out that over 75 % of the users were men, that 40 % were single, that 79 % were between the ages of 15 and 40, and that the bulk of respondents were middle managers and white collar workers. 70 % of the people calling in to Gretel used the electronic mail service; of those, 62 % had met some of their conversation partners face-to-face; 70 % used a pseudonym because they got a kick out of it; and 40 % stated that they preferred the new medium to television.

Until 1984 Gretel would be the only electronic mail/chat service accessible on Minitel with calls coming in from all over France. To date, this type of electronic mail or rendezvous service accounts for almost 40 % of mass-market Minitel traffic. Michel Landaret and *les Dernières Nouvelles d'Alsace* can take pride in having given videotex its first boost.

# Versailles or the crowning glory of videotex

Videotex was queen for three days at the Chateau of Versailles for the June 1982 economic summit of the world's seven most industrialized countries. Prince consort was the President of France, François Mitterrand, who had decided to center discussion on emerging technology, its impact on Western society, and its role where Third World countries were concerned.

The proposition that emerging technology offered a way out of the world economic recession was that summer's conventional wisdom. Jacques Attali, a close Mitterrand adviser, had long been convinced that a nation's economic recovery hinged on its successful transition to an information-based society. He was very close to Yves Stourdzé, a long-time student of the subject and knowledgeable United States and Japan watcher. Stourdzé thus had a much more farsighted view of such matters than most French observers. Furthermore, he had devoted considerable study to the French telecommunications scene and had arrived at a number of unorthodox conclusions, so many keys to a better understanding of the *mal français* in the area of communications. Well before taking the reins of France's Center for Advanced Systems and Technology Studies, the CESTA, he had been hard at work trying to convince French officialdom of the absolute necessity to make the transition to an information-based society. Since taking over this key post, he had spared no effort to set the record straight, persuaded that France could not afford to lose the battle of communications as it had lost the mass-market electronics war. Stourdzé, together with summit guru Attali, would be the driving force behind the Versailles Summit's focus on technology. Both were quick to realize that heightening delegations' and journalists' awareness of such technology would be better accomplished by using them rather than talking about them.

Mitterrand approved of this "new-tech" policy orientation. Interested in anything new that comes along, he was impressed by new technology's potential for bringing about change. Moreover, the summit was a dream opportunity to promote French technology before 3,000 journalists and six foreign delegations; a once-in-a-lifetime occasion to display France's most novel products. And so the green light was given, and Jean-Louis

Bianco, young special affairs adviser for Mitterrand, was put in charge of bringing the Versailles Summit into the videotex age.

Bianco was by no means new to the subject. He had a long-standing interest in France Telecom's new products, a number of which he had used when he was in charge of an inter-township board in the Haute-Provence *département*. At the time he had had a teleconferencing system set up to enable townships that were hard to reach in the winter to communicate with one another. Together with elected officials, city hall authorities, and local associations, he had also tried to devise an information distribution system that he hoped would culminate in a videotex network. In addition, he wanted to take advantage of the Versailles get-together to dispel certain political friends' doubts about the value of such technology. And so he set to work with France Telecom's Michel Bouvier to do the impossible, i.e. to organize a paperless summit, one where heads of state and their delegations would obtain information through screens and communicate using keyboards and electronic "magic slates".

Four months of intensive work got under way. France Telecom provided "unlimited" funding; some $850,000 would be spent on the operation. Bouvier, the operation's main architect, had carte blanche but he had been given to understand in no uncertain terms that the operation had to go off without incident since the summit would be outfitted with one information system only — an electronic one. There would be no paper communiqués, bulletins, programs, or conference notes. The only paper would come from hard copy printers. The signal was unmistakable: they had better not screw up, since the whole operation depended on videotex. It was Bianco, with presidential backing, who pushed through this all-or-nothing approach, which in retrospect seems risky. He knew that old habits were hard to break and that it would be difficult to prevail on people to use a new medium rather than conventional tools of information. To avoid any possible rivalry, videotex would be the only system available. And that was that.

Pumped up by the challenge, the technical crews worked round the clock for four months to put together a system combining Teletel (interactive videotex) and Antiope (one-way teletext), both outfitted with hard copy printers, a facsimile network (telephone transmission of ordinary documents), and an experimental telewriting link (those smallish electronic magic slates) between delegations' offices and the

## THE MINITEL SAGA

coronation room where the heads of state were to meet. 250 terminals were installed in 35 strategic locations.

The terminals offered access to three main types of services, whose contents were ultimately the responsibility of Bianco: a "Summit Newspaper" supplying continuous information broadcast by the Antiope teletext system; a real-time network for distributing urgent information, consisting of television sets equipped with Teletel decoders; and lastly a "Summit Guide" containing 8,000 pages of information accessible through Minitel, a complete data base on the industrialized countries for the use of journalists covering the summit. It included facts and figures and an economic survey of France, not to mention a catalog of the delights of Paris, including a section entitled "Three Days in Paris" in which those "wild Paris nights" did not receive short shrift. The whole operation was synchronized from a mobile control unit built and installed in Versailles at the behest of Bouvier. And to top it off, more than 3,000 electronic mailboxes were made available to participants.

The technical crews could not get over installing their systems in an historical site of the symbolic significance of Versailles. What an amazing experience it was to cable the throne room! What a strange impression in the dead of night to install Minitels beneath the massive canvases depicting the Napoleonic wars and then to watch them light up before the great figures who had made the history of France! What a thrill to cross the palace grounds along the Grand Canal to go check on the cabling in Marie-Antoinette's rooms!

The advance divisions of Americans, more concerned about presidential security and the logistics of transporting bottled American water to France — lest their President not be able to handle the water of Versailles — had not paid very close attention to the information system being put into place. They were nonetheless amazed at the novelty and reliability of the system, at least until that unhappy day when, with temperatures rising in the un-airconditioned rooms of the Versailles palace, a number of terminals went on the blink. The joke making the rounds (launched by the Americans with their special brand of humor) was that the most advanced technology to date was really air conditioning.

Most of the journalists gave the new system high marks. There followed a spate of favorable, even highly flattering newspaper and magazine articles. They vied with one another for the catchiest headlines:

"Telematics at the Château", wrote Jean-Michel Quatrepoint in *le Monde*. "Magic Slates for the Princes", signed Fabien Gruhier in a more caustic vein in the *Nouvel Observateur*. The irreverent, muck-raking *Canard enchaîné* headlined "Don't Shoot the Guru". In *Libération*, Michel Lepinay offered "Electronic Orgy at the Palace". For *l'Humanité* it was "French Telematics Showcased". *Le Figaro* saw in the operation "a telematics premiere at the Versailles summit". And the well-known French illustrator, Cabu, offered up a series of delightful cartoons depicting the "closed-door conference at Versailles": Everything took place out in the open, in front of the screens!

Had the French, thanks to the Versailles operation, finally taken to their own national videotex system? By an ironical twist of fate, the Versailles operation, conceived to promote French datacom systems abroad, had little impact on exports. It did, however, render justice at long last to videotex in France. Portions of the summit were frequently rebroadcast on television; for a time videotex was ubiquitous and thanks to television made its way painlessly into French homes. Its credibility was reinforced with each passing day, and it soon became an everyday object. The Versailles summit had started the ball rolling, by arousing the Frenchman's curiosity about videotex, thereby paving the way for general acceptance of the medium.

A few months later the French public learned that, thanks to Minitel, two brothers who had been separated for years had been reunited and that a number of missing children had been returned to their parents. But there remained the matter of its actual use in French homes beyond the west of Paris where it had already been tested. The year was 1983.

*The first whodunit on Minitel. In 1982, INA and CCETT presented "Bug Maldone". In the Marseille underworld, a mad strangler is on the prowl. There are no clues, but potential "informers". Step into Bugs' shoes and with the help of Minitel and the informers you'll encounter unmask the vilain — before he strangles you! Your move!*

*Radio stations, TV networks, newspapers, magazines — they all serve up telematics services since the mass media took videotex by storm in 1986. A new means of informing the public that makes for improved communication.*
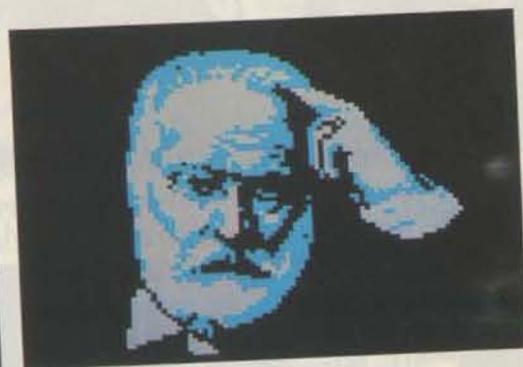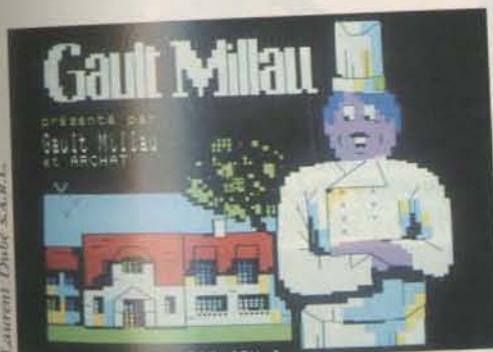
*The French videotex format was barely off the drawing boards and was already belittled for its primitive graphics capacity. But the graphics people have worked wonders with the "alphamosaic" display format, so called from the little squares that are assembled into a picture, and have come up with real works of art.*

*CRAC is always on the lookout for new ways of communicating and has specialized in happening such Paris night spots as "Les Trottoirs de Buenos Aires" and "New York-New York".*



*More and more information is available for consultation at a single spot via Minitel. Here, for example in a designer showcase of screens combining digital data and video images.*

Ph. Gontier-V.T.COM.

# the videotex | 3
# menagerie

T he videotex fête in Versailles ended with everyone in high spirits. The operation had gone off well, to the great relief of the organizers, who were testing their marvelous communicating machines "without a net". The engineers might well have appreciated cooler weather for a flawless performance, and had to admit grudgingly that their machines were not cut out to withstand unusually high temperatures.

In Vélizy the party was still going strong and would continue to do so until 1984. In 1983 the electronic directory in Ille-et-Vilaine was inaugurated amidst great pomp and circumstance, together with a plan calling for its rapid extension throughout France and the *gratis* distribution of Minitel terminals.

By the end of 1983, 120,000 terminals had been installed in France. A total of 600,000 was projected for late 1984, 3,400,000 by December 1987, tantalizing figures for all manner of adventurers itching to take the plunge into videotex. And they were legion, as attested to by videotex's mind-boggling growth. In January 1984, Minitel users had 145 services to choose from; two years later, 2,071 services were at their fingertips. Between March and April 1986, almost 900 services were put on the market. Today Minitel delivers some 8,000 services. It took only a little over four years to build up this extensive range of electronic information and communication services — amazing!

Naturally, the July 1982 law on broadcasting and subsequent

measures have contributed in large part to the massive proliferation of videotex services. By resisting the passage of any new legislation in the early, i.e. testing, days, France Telecom had undoubtedly made it possible for a legal framework well-suited to the new medium to be worked out. As said earlier, the 1982 law on broadcasting placed videotex on an equal footing with print journalism in that persons wishing to open a service on Minitel need only sign a statement to that effect at the local *préfecture*, or regional administrative building, as do those wishing to publish a tract, a newspaper, or a book, the point being to indicate who is legally responsible in the event of litigation in matters of libel, royalties, and so forth. The new medium was thus governed by a very flexible legal framework, a rare occurrence indeed in French law, and so attracted "adventurers" bent on doing something new. They had a certain amount of leeway, provided of course that they complied with the ethical ground rules laid down in the legislative texts.

Now, as a rule, adventurers go about their business very intently and have a trick or two up their sleeves, and the Minitel trailblazers were no exception. Some had taken part in one capacity or another in the Vélizy project and had gained hands-on videotex experience. Others had acquired computer skills elsewhere. Some had gained publishing know-how on other media. Still others had worked primarily with associations and were well versed in organizational matters. The pioneers of mass-market videotex possessed all four of these skills to some extent. There were some who had "come out of nowhere", but they were few and far between.

# Adventurers in the service of Minitel

The service providers and hardware and software operators at Vélizy, who had harbored fears that their involvement in videotex might go no farther than the left bank of the Seine, with the attendant loss of investment in money and brainpower, were overjoyed to learn that the Minitel would indeed be distributed free of charge and on a large scale. They would finally be working on an industrial scale, with real users, in a real market setting, unshackled by experimental rules and guidelines.

The operation would not be simple, however. In Vélizy there was no convenient means of payment for the billing of electronic information, whose unit cost was often low; and to this day an ideal solution remains to be found. Electronic payment cards have been shelved by engineers pending a more favorable climate. Pay-per-use billing systems are much too costly given the tiny amounts involved. How many bills amounting to only a few francs from the days of the Vélizy test have never been collected because they were not worth legal action? The providers did not know whether to offer their services free of charge or on a fee basis. The first option posed no problems for those wanting to sell something via Minitel, i.e. for mail-order houses that wanted to use terminals to garner orders or for the French national railway, the SNCF, to sell train tickets. The free-of-charge approach did, however, give headaches to those who intended to sell their videotex service as such, e.g. the press with its electronic newspapers and, in a more general vein, publishers with their know-how.

As matters then stood, presubscription was the only solution. The question arose, however, how to get people to subscribe to a service they did not know about and so had never tried, and which was alien to them. There was little room for maneuver, which is why mass-market videotex services did not take off until the "invention" of the *kiosk*, whereby videotex services were simply tacked on to the phone bill. The introduction of the kiosk system in 1984 was preceded by various abortive attempts to combine in one way or another the free-of-charge and fee-based approaches. The ensuing systems were often jerry-built, but they did serve to get mass-market videotex out of the starting blocks.

Another issue was how best to use data processing resources. The decision to centralize all the data in the Vélizy host computer prevented service providers, except major companies equipped with up-to-date and powerful computer systems, from acquiring data communications know-how. Fortunately a number of software and systems houses — Sorinfor, since become G-CAM, SESA, Télésystèmes (a France Telecom subsidiary), CAP-Sogeti, and Stéria — had had a hand in the Vélizy videotex and Ille-et-Vilaine electronic directory projects and had come by some datacom skills. Incipient mass-market videotex was to rely on these firms until datacom competence had been forged in other precincts. Together these firms would host all the consumer videotex applications of the day. When one considers the fact that France is today home to 136

companies specialized in hosting videotex services and providing the requisite data-base resources, one can appreciate how far the country has come.

Then there was the problem of winning over the public. Entrepreneurs wondered how to inform people about videotex services; how to persuade them to try them out; how to get them to access for the very first time. Only the press had no such problems, since it could devote newspaper space or advertising to its new videotex services. The others, however, had no such forum at their disposal. And in fact, the newspapers and magazines that put together videotex services throughout 1983-1984, and there were many of them, were quick to "ban" outside advertising in their pages, which they subsequently lifted in 1985. But back in 1983 the situation was different in that potential service providers lacked even the rudiments of communicating, denied them during the Vélizy videotex test. The Teletel team, rendered gun-shy by the dire consequences of the conflicting statements made about the test it had conducted and rightly convinced that the quality of public relations policy depended on its consistency, was bent on concentrating the decision-making powers in the hands of one individual, and never allowed a single service provider to enter into direct contact with the public.

As for service conception and operation, the first tests had been conducted at Vélizy on a no-fee basis, an approach that had made for an easily satisfied consumer. Times had changed, though. Users would now pay for what they consulted and would want their money's worth. They would be in the market for services that were original, appealing, well-balanced, and that worked well. The stakes were high and slap-dash workmanship was out of the question. Videotex was increasingly exposed to normal market forces. The only good news, but of considerable importance, was that no one would need to buy a terminal, which explains in large measure why videotex got off the ground in France despite skepticism in Europe and the United States. The first services were thus developed under monopolistic conditions, in a captive market. The "consumers" were people with "complimentary" Minitels who felt like using them.

And so the first service designers, some of them graduates of the Vélizy school, tried to get a foothold on this rather slippery, yet well-guarded, terrain.

## The Who's Who of mass-market videotex

What gusto! The energy, vitality, grit, and entrepreneurial capacity of the pioneers of consumer videotex are truly awe-inspiring. Their powers of persuasion and salesmanship are just as staggering. The drive with which they saw their projects through is no tall tale either. In spite of all opposition, despite friends and colleagues and skeptical superiors, they produced the first videotex services.

Martine Tournier is a very discreet woman who grants few interviews and is ill at ease blowing her own horn. When she went to work for the Paris daily *Parisien libéré*, her business administration degree in hand, she knew nothing of videotex. She knew that a number of projects — shunned by all the newspapers — were in the works in Vélizy and that the *Parisien libéré* was distributed in the Yvelines *département*, i.e. where the city of Vélizy was located. She thought she spied an excellent opportunity to turn out an electronic version of her paper as part of the Teletel experiment, even if she had to fight to sell the idea. Had the *Parisien libéré* been waiting all along for someone to take on such a project? Candidates must have been in short supply. All the journalists had been accessories to some degree in the anti-videotex crusade of the summer of 1980, and those who felt any such calling must have been a rare commodity. They reasoned that there was no need to risk taking a beating on a new medium when they had it so good at the newspaper. But because she had just gone to work for the paper and had not yet found her niche, Tournier did not "have it so good". She was more than ready to take personal risks. She was intrigued by emerging technology and wanted to have a look-see. And so she obtained her paper's grudging consent and was off.

"The press was against it at first. If I had not shown the way, it would have missed out on videotex just as it had passed up the opportunity to work with television. But none of it would have ever happened without Marie-Josée Varloot, head of electronic news at France Telecom. She helped and guided us. She deserves the credit for the success of *PL*." To this day *PL* (for *Parisien libéré*) ranks high among the leading services on Minitel.

In late 1983 Tournier opened her service in the Ile-de-France and Picardy regions. In 1984 she would be the first customer on the kiosk. In six years her team has increased more than ten-fold to cope with the

growing number of calls and the ongoing expansion of the *PL* service, which has an answer for everything. In June 1986 it offered the corrected version of the French school-leaving examination the same day of the test, an operation that unleashed a flood of calls. But the service also serves up frequently updated news flashes, classified ads free of charge, an electronic mail service, racing results, all manner of sports events (tennis tournaments, the Paris-Dakar Rally and the like), shows and other cultural events on in Paris, the annual winners of the César awards (France's version of the Oscars), the United States and United Kingdom singles and album hit charts, and various games, just to name a few. The hallmark of *PL* is its all-inclusiveness; it nonetheless has no qualms about motivating Minitellers with a little cash, giving some of its games the look of one-arm bandits.

For Tournier, constant renewal of the service was the only way to stay in competition, which turned cutthroat in 1985, and to prevent it from growing stale. Success clearly did not go to her head. Moreover, she regards her profession as a real "picnic" even though, bitten by the videotex bug, she and her team worked their tails off for five years with no vacation. Asked about the ingredients for her success, Tournier answered without hesitation: "I had to be an adventurer, a dare-devil; I had to have stick-to-itiveness, a sixth sense". That was yesterday. Today a love of the contest is necessary, and "I love tough competition", claims Tournier whose ambition is to keep *PL* among the front-runners of videotex services for a long time to come.

Cécile Alvergnat is as blond as Martine Tournier is brunette and just as determined, though quite different in character. Alvergnat loves contact with people. While still very young, she accompanied her father from one political meeting to another and, filled with admiration, listened to him enthrall the crowds.

At an important political convention, she unexpectedly found herself on stage — she was 23 years old. She had to speak, to charm, to win over, in short she had to communicate with the public. At that very moment she "fell in love with communication", which became her watchword for life. She set up a children's bookstore, *École Buissonnière*, which is still alive and well, to which she has added workshops called *"Libres Enfants"* to take children's minds off their loneliness when outside the home. She promptly moved on to young people's television, took part in the TV show *"Italiques"*, then in the public broadcasting network's program, *"De*

*livre en livre"*. She then turned to radio when Anne Gaillard asked her to take part in a show called *"Amstramgram"*, which she hosts on one of France's public radio stations, France-Inter.

Until then Alvergnat had always learned by doing; her experience with videotex would be no different. In February 1984 she put out the first issue of *Crac* — the print version — which specialized in emerging media, together with *Crac* the videotex service. Crac Editeur was then a non-profit association. In September 1984 she sold her small apartment to start up a company with Pierre Guinchat, editor in chief of the magazine *H*, and set up her service on Jean-Louis Fourtanier's CTL host computer. She gained access to the kiosk in 1984 using Guinchat's magazine registration number (the registration number from a newspaper or magazine was needed to enter the kiosk system). *Crac* then really took off. Four people were involved in running the service, designing the applications, and devising ways of communicating with the public. Unlike Martine Tournier, who could spread the word about *PL* through the *Parisien libéré*, Cécile Alvergnat could hardly use *H*, a journal specialized in professional data bases, to promote *Crac*. She was the first to run up against the very serious matter of finding the means to reach the public, a problem that invariably confronts videotex services that are not newspaper spin-offs. Credit goes to Alvergnat, then on the lookout for new advertising media, for resolving this problem. She leased billboard space in the Paris metro and put up posters for Minitel showing off the voluptuous Miss A.C.l, symbol of the *Crac* on-line electronic mail service. Alvergnat worked hard to infuse her videotex products with her love of live broadcasting, her thorough knowledge of the press and book industry, and her sensitive grasp of the child's world. All of *Crac's* numerous innovations derived from this three-pronged approach and were fully in line with Alvergnat's conviction that today's world generates seas of solitude. To her way of thinking, videotex, with its communication potential, looked like an effective means of limiting the damage.

Alvergnat continually came up with new products. In May 1985 she came out with the mnemonic *CRAC J*, essentially for young people, which offered games and an electronic dialog service. In January 1986 it was A.C.l, whose tittilating come-on left no room for doubt about the nature of the service, which sounded truly *"rose"*, i.e. erotic. Always game for big get-togethers, Alvergnat organized a fantastic party in a well-known Paris night club with the equivocal name *Les Trottoirs de*

*Buenos Aires* (the sidewalks of Buenos Airs) attended *en masse* by *Crac* devotees, who were so numerous that even a neighboring hall rented at the last minute was packed to overflowing.

Very much concerned about latchkey kids, Alvergnat brought out in the spring of 1986 an unheard of service on Minitel: *S.O.S.-Devoirs* (Homework). Children would finally be able to monopolize the phone between 5 and 7 p.m. to do their homework, not, as usual, with school friends, but with a teacher on Minitel. The live approach was taken to the hilt. Since sophisticated conversational software was available, she reasoned it might as well be used to do something useful for everyday living. Alvergnat worked on this idea day in, day out until the fall of 1986 when she came up with *S.O.S.-24-24* on *Crac 3*, which offered on-line expert advice on such disparate matters as travel, law, data processing, insurance, books, and, of course, encounters. Bereft of any advertising relay in the press, and without the backing of financial institutes, *Crac* forged ahead undaunted. On July 8, 1987, the first Minitel restaurant, the *"Jardins du Minitel"*, opened its doors courtesy of Cécile Alvergnat. The recent buy out of her company by a subsidiary of the Havas Group goes to confirm her success.

On December 10, 1984, *Funitel* was unveiled in front of the cream of French videotexdom. It was regarded in some quarters as the most important event since the electronic directory was started up in Ille-et-Vilaine, perhaps because it was the first major gamble that private-sector players had taken on the growth of consumer videotex — without France Telecom subsidies. And what players: the inventors of the French lottery. The new company, Sytem, had assets in excess of $2 million and included such partners as the French mail-order house, La Redoute, and three banks — Worms, Crédit National, and Crédit Lyonnais — the first banks to bet on mass-market videotex. The President of CEO and Sytem, Claude Kretzschmar, had ambitious designs for his videotex baby. He would need 160,000 hours of connect time to break even, a figure equaled by no competitor at the time.

To reach that figure, he intended to use some powerful machinery and embarked on the largest-scale technical project in the young history of videotex. At first *Funitel* offered 300 simultaneous access points, meaning that 300 people could call into the service at the same time. By today's standards, 300 access ports is commonplace, but at the time a host system offering even 100 was considered an accomplishment. Observers were further amazed to hear that he planned to offer 1,000 ports in the spring of 1985 and 2,500 in the fall of 1985, and they wondered how much of it was hype. But if Sytem managed to deliver a host system that did actually offer 1,000 simultaneous access points, it would truly revolutionize videotex. It would provide the potential for realizing economies of scale and organizing big events through videotex.

Kretzschmar threw himself into the venture. He owed his credibility to the success of France's national lottery, and knew how to use his reputation as a winner to convince people that he was going to succeed on the new medium. He further had managed to win over the bankers, a real feat in the eyes of videotex professionals. He was not knowledgeable about videotex — yet — but he knew how to do something of much greater importance: He knew how to come up with games that worked and he would try to do as much on the new medium. His first offering was a videotex version of a well-known French TV game show, "Des Chiffres et des Lettres", from where he went on to produce the very first on-line dictionary. *Funitel* callers could also play hangman, naval battle, the longest word, and an adventure game.

His was a two-fold gamble. No one could predict how Minitellers would react to electronic games and no one knew how to charge for such products. Kretzschmar gave all possible billing methods a try, from presubscription plus entry fee to a window on the kiosk with presubscription on 36-14, until after a number of near-fatal ups and downs (Minitellers were decidedly averse to subscribing to services) *Funitel* at last adopted the *"à la carte"* or kiosk billing system.

Until they sold Sytem to the Crédit Lyonnais in March 1987, Kretzschmar and his associates were to add feature after feature to their *Funi* service and increase traffic to over 200,000 hours of connect time, overtaking *PL* in the process, which lost its number one ranking for the first time. They would never be short on ideas. In September 1986 they launched the Stock Market game in which the trading rates on the Paris *Bourse* were made available on-line and updated daily. Players managed a fictitious investment portfolio valued at $100,000. The winner took home a sum equal to the amount of money "made".

Henri de Maublanc is one of their old accomplices. His big regret is not to have been the first to go into videotex, because had he been, he would have been the best — at least that is what he claims. But until 1983 he spent most of his time in the United States marketing

boardgames that he financed by selling advertising space to the major corporations. His "Fortune 500" game (known in France as "Business") has become a world-wide winner, distributed in 17 countries. And de Maublanc is quite proud of the fact. Once his job with the America Cup was up, he returned to France where he came face-to-face with a Minitel. Claude Termens, videotex manager at France Telecom, lent him a thick report detailing exactly what Minitel could do.

Claude Perdriel, who was going through a bad patch with the French weekly the *Nouvel Observateur*, whose readership and advertising sales were dropping at an alarming rate, asked de Maublanc to come up with a new layout for his magazine and to give some thought to new departures, such as freebies and videotex. Perdriel, who was losing money hand over first with the daily newspaper *le Matin* (rumor had it $10 million) and who was not making much with the *Nouvel Observateur*, had no intention of pumping astronomical sums of money into any new projects. So de Maublanc turned to France Telecom where he knew quite a few people and, like the newspapers, applied for some financial aid to start up a videotex service. The answer was yes, and the *Nouvel Observateur* pocketed $500,000 over a three-year period to bring its videotex service on-line.

The farsighted de Maublanc bet he could devise a 24-hour service and came through with the idea of *Aline*, which, until the advent of *Jane*, started later on by the *Nouvel Observateur*, would be France's most famous on-line electronic mail service. He shared Cécile Alvergnat's views on loneliness and the potential market it represented. What he needed, then, was a low computation-capacity host system that offered a large number of access ports so that callers could swarm over the service and remain on-line for as long as they wished without being ejected by the overflow mechanism. *Aline* went into operation in July 1985 and was an immediate hit. In six months it shot to number one among electronic mail services with 2,000 connect hours a day. The advertising campaign with its slogan, "*Aline* is terrific", was as straightforward as possible.

All was not roses, however. From the outset *Aline* was plagued by an endless series of technical problems. The first host computer was defective and the second, Fourtanier's CTL, would become too expensive as soon as the service hit its stride. And so de Maublanc went looking for sensible technical solutions whose basic premise was that the *Nouvel Observateur* would host its own services. De Maublanc had met Claude

Kretzschmar and his group six months earlier at the inaugural show of their games service at *Espace Cardin*, a chic Paris eatery, and their encounter proved to be consequential. De Maublanc put little stock in their marketing concept (how could people reasonably be expected to subscribe to games with delayed results when their whole appeal was precisely the fact that the player was operating in real time?) and their first products (why so many graphics when it takes so long to display them?), but he immediately realized that their technical choices were right on.

The ensuing friendship developed into a close partnership when de Maublanc, after leaving the *Nouvel Observateur*, decided to start his own videotex business in late 1985 with almost $100,000 cash on hand from the sale of his houseboat. He decided to put his new service, *Ludotel*, on the Sytem host computer, in exchange for making future software upgrades and through proceeds from the sale of his own software. He seized the first opportunity that came along to buy into Sytem with his houseboat nest egg. *Ludo* alone was already realizing 60,000 connect hours a month, while *Funitel* was bringing in 100,000, and *PL* — still at the top of the ratings — was running up 140,000.

Henri de Maublanc was everywhere at once on the videotex scene and one is at a loss to put a finger on all his varied activities. Sporting an ample hat in winter, glasses that dangle from a black neck cord, and an English tweed sportscoat worn to a fine gloss in the back, he is ubiquitous. He publishes *Ludo* and *Ecol*, both stored on the Sytem host system, and *Anabelle*, on the CTL host computer. He continues to do varied consulting work for the *Nouvel Observateur*. He has a share in Sytem and has inaugurated *Politel*, a service billed as a "computer-less host system", on which service providers lease computer space. He now has an office in one of France's best known advertising agencies, Roux-Séguéla-Caizac-Goudard, where he is surely cooking up something new in advertising or communications. Quick on the draw, de Maublanc has been known to register 10 trade-marks in an hour — for future use.

Bubbling over with ideas, de Maublanc has announced preparation of a major project bringing together a number of small-town newspapers interested in a new, transregional approach to classified ads. In conjunction with the regional daily press and French "freebie" specialists, de Maublanc is rethinking the classified ad business from top to bottom.

The very classified ads that nearly torpedoed the launching of videotex will be given a good face-lift by the same medium!

These are a few of the men and women who have made consumer videotex what it is in France. After the infamous summer of 1980, François Henrot succeeded in staking out France Telecom's territory. The distribution of roles was clear-cut: France Telecom would develop the hardware system, build it, make it reliable. Others would devise videotex products. The only exception to this rule was the electronic phonebook that France Telecom developed for its directory assistance service.

By early 1985, Michel Landaret was no longer alone in inventing videotex services. (His service was by then receiving 1,000 calls a day for a daily traffic count of some 800 hours from 2,000 "subscribers", who often bought their Minitels direct at the factory outlet in suburban Strasbourg.) Mass-market videotex products were cropping up all over, thanks at first to the aforementioned pioneers and later to people "from out of nowhere". From 1983 to 1985, over 2,000 videotex services appeared on the market.

## Doing business on Minitel

In an effort to defuse the crisis that threatened French videotex, PTT Minister Louis Mexandeau had announced in his Vélizy inaugural address that professional, as opposed to mass-market, videotex would receive top priority. There were of course political and short-term considerations involved, but he also took this new tack convinced that it offered a golden opportunity for promoting videotex. He was of the opinion that business should use this new means of communication just as it did other media. Moreover, a look at the first professional services on Teletel in Vélizy and the success they enjoyed would be enough to convince anyone that the Minitel was not confined to games and the like. There was already a market, albeit embryonic, for professional information services, with railway timetable information heading the list of calls. Banking services also scored well. The mail-order service of La Redoute was less popular, but highly valued by those who did use it. Its success attested to a high degree of service relevance.

On October 2, 1982, the Banque Française du Commerce Extérieur or French Foreign Trade Bank, the BFCE, set about conducting a videotex experiment. Looking to evaluate videotex potential for accessing customer account information, the bank installed 15 terminals on its premises. The results were conclusive, so in 1983 it offered the same service to 200 of its customers whom it provided with Minitels. In November of the same year, the daily newspaper *Dauphiné libéré* equipped 50 of its newsdealers with Minitels so that they could order their newspaper stocks directly. At the same time, the daily *Dépêche du Midi* opened up an experimental service containing 12,000 classified ads accessible to the public through 140 Minitel-equipped dealers. It cost about 15 cents to consult and a little over $10 to run an ad. In March 1983 the Peugeot bicycle company outfitted 200 of its 2,400 dealers with Minitels, offering them services for stock ordering, product display, and general assistance. The system (called *Cegetel*) was first and foremost a means for Cycles Peugeot to touch base with its dealers. Elsewhere, companies set up videotex services for sales staff training and briefing; yet others used Minitel to keep their franchises abreast of parent company developments.

Professional videotex experiments sprang up like so many dandelions after a spring shower. Soon there were hundreds under way. Day in, day out the industry press announced the emergence of new, imaginative services, some of which involved sectors of activity that on the face of it did not lend themselves to the medium. From 1982 to this day, professional videotex has been enriched by an avalanche of ideas and a proliferation of all manner of initiatives. What "up-to-date" company in France does not offer a service on Minitel as this book goes to press? Frenchmen wishing to know where to spend a ski holiday consult *Skitel;* those wanting to go on vacation call *S.O.S.-Voyages;* those wanting to keep track of their investment portfolios call *A.J.;* those comparison shopping for the best credit arrangements look up *Cetelem!*

Of these myriad activities, only those designed with the general public in mind are visible to the naked eye; there are as many and as varied intracorporate videotex services. Credit for it all goes, of course, to the Vélizy test, which proved that the *gratis* distribution of Minitels was the only way to solve the "chicken and egg" dilemma, i.e. the fact that people cannot be provided with available information unless they have a Minitel but will not have a Minitel unless they want the information! This was a prime factor behind the surge of activity. A few noteworthy people blazed the trail in professional videotex, showing the way to others who would set out later.

René Riffard is one such trailblazer. This imaginative banker had made of the Crédit Commercial de France, the CCF, banking's leading light in matters of videotex. In late 1983 he unveiled his *Vidéocompte* service destined for individual account holders. For over a year now, the CCF has been testing *Vidéobanque* with corporate account holders. Through it, companies can verify account balances, obtain itemized readouts, and retrieve information using criteria such as checkbook number, account number, and even amounts. Customers can also transfer funds, order checkbooks, and call up for exchange rates on Minitel. Working hand in glove with France Telecom, which distributed Minitels to CCF customers, Riffard laid the groundwork for home banking. In October 1987, 15,000 CCF customers — including 12,000 individual account holders — were consulting their accounts via Minitel. Businesses were encouraged by the results, with 80 % of them calling every day for seven minutes, the remaining 20 % connecting only every other day but for twice as long. The CCF's host system is muscle-bound: It includes an IBM 3081 CPU with two front-end communications units and 400 access points. Plans were to go to 1,600 ports by the end of 1985 by leasing 40 Transpac accesses.

Other banking establishments followed suit and, after the press, they were the first to make heavy use of videotex. In April 1983 the Banque Populaire de Lorraine offered 300 business owners a videotex service that took off like a rocket, and a year later it was receiving 200 calls daily, the bulk of which accessed the consultation services. Minitel-based transaction services, however, were longer in establishing themselves. There is a season for everything. In January 1984 the Crédit Lyonnais launched *Télélion;* the BNP, *Téléservice B;* and other banks promptly fell in line. In April of the same year the Crédit du Nord launched its ambitious *Norestel* system, designed to enable professionals, small businesses, and small industry to manage their funds to the greatest effect; cost: about $15 per month. For a little over $100 a month, professionals and businesses can take advantage of a service with added features, *Corinte.* Individual account holders at the Crédit du Nord have access to *Nordirect,* free of charge. 1984 would be a break-through year for videotex in the banking sector, which was keen on providing its customers with new services or existing services at reduced costs. Accordingly, the first banks to opt for Minitel were those that sent customer statements through the mail and

for which customer access via videotex would be much more cost-effective. They were well advised to promote it.

The various banking services are all cast in the same mold, the only differences being that some are more legible than others, some better laid out, and some accompanied by high-quality instructions. And it is no wonder that none of them stand out from the crowd, since they all offer the same services, e.g. direct and real-time access to account information and a number of at-home operations (funds transfer, for instance).

At France's national railway, the SNCF, Jacques Darthou lost no time in idle speculation about the potential of videotex. Without even testing the water, he dove in. First stop, Vélizy. Just as France Telecom had directory assistance problems, the SNCF had serious over-the-telephone information headaches. The main number for timetable information was close to meltdown. The numbers of the Paris train stations were just this side of gridlock, and the plight of outlying stations was just as bleak. To say nothing of the never-decreasing costs of the switchboard operators who, their printed schedulebook in hand, dispensed information to callers from 8 a.m. to 8 p.m. (and tough luck for those calling after 8 p.m.! they would have to go to the station to find out the exact departure time of the next day's train). And one could forget about trying to get information about connections, since it was somewhere else in the book!

Darthou's energy, kindness, and determination got the best of even the most doubting Thomases and attracted other carriers in the SNCF's wake. At Vélizy he set up a skeleton service and analyzed user reactions. The service offered general information and times for the main lines only, but it was available round the clock. The transition to a more comprehensive service was hampered by the scope of requisite investments in machinery and it was decided to wait until the number of Minitels in use rose to do so. When the electronic directory was hooked up to Ile-de-France and Picardy at the end of 1983, the SNCF alone accounted for 8 % of traffic.

Darthou realized immediately that the Minitel would be fantastic if, after obtaining train times, callers could reserve tickets — and pay for them at the same time. But as long as there was no smart card for payment or some sort of verification system for weeding out pranksters, it was a pipe dream. SNCF managers' jaws would hit the ground if an entire train was reserved on Minitel by some practical joker! Meanwhile, the SNCF's electronic information service improved with every passing

day. It was soon possible to reserve tickets by Minitel, even though they had to be picked up and paid for at the station. One day all these operations will be effected via videotex and once in the station riders will have nothing to do but buy some reading material and victuals before boarding.

A host of carriers followed Darthou's lead. For the Paris metro (the RATP), France's international and domestic airlines (Air France and Air Inter), and numerous others, be they suppliers or middlemen, Minitel offered an answer to their communications problems with the public. At the regional level there was an avalanche of start-ups in the tourist industry. In March 1984 the Midi-Pyrénées region opened up *Système V*, which delivered 3,000 bits of information on accommodations, restaurants, and entertainment and leisure activities in three of its *départements*. With the opening of the kiosk service, travel industry professionals of every stripe swarmed onto videotex. In June 1985 the *Voyagetel* service was host to 65 promoters, who received per month a total of 160,000 calls lasting an average of 10 minutes each. The novel set-up required each promoter to pay an entry fee of $1,500 to $2,000. They paid $20 a "page" and a one-time fee of $670 for putting their information on-line. The Informatel company, promoter of *Voyagetel*, had gross earnings of $1.7 million that year and employed a full-time staff of four. Bright ideas on how to use videotex were plentiful in the travel and leisure sector. Some have the potential for resolving a number of critical economic problems, for instance that of using transport capacity to a maximum through last-minute bookings. In the United States the abortive videotex experiment Viewtron offered a service — Last Minute — through which people wanting to leave on a moment's notice could book remaining seats at 20 % to 50 % fare reductions.

The mail-order industry has not slackened the pace since the Vélizy test either. France's largest mail-order house, La Redoute, had worked with France Telecom well before the Vélizy watershed. As early as 1973 it had observed the Tic-tac venture and was convinced that it could put the push-button phone/computer combination to good use to keep its purchase order service open round the clock and to hold down the cost of information retrieval. Minitel is convenient in this respect in that it is the customers themselves who unknowingly key the requisite data into the computer, which is a blessing for businesses that have millions of orders to process. La Redoute was first on the scene in Vélizy with a basic

service that offered information of various kinds (what orders could not be filled, for instance) and enabled callers to order catalog items and new catalogs.

Jean-Pierre Masclet was responsible for molding and upgrading La Redoute's videotex services. Like his counterparts at two other leading French mail-order houses, the CAMIF and the Trois Suisses, he was pleased with the Vélizy results and was looking forward to expanding La Redoute's geographical base of operations. It is true that mail-order house services have changed little since the basic recipe was developed at Vélizy, but then the clientele of mail-order businesses it not crazy about change. The CAMIF did, however, know which way the wind was blowing when it opened an on-line electronic mail service; and La Redoute took advantage of the medium's ready "updatability" by launching a "This week's bargains" entry. Masclet forged ahead painstakingly, knowing that his company's customers would be slow in using the Minitel spontaneously to place their orders but also that he could show a return on investment on his computer system with a relatively small percentage of orders. Minitel orders currently account for 1 % of La Redoute's gross income and 6 % of CAMIF's. To the outside observer it might seem a drop in the bucket, but for the company's videotex managers it is a very encouraging result. In a word, confidence is king and the use of Minitel for advertising sales promotions goes on. The service is free of charge — no need to subscribe — and the customer pays only for the call (to access the service he keys in 36-14 and the letters "La Redoute" for a cost of around $3.50 an hour).

It is only a matter of time before the catalogs of other retailers find their way to videotex, and projects are in the works everywhere. Some mail-order houses may wait for tomorrow's sophisticated-graphics Minitel before taking the videotex plunge. Others may take the classic route by combining their videotex service and their catalog. CAMIF, in what is perhaps a sign of things to come, has already recorded its catalog on videodisk. One thing is certain, though, the trend toward the use of visuals will be combined with videotex — in the initial phase at all events. The fact that some 3,000,000 Minitels and a powerful data distribution network are available is too good an opportunity to pass up — and watch others use.

The conventional distinction between consumer and professional videotex, adopted here for clarity's sake, is much more tenuous in reality

than at first glance. For instance, is a service offered by a mail-order house like La Redoute consumer or professional? When the SNCF introduces videotex to relieve the congestion of its telephone information services, it is really dealing with the general public. When one of France's leaders in the want-ad market, Comtesse Publicité, starts up an information service on newspapers listing classified ads it is naturally targetting people in the market for a job. Despite the fact that such utilitarian services have been designed by professionals for their own communication or publicity needs, they are essentially mass-market services.

Outside of this gray area where consumer and professional overlap, there are nonetheless a number of strictly professional services. Merlin Gérin, for example, has developed a videotex service that provides customers with real-time assistance in repairing machines. Once the malfunction has been identified, the system guides the repairman through the operations to be performed. At the end, the machine even lists the parts that have been used to repair the machine and will, unless advised otherwise, dispatch them to the repairman with the next morning's mail. This is a typically professional service.

Not a day goes by without similar services springing up; services for helping sales staff, for bulking orders, for performing remote-repairwork, for restocking quickly. Professional services are either in-house or shared with contractors and other partner businesses. They are not all known because they are more or less private, and are not accessible through 36-14 (users keying in this number pay only for the call) or 36-15 (since the point is not to charge a customer almost $10 per hour of connect time for a *gratis* after-sales service or an employee for pointers). To access professional services, callers enter 36-13 (for an hourly rate of a little over one dollar) or key in a confidential access code using the switched telephone network. This is where the real, full-fledged professional videotex services that are not relevant to the man in the street are "lodged".

# "Citizen Kiosk"

Once videotex was out of the experimental stage, professionals set about looking for ways to charge a fair market price for electronic

information, since suitable rate schedules and payment systems were lacking. France is not the United States, where customers need only give their credit card number to have merchandise mailed or on-line information transmitted to them. France is more conservative — or less trustful — and its Carte Bleue (Visa) consortium does not go in for such practices, which offer no means of verifying that the customer doing the ordering and the owner of the card are one and the same person. It is feared that the numbers on stolen cards could be used by others, and the company recently reiterated its policy of not guaranteeing payment in such cases. Videotex service providers could therefore go one of two routes: presubscription or no charge. Attempts were made to find a solution based on one or the other, until April 1984 and the advent of the kiosk, which settled the matter by offering practical billing options.

## Subscribe now!

Sytem Corporation's *Funitel* offers a good illustration of how services zigzagged between various payment methods. The problem is that few people are willing to subscribe, even for a few short weeks, to video games, no matter how much fun they might be. They want to see them close-up first and will only subscribe once the service has passed muster.

France's first pay TV station, Canal Plus, got off to a rocky start on account of the slow pace of subscriptions, and this despite repeated advertising blitzes that some considered out of all proportion. On the other side of the coin, Canal Plus was not later hit by a wave of subscription cancellations, unlike cable TV networks, which are forced to run hard-hitting marketing campaigns to retain or lure back subscribers. Once they have signed on, the French remain faithful to their coded TV station. In the United States brand disloyalty and rough-and-tumble competition among services are the rule, and cancellations will always be a headache calling forth gimmicks and "quick fixes". This might occur in France the day that the TV network offer weighs more heavily in viewer decisions.

In 1982 the Teletel access service instituted a reversed-charges system; by keying in 36-13, the caller could access services paid for by the person or organization being called. As 1983 faded, the Teletel access service introduced a system for charging the caller, but only for the cost of the call. The truncated magic number began with 614, since

renumbered 36-14 with France's transition to an eight-digit phone system.

Service providers were to build upon these two approaches to charging, which at first were available only in those areas covered by the electronic directory and later extended throughout the country. At the same time the Minitel 10, with its Azerty keyboard and built-in electronic telephone set for communicating with other Minitels or storing data on peripherals, hit the market.

In December 1984 it was not expensive to subscribe to the video game service *Funitel:* an annual entry fee of $25 and $2.50 per hour of connect time. If one stops to consider the astronomical cost of pin-ball and other bar games, user reluctance is baffling. Although people do not have second thoughts about paying for something outside the home that they have deliberately sought out, paying from the home for something that is consumed in the home is another kettle of fish altogether. A good example of this mentality is newspaper subscriptions, which are losing ground in France in the face of newsstand sales. The advantage of the subscription approach for the vendor is that he holds a captive market. On the other side of the coin, it gives rise to a host of aggravating problems primarily due to the proliferation of minor bills that often do not amount to the cost of the paper they are printed on. If legal fees for prosecuting bad debts are figured in, it is readily apparent that the subscription approach is ill-suited to the flitting habits of videotex practitioners. No sooner have they asked a question, left a message or exchanged a laugh, than they disappear!

The situation is not much different where professional data bases are concerned. A company that consumes a great deal of information does not hesitate to subscribe to a number of diverse electronic services covering a wide range of information. A company, however, that needs information only on rare occasions or from highly disparate sources is not tempted to take out the number of subscriptions necessary to cover all the areas its rare questions might touch on. The latter either foregoes information sources that would nonetheless be useful or enlists the services of "information brokers". They do the electronic "footwork" for businesses thanks to their many data-base accesses and know-how in matters of data-set interrogation and interconnection. No one had ever heard of information brokers as recently as just a few years ago; now they are establishing themselves as key middlemen between information

systems and businesses. Data-base editors owe them the bulk of their traffic and subscriptions.

*Funitel* did not have a monopoly on hybrid billing methods. Until February 1984, when the kiosk opened for business in the Paris region and Picardy, each service improvised accordingly. The miracle solution remained elusive and videotex schlepped along with no-fee services like those of La Redoute and the SNCF. The banks alone had the means to promote an active videotex strategy. They had no billing and collection worries to cope with since the cost of services was deducted straightaway from customer accounts. Therein may lie the reason so many banks got involved in videotex in 1983-84.

They even had the opportunity to extend their in-house system to include non-banking services. The highest echelons of the banking community were asked to consider having their financial institutions take over billing and collection for videotex services. Their refusal surely stemmed from the fact that they did not wish to be held responsible for videotex bills which they themselves could not vet. Above all they did want to bear the brunt of disputes that would inevitably arise because France Telecom had no reliable metering system. These were the days in France of repeated challenges to Telecom's phone bills. Itemized billing, which has since been introduced in a number of areas, did not exist. Banks do not appreciate handling the amounts due to others, especially when they are questionable or hotly contested.

The same lack of billing and collection problems explains why towns opted for videotex. Nantes' Telem system was promoted with the slogan "a public service for the public". In Alsace, the regional host system, *Vidéotex Conseil*, sensed that municipal videotex was up and coming and accordingly came out with *Urbis* in September 1983, a videotex tool that is sufficiently malleable to accommodate the specific needs of each community. In August 1984 a consortium including the newspaper *Ouest-France* and the city of Rennes opened the paper's *TOM* service. In December of the same year Jean-Marie Rausch, mayor of the city of Metz, unveiled *Mirabel*, which three years later was to become the hub of a multimedia municipal information system.

Members of Parliament would also be among the first to get a taste of electronic communication and information services. As soon as he took up this duties in 1981, Louis Mexandeau set out to convince every lawmaker of the merits of videotex by providing an opportunity for

hands-on experience. Some would see for themselves at the Socialist Party's 1982 convention in the city of Valence; others would hear about it during the Versailles Summit. But most would become *de facto* supporters as they signed their region up for the electronic directory. To Mexandeau's way of thinking, however, true allegiance was contingent on personal use.

He accordingly suggested that the two houses draw up and implement a program especially suited to their needs; the Senate was not forthcoming. Dominique Robert, Mexandeau's parliamentary attaché, had to summon forth all his grit and charm to bring the three *questors* of the National Assembly, those responsible for its administration, round to his way of thinking. When Parliament convened in 1983, the PTT Minister inaugurated an electronic mail service on the Teletel network, developed and financed by the Assembly, which all the deputies could access from their offices and, as of April of the following year, from their committee rooms. The new service delivered appointments calendars, reports, memoranda, agendas, legal data, and a thousand and one other frequently updated services. In the Palais-Bourbon, symbol of French democracy, lawmakers of every rank, stripe, and accent could now explore the wonders of 470 Minitel.

# Key in 36-15 + whatever...

In May 1983 at a colloquium on videotex organized by the Center for Journalists' Training and Continuing Education, France Telecom's head of Commercial Affairs, François Henrot, brought kiosk out of the closet. He explained that it was a system for billing videotex services, one reserved for the press.

A special call number would be assigned to calls to videotex services, which would have a surtax levied on them payable by the person calling. The revenue raised from this tax, a flat rate determined by common consent with service providers, would be remitted to them by France Telecom, less the cost of distributing the information.

While the announcement of kiosk billing was a scoop for those in attendance, it was already apparent to anyone who had read between the lines of Mexandeau's inaugural speech in Vélizy. And yet the proposal was not universally popular. At the time it occurred to no one but the system's promoters, who were taken by its elegant simplicity and the fact

that it guaranteed confidentiality, that the kiosk system would be a bonanza. Service providers, who had been expecting news about the promised home banking terminal, gave it the thumbs-down. They were worried about user reaction to a telephone-based method of payment. Then chairman of the Association of Teletel Service Providers, Jacques Darthou, aired his views to Mexandeau: "Service providers have very much appreciated the stands you have taken on numerous occasions with respect to videotex in France and the resources needed to ensure its success... On this same score and to illustrate our point, we regret that the groundwork laid for home payment of videotex services is now seriously jeopardized... An ambitious project for smart-card readers should already have been launched."

In actual fact a few dozen smart-card readers had been tested at Vélizy and the prevailing view was that electronic payment of videotex services was the first-class way to go. Day in, day out, month after month, they would announce that it was imminent, that it was making headway, that it would be ready any day now. As can be readily imagined, the select assemblage of videotex people sat in stunned silence as François Henrot, with his legendary deft touch, implicitly acknowledged the real motives behind his kiosk proposal: home payment was not conceivable, not for the time being anyway, and not on a national scale. What had actually happened was that the various partners involved in the *"monétique"* electronic money project had not got along and had promptly become bogged down by the hoary issue of who would pay for the terminals. The banks agreed with the concept of *monétique* but had no intention of spending a penny on it. France Telecom, already deep in debt on account of the phone catch-up program and the datacom project of which it was sole financier, was not about to foot the bill again. As a result, the project was postponed *sine die*. The manufacturers involved, however, did not jettison the venture and continued to work at resolving the technical drawbacks. Politically, though, the project was put on ice until 1987 when it was revived in the wake of the uproar over pay checks and the advent of smart-card pay phones.

In his address Henrot had also spoken of consultation, but to whom was he referring? France Telecom's partners had never been under the impression that consultation was a hallmark of the house of Telecom. Consumer representatives who had been heard by the commission for monitoring videotex experiments had never received answers to their

questions. Neither had the systems operators, who had endorsed their views. As to the press, it had come to the bitter (or joyous) conclusion that to get France Telecom's attention it had to speak out in the newspapers.

From the outset France Telecom's partners feared that kiosk billing would spell the indefinite postponement of the smart card. In addition, they were afraid that charging for information that was otherwise available for nothing (timetable information, purchase orders, and the like) would put a damper on the overall growth of traffic. Accordingly, they were favorable to confining the kiosk system to companies in the business of communication. This may explain why France Telecom's decision to reserve kiosk billing for the print and broadcasting media, one that had no legal grounding and translated into a *de facto* monopoly of the press on consumer videotex, did not arouse the opposition that might have been expected. But what really gave videotex publishers night-mares was the possibility that the public would stay away from the kiosk system. They were reluctant to abandon a known quantity (presubscription) for an approach that might very well not pan out (pay-per-use billing).

Then there was the matter of the break-even point of kiosk services. It did not take a Harvard MBA to figure out that 30 % of the total would be taken off the top by France Telecom, its share as carrier. The remainder would be split between the host system (where the services are stored) and the service provider. It was thought that the delicate balance among the sector's players might be tipped in favor of the host systems, whose operating costs after initial investments were very low, whereas service providers had to plow earnings back into developing new services. Would kiosk billing prompt service providers to host their own services?

Everyone did agree on one thing, though: Kiosk billing was a great thing in that it spelled out the economic ground rules for existing — as well as future — videotex services. Basically all the information and service providers endorsed the principle of kiosk billing, but they reserved the right to challenge specific aspects of its implementation. For example, no one could agree on the amount to be charged, and since there would be only one rate — for purely technical reasons — such divergences posed a problem. And the gap was to grow wider between those offering what they considered legitimate value-added services, and who wanted to be renumerated accordingly, and those aiming to make

Minitel a communication rather than information medium, and who argued for the lowest kiosk rate possible. But France Telecom had honed its bargaining skills to a fine edge and let it be known that several rates might be proposed in the future. It had some sophisticated rate strategies in store! For the time being, though, France Telecom had what it likes best: the green light from the authorities. It therefore knew that no one — not the banks, not the newspapers, not any rate-fixing parliamentary commission — would pry into its business. By late 1985 kiosk billing had been extended throughout France and got consumer videotex off the ground.

Let there be no mistake about it: The decision to go with kiosk billing was not easy for France Telecom. It ran counter to the traditions of the house and the mind-set of its engineers. The kiosk option had in fact already been proposed to Gérard Théry, France Telecom's pre-1981 general manager, who had brushed it aside. The idea of France Telecom acting as bill collector for third parties was not at all to his liking. The same system had again been put forward by Philippe Bodin, a member of Mexandeau's staff, and grudgingly accepted by Jacques Dondoux, whom François Henrot frequently reminded that, although the profession of tax collector was pleasant enough, throughout the history of France such people invariably ended up on the wrong end of a rope!

Jacques Dondoux was mainly concerned about confidentiality. The thought that users might be "traced" through the billing system gave him pause. He set about looking for a way to guarantee the privacy and confidentiality of exchanges on Minitel. A chance conversation with his Swiss counterpart, Mr. Traxel, apparently started the wheels turning. As a good Swiss, Mr. Traxel knows what privacy and confidentiality are all about. He let Dondoux in on a little secret of his own when he advised him: "Why not set up a kiosk? That way no one will know who buys what".

The idea made converts slowly but surely, but the set-up went against the grain at France Telecom, which for the first time would be called upon to collect money for a third party. A detail perhaps, but not a minor one. The specter of customer complaints and their aggravation at phone bills inflated by videotex charges loomed large. Then there was the matter of devising a system for metering Minitel calls.

The balance would tip in favor of the kiosk system, on the grounds of both ethics and economics. Better than any other system, it guaranteed

the anonymity prized by Dondoux and the PTT Minister's staff and required by law. In addition, kiosk billing was ensured by the network within the network and made it cost-effective to collect even the smallest amounts. When the kiosk system went into effect in March 1984, odds-makers saw it as a long shot. No one had grasped that the kiosk was the fourth movement in the videotex symphony, after the Minitel, the packet-switched data network, Transpac, and the introduction of videotex access points. With the introduction of kiosk billing, videotex traffic sky-rocketed, climbing from 198,000 hours of connect time in November and December 1984 to 2.2 million hours in the same months a year later. For the month of June 1987, the figure exceeded four million hours! Today, the monthly count is six million hours.

# Knocking on heaven's... ports

Callers access France's videotex network via ports to reach the host system that stores the sought-after service. In France, such access points are accessible from anywhere in the country, and all at the same price. The March 1982 decision to use the Transpac network, whose rates are time- not distance-based, to transmit videotex data was a logical outgrowth of Dondoux's express wish not to penalize the inhabitants of out-of-the-way regions whose infrastructures could not handle a wide range of videotex services. Thanks to Transpac, all Frenchmen, whether from Brittany, Auvergne, or Provence, were equal before the god Videotex. Unlike his predecessor, Dondoux did not buy the idea that the distribution of professional information would be enough to make a videotex network profitable. In the same vein, the Télécom 1 satellite, initially dedicated to the transport of professional data, would later be used to transmit television signals.

The matter of simultaneous access ports has always been paramount for host system operators. Too few points drives away callers who cannot get through, whereas too many makes it difficult to make a return on investment.

## Microcomputers vs. megamachines

Access ports are important, especially in videotex where the more successful the service, the more ports are needed: Only one person at a time can enter a port, which remains occupied until the call is over and the user has disconnected.

The first videotex host systems, like the one for the Teletel test in Vélizy, the CITV, or those devised by CAP-Sogeti, Télésystèmes, Stéria, and others, were mere computers specially adapted for the occasion (access systems, communication protocols with the Teletel network, the very first electronic mailbox software programs, and the like). At the time, the commonly held view was that videotex services would be unwieldy, with huge data bases to manage. Thus data processing capability was naturally uppermost on people's minds, whereas the seemingly insignificant matter of the number of access ports got short shrift. It was also true that the early days of the Vélizy test had seen a number of megaservices go on-line. Managing such behemoths as the Redoute catalog, the SNCF timetables, and the citizen's administrative guide was no mean feat — to say nothing of the electronic directory, still the world's largest distributed data base.

During this entire period, France's "conventional" software and systems houses dominated the scene. They soon formed a key sector in the development of consumer videotex by raising the comfort level of service design, which went a long way to spurring content-provider creativity. Credit is also due them for the vertiginous drop in host system operating costs, which plummeted within a year from $25 an hour to less than $2, and without which the viability of videotex service publication was no more than a pipe dream. Moreover, it was the only videotex-related sector that managed to export, thereby initiating a number of foreign countries to videotex à la française. Together with service publishing per se, it has been the main source of new jobs within the videotex industry.

And yet the systems and software houses did not take the new medium by storm. They were hardly sanguine about its prospects, otherwise they would have invested in it and continued to play the major part they had in the early days. Once the large-scale public projects had been completed, and once Teletel and the electronic directory were under way, they would appear to have lost interest. They had been ambivalent

about consumer videotex all along, and today theirs is only a token presence. They have remained true to professional services, which are more in keeping with their corporate *modus operandi*, with the type of risks they know how to take, and with the way they are accustomed to investing. They may make a comeback, though, now that consumer services appear to be here to stay, and the Crédit Lyonnais' buy out in January 1987 of the consumer service leader Sytem for its subsidiary, Sligos, is a clear signal of just such a revival of interest.

In the meantime, however, they have been overtaken by smaller companies, often set up with and for videotex by "adventurers" tempted by a ride on the mass-market videotex machine. Outsiders like CTL, Ippolis Informatique, Sytem, Segin, and so many others have enjoyed spectacular growth, which they owe to their offense-minded strategies. They have taken the trouble to devise a line of products suited to the needs of information providers and based on reliable, flexible operating systems that stand in stark contrast to the offerings of the major systems and software houses.

Contrary to the British approach where everything is subordinated to the Prestel network, France Telecom's strategy was to give operators free rein in choosing host computers and to be broad-minded where standards were concerned. Granted, steps were taken to promote what French industry had to offer by using Honeywell Bull's Mini 6 computer, Intertechnique's Réalités 2,000 and 5,000 models, and Thomson's Microméga. France's Agency for Data Processing, the ADI, had taken a similar tack by subsidizing the first videotex operations using French equipment. But despite such backing, French manufacturers would not be able to hold on to the host systems market, from which they have all but disappeared in 1987.

From the outset foreign manufacturers carved out a share of the market. IBM, DEC, Hewlett-Packard, ATT/Olivetti, and MacDonnel-Douglas supported systems and software houses in their approach to videotex. They knew how to adapt to market trends; they had a range of marketing techniques and product lines that meshed with the needs of service providers. When in the early going, high-capacity host computers were called for, they had just what the doctor ordered. When around 1982-83, microcomputers were needed, they were able to meet the demand, and in 1984 they supplied the megamachines necessary for seeing through a mass-market strategy. Their ability to change course and move with market trends explains how they managed to retain a foothold in the market despite starting out with nothing more than their products.

It was Michel Bouvier who had introduced videotex to a number of the outsiders who subsequently went into the business of hosting videotex services. He had recruited them in the Vélizy days to help design and build the services he was promoting the world over. Jean-Louis Fourtanier is the best known outsider. In 1979 this affable videotex pioneer started up CTL (a computer language consultancy), by no means a run-of-the-mill software house. His goal was to develop data communication tools. To meet the increasingly insistent requests from Bouvier, with whom he had devised some 500 pilot-scale services, he decided early on to market videotex host systems under the CTL name, which in June 1982 accounted for 70 % of his gross revenue.

Fourtanier's big break was to realize, well before anyone else, that the Unix operating system was ideally suited to videotex, both in terms of quantity and quality. He claims that his choice was a stab in the dark. Before striking out on his own, Fourtanier had worked for Dassault Aircraft where he had been surrounded by American consultants who swore by Unix. And so later, when it came time to select a system, Fourtanier went with Unix in the absence of any hard data on the performance levels of available operating systems where videotex was concerned. Developed in the Bell Laboratories in the early 1970s, Unix was the product of a search for an operating system that would provide a pleasant and efficient working environment in laboratories. Unix is a time-sharing operational system with some 100 utility programs that can accommodate an unlimited number of programs without becoming overly complicated. Unix's feature attraction, though, is the low cost of transferring programs developed in the Unix environment on to other computers, thanks to its C programming language.

Unix ranks among the *de facto* operating system standards and has since become a mainstay in data processing. But at the time, few people were familiar with it. Fourtanier was one of the few. He selected Unix, which as he tells it was responsible for his company's incredible breakthrough in videotex. While other host systems remained tethered to the Mini 6 or equivalent hardware and dropped out of the consumer videotex market one by one, CTL invested in hardware that operated under Unix, thereby enabling it to transfer its services on to increasingly powerful computers without making any software upgrades.

CTL was able to finance its own fantastic growth. Today Fourtanier is pleased to say that he never needed outside capital, even in 1985 when investments were heaviest, since he is convinced that his bank would not have granted him the necessary line of credit. Until 1985 CTL was alone in hosting communication services on big computers. The "conventional" systems houses had thrown in the towel and had carved out a niche in professional services requiring few simultaneous access points. Other outsiders caught up in the move to smaller hardware developed microcomputer-based strategies. Started in April 1981, the software house Softec adopted an approach round an eight-bit microcomputer, the PSI-80, compatible with CP/M software, and which sold, basic software included, for $13,000 taxes not included. Each PSI-80 could manage eight simultaneous access points. Integrated in the KOBUS configuration, 120 simultaneous access points would be available at a cost of 15 PSI-80s + $3,200 for the KOBUS coprocessor. There were many such schemes using Apple, Logabax, IBM PC, Thomson... and which resulted in a balkanization of the market.

During all this time, Fourtanier continued to forge ahead as his team got a better handle on the Unix operating system. Naturally, a number of coworkers had left to go into business for themselves, taking with them a portion of CTL's know-how. Still, Fourtanier was prepared for the third wave of videotex services foreshadowed by the mass-market strategies of *PL, Funitel, Libé,* and the *Nouvel Observateur,* which relied on megamachines with communication functions prevailing over computing power.

On-line electronic mail services came into their own. Fourtanier had opened his in March 1985 with 100 access ports. By late 1985 he had over 1,000 ports (or simultaneous access points) on hand, whereas most of his competitors had to settle for a few hundred. He had become the pivotal figure in consumer videotex circles. Requests for access to CTL poured in. The *Nouvel Observateur* service, which had run into problems with SGIP, went over to CTL, which was attracting a growing number of services and plowing every penny earned back into increasingly sophisticated hardware. Fourtanier remained loyal to Hewlett-Packard and in the course of 1985 bought 10 big computers to replace the "Model T" he had started out the year with. Other systems operators had gained a foothold in the big-capacity computer market. Énergie Vidéotex, oddly enough a Johnny-come-lately to the sector, announced for October 1984 a 1,200-port host system incorporating computers operating under Unix and installed by CTL.

In the year of grace 1984, Minitellers found themselves transported back to the dire days of "Asnières 22". Services were hard to reach and screens frequently flashed "Host busy, please call back". Minitel watchers, statistics at the ready, claimed that half of all calls did not get through. And when callers did finally manage to get through they were often "ejected" by the host. No one could put his finger on the exact cause of such a streak of bad luck. Perhaps the Teletel network was saturated. Or maybe the Transpac network, which had not been designed to handle so many connections and disconnections, was at fault. The hosts were perhaps not entirely bug-free. This last explanation struck observers as the most plausible, and the hosts did indeed turn out to be the culprits. But there was a myriad of causes (under-capacity of hardware, poor design of software for managing calls, hardware malfunctions, service downtime for program updates), and each host system was a case apart.

Today, yesterday's videotex glitches have faded from memory. Nowadays, besides the need to increase productivity to offset any decreases in electronic service prices, systems operators' biggest worry is to augment entry and communication capacity. There is talk of a possible fourth generation of hosts with 2,000 ports (they exist on the drawing boards anyway). Such big thinking is in response to the unabated surge in electronic mail traffic and the invasion of videotex by the mass media that need to reach as large an audience as possible at any given time. Lastly, it reckons with advertising needs in that, and this is not generally known, the first videotex advertising campaign that comes along runs the risk of exploding the host system storing the service in question!

And yet numerous experts are of the opinion that electronic mail services, which account for the bulk of traffic today, have reached their peak. True, they will remain on the cutting edge of service development but they may very well drop to second place behind the value-added information and communication services that are looming on the horizon and require much greater computing power than electronic mail services.

## Transpac, the indispensable

In 1982 Jacques Dondoux selected the French packet-switched data network, Transpac, which covered all of France. He had three aims in

view: to offer same-rate Minitel services to all callers, regardless of geographical location; to turn a profit on a professional data network that was far from being saturated; and to keep billing within the network.

The value of Transpac had already been brought home to Bernard Marti in 1977 when he decided to put on his videotex demonstrations at the Berlin Trade Fair without hauling his own computer to Germany. To that end, he hooked into the Transpac access point nearest the border in order to link up with his computer in Rennes. This was made possible by the CCETT team which had had to devise a prototype access point from scratch. Dondoux made his decision safe in the knowledge that the technical kinks had been worked out, even if the transition from prototype to industry-ripe product must inevitably give rise to a host of problems. And indeed CCETT engineers would encounter a multitude, so many in fact that the first generation of VAP (videotex access points), plagued by inconsistent performance, would call forth a second generation of access points, VAPI. The new model was the same, only more reliable and more intelligent, with more features, including the ability to manage a portion of the communication with the Minitel terminal, to feed information back to the host, and to accommodate in the short term a flat-rate schedule and in the long run a diversified rate schedule: the famous "multirate kiosk system" scheduled for the fall of 1987.

In its immediate aftermath, no one was really thrilled about the decision. All those promoting regional videotex services saw it as a stab in the back. The engineers, always very sensitive about what was being transmitted on their networks, took a dim view of the diversion of a system designed to distribute precious and serious information to transport mass-market communications. But the decision was taken because it was seen as the most "democratic". It furthermore lent videotex a national dimension: Services could be hosted on computers located in the farthest recesses of France without being penalized.

The only problem was that France Telecom had not expected such a sudden surge in consumer videotex traffic. By late 1984-early 1985, as the kiosk system gradually moved to cover the country, Transpac, a France Telecom subsidiary, was deluged by requests for access points and was compelled to place a quota on them. It limited the number of access points each service provider was entitled to, a move that was to no one's liking, but a situation that was to subsist for some time. Because the kiosk

system was reserved for the press, Transpac access points were begged for like so many newspaper registration numbers, which are bought and sold on the black market in France. Those who wanted to play by the rules took a number and waited to be served by Transpac; they also made arrangements to have a magazine or newspaper in their group. And so the laws of supply and demand, with the concomitant share of fast dealing, took root in the shade of the monopoly tree.

For the first five months of 1985, videotex was a veritable cornucopia. Starting in April, anyone with a Minitel could access 25 billion characters on-line. The electronic directory was receiving over 100,000 calls a day, four times as many as the number (12) for directory assistance, and processing up to 2,000 at a time. Sytem made a spectacular recovery thanks to the beneficial effects of kiosk charging. G-CAM and TF-01 (a subsidiary of the TV network, TF-1) launched *Pluriel,* the first videotex emporium. The *Nouvel Observateur* knocked one out of the park with the opening of its on-line rendezvous service, *Aline. Libération* had recently changed host system to shift into a higher gear. In a span of two years, over 1,000 services had sprung up. 5,000 jobs had been created. France's PTT had invested $500,000,000 in videotex. The public adjusted well to the kiosk system and used it without hesitation: 11 million calls a month were recorded for 800,000 Minitels in operation.

There was electricity in the air. Not a day went by without a new product being unveiled. Not a newspaper that did not contrast French success with foreign failures. The Minitel had definitely been adopted, and was used for everything: to converse, make inquiries, play games, purchase merchandise. It was a known fact that over 30 % of those with a Minitel did not yet avail themselves of the little machine, but amidst the prevailing optimism this was simply regarded as a sizeable market waiting to be captured.

And then on June 18, 1985, the Transpac network broke down. Dominique Commiot in the magazine *Sciences et Avenir* commented the event thus: "For two months, in this column, we have been describing the wave of madness sweeping across a France bitten by the videotex bug. Since then, the phenomenon had only increased in intensity, so much so in fact that on June 18 those hundreds of thousands of Minitel fanatics knocked out Transpac".

Transpac is the flagship of French datacom technology. Operational since 1979, it was the world's first public packet-switched data network

and remains the most powerful. It was one of the major reasons that the X.25 standard was adopted worldwide, a format that enables computers the world over to communicate with one another. In July 1985 Transpac consisted of 28 automatic switching systems connected by ultra high-speed links. Serving 25,000 subscribers, it is guilty of only one transmission error for every 10 billion characters transmitted. Transpac conveys 400 billion characters per month, whereas the two largest American networks, Tymnet and Telenet, record traffic levels of 100 and 50 billion characters, respectively. Transpac has made of SESA, who designed it, the world's packet-switching leader.

How could a network such as Transpac simply give up the ghost one fine day? The French were dumbfounded to discover that their high-tech did not rhyme with perfect and that they were so dependent on telecommunications networks. Contrary to what people claimed, however, Transpac did not blow from overloading. The network was not saturated and the volume of information was not on the hot seat. Calls from Minitels accounted for 40 % of calls to Transpac, but only for 25 % of the data transmitted. The cause of the breakdown was elsewhere. It lay not in the amount of data transmitted but in the way people used the Minitel. Minitellers, and especially devotees of on-line electronic mail services, tend to access a service just long enough to see who is there, and then zap over to another in search of better action, and so on. In short, they drop in for a visit, take a look around, and move on to another service to see whether the grass is greener.

In terms of the technology involved, this sort of activity is managed by the software that controls the automatic switches. And it was the culprit. It must be borne in mind that this type of software is extremely unwieldy and contains several hundred thousand instructions. Most important, though, it is impossible to simulate the reactions of such software under actual operating conditions, a drawback compounded by the fact that in real life a snowball effect ripples through the network. For example, when callers cannot get through to a service they keep keying in the number. The automatic switch is thus deluged by a growing number of calls that it is increasingly hard-pressed to handle. The number of in-coming unanswered calls increases until the other automatic switches to which they have been automatically rerouted are in turn congested, and so on, until the heart of the network is saturated. This snowball movement must be stopped cold.

With that in view, France Telecom immediately set up a crisis management center under the responsibility of Jean-Claude Mailhan, production manager in the house of Telecom. They assigned top priority to relieving Transpac's data load. Professional service subscribers were provided with leased lines to transmit their data — on Transpac's tab — and Minitellers were asked to give their favorite toy a rest. They next went about restoring the network. The snowball effect had been stopped and the software debugged. Taking advantage of the summer slow season to recuperate, Transpac was ready to face the world again in the fall. France Telecom took a few normal precautions to restore the network. It temporarily reserved access to the kiosk system to the press — a move designed to appease it. It slowed distribution of the Minitel. Lastly, it obtained certain guarantees on the quality of the services offered by host systems by issuing a "label of quality". Transpac traffic levels had returned to normal before winter. And France Telecom compensated service providers for the losses they had incurred by remitting to them a sum equivalent to their income for the two months preceding the glitch. It was the least it could do.

The price of success, as it were. The breakdown of Transpac in June 1985 was a blessing in disguise. The fact that it occurred just before summer was already a godsend, but that it happened before any structural damage was possible and, above all, while Minitel traffic was still within the realm of the controllable was an extraordinary stroke of luck. What if Transpac had broken down nowadays with Minitel's four million connect hours per month! It was so good that it was transformed into a publicity stunt! Some of Dondoux's and Mexandeau's staffers realized that opportunity was knocking at the door. They encouraged Telecom engineers to go public with the story, admit that they had hit a nasty snag, rather than slink about sheepishly as if they had done something wrong. But above all, they were asked not to rekindle the controversy about whether saucy videotex passages should be mixed with the serious data transmitted by the Transpac network. After some slight hesitation, the Minister made it clear that a public utility had no business poking its nose into contents. After all, the postman does not open the mail!

Once again, though, in its treatment of the Transpac story, the press preferred brass knuckles to kid gloves. "The further it gets along, the less it gets along", was Pascale Monnier's headline in *Ouest-France.* "Minitel, a summer of slim pickings", was the storyline in l'*Humanité*. The *Parisien*

did not pull any punches either. It took advantage of the situation to publicize its own *PL* service and lashed out with "The Administration torpedoes consumer videotex and passes the buck". Invoking negligence, shortsightedness, intellectual muddle, and a mind-boggling demonstration of incompetence (sic), the article concluded that "the Government and Administration have torpedoed French technology in its entirety, along with its image vis-à-vis foreign competitors... the Administration is incapable of seeing through the technological challenge faced by French engineers, researchers, and businessmen". This article stung the PTT Minister, who was personally incriminated by the *Parisien*. And yet no one knew better than he how much the development of the *Parisien's* videotex service had cost France Telecom. He accordingly penned a few choice words to set the record straight, listing all the financial and material assistance that France Telecom had provided the *Parisien*. Which may explain why, well before the other papers, the *Parisien* headlined on July 17, 1985: "Videotex: back on track".

Still, many journalists took the incident in stride, with a dose of philosophy and humor. "Minitel takes a vacation" was the headline in the *Tribune de l'Économie*. And then there were all those who, deep down, were reassured to discover that technology had its limits and that an insignificant thing like the videotex lonely hearts club had done in the world's most powerful data network. They chuckled with malicious glee at seeing the Lilliputs tie down Gulliver.

Abroad, the Transpac outage would do more to publicize the enormous success of Minitel than the months-long efforts of the Intelmatique Company and its president Georges Nahon, who had already touched base with all the trade journalists. From then on, articles on the incredible phenomenon of French videotex were to abound, especially in the Anglo-American press.

# Services by the packet-ful

Who among the founders of videotex can honestly say today that they had expected things to turn out as they did? Who among the men and women who had concentrated their creative energies on developing complex and comprehensive information services could have predicted

the extraordinary breakthrough of today's small and varied videotex services with their summary, yet to-the-point, contents? Who could have imagined that on-line electronic mail services would assume the proportions they have, accounting for half of all consumer videotex traffic. And lastly, who would have thought that the media (television, radio, print) would pounce on videotex in an effort to establish closer, more interactive ties with their audiences?

None of this was in the cards. And what is more, the system, as designed, does not really lend itself to person-to-person communication. It is better suited to interrogating data bases. And so it was in the shadows that users, encouraged by the Gretel episode, were to contrive to divert the new medium from its initial purpose and make of it an object of communication. And yet one needed only take a close look at the results of the Vélizy test to realize that something was afoot. That something had not escaped the attention of Louis Mexandeau, who in his address inaugurating the electronic directory in Ille-et-Vilaine cited the on-line electronic mail service as one of special delight to the Minitellers in Vélizy.

And yet France Telecom's engineers were averse to acknowledging as fact a state of affairs that did not jibe with their version of reality. They objected to their system being used to host a real-time electronic mail service for exchanging sweet nothings. Basically, they felt that such a use was not dignified enough to be featured on an infrastructure of Transpac's caliber. The same story had unfolded in the early days of the telephone, which was accused of being a handy tool for arranging lovers' trysts. They could not bear the thought that videotex would go down the same road. They even went to great lengths to juggle their statistics in an effort to mask the magnitude of on-line rendezvous service traffic. And they took their strategy to the limit: The 1984 directory of videotex services listed only three real-time electronic mail services — and they were all professional. The others, which accounted for the bulk of kiosk traffic, were concealed with a delicate sense of propriety under other headings such as 'press', 'information', and 'games'. This same intolerance for anything they felt smacked of flirting had led them to cut short the on-line chat network that had enjoyed considerable success in the city of Montpellier. Prospects for increased traffic often carry little weight in the face of conventional morals.

On the other hand, outsiders may also underestimate the feeling of

irritation among engineers who have to stand by while a pet project they have worked so hard to see through succeeds along lines they had not anticipated. Their reluctance surely derived from a process of identification with the object, which explains that they were loathe to accept the handiwork of others where their "baby" was concerned. As a sort of consolation, many Telecom engineers regarded such "excesses" as a childhood illness. Once the medium had grown up, they reasoned, it would come to its senses.

The pride they felt in accomplishing what they had set out to do, especially where the electronic directory was concerned, and the satisfaction they could take in watching new services appear every day on Teletel did relieve their malaise somewhat.

## The surge of on-line electronic mail services

Gretel is the star of on-line electronic mail services. First because it was the first and second because it was given legitimacy by Eddy Cherki and Marianne Lamour, who thought the Gretel story interesting enough to warrant one hour of air time in January 1985 on the FR-3 TV network. Originally entitled *"Minitel, mon amour"*, it was renamed "Ulysses calling Maldita" on the grounds that the station had an image to uphold. For an hour, French viewers were able to watch and acquire an understanding of the joys of interactive electronic mail. Ulysses had been conversing with Maldita for months — via Minitel. They had never met. His thrill was to meet her on Minitel and talk endlessly into the night, sometimes until dawn. For the purposes of the show Maldita discovered the man behind the pseudonym. We do not know whether they married and lived happily ever after!

But thanks to this one hour of TV exposure, communication via Minitel emerged from under the execrations that moralizers of every description had heaped upon it — until the next onslaught, that is. Maldita and Ulysses were just everyday people; there was nothing weird or bizarre about them. Moreover, at the time, 2,000 other people just like them were talking to each other on Gretel and, until the kiosk system — and other on-line electronic mail services — opened up, people from all over France were lining up to access Gretel. The system's attraction was such that Michel Landaret had to limit the duration of calls; those who remained on-line too long were automatically cut off.

Today the working principle of on-line electronic mail services is so well known that there is no need to expand at great length on what made Gretel special. Its most attractive feature at the time, and one that has since found widespread acceptance, was the use of a pseudonym and the fact that the pseudonyms of the other callers on-line were displayed. Should a caller decide to leave an on-line electronic mail service for a stroll through the information services, for example, he or she will be contacted in the event a message arrives, which can be answered or not. On Gretel no subject is taboo; callers can talk about whatever they want, to whomever they want, at all hours, night and day. They can look for soul mates, converse with strangers (with no ulterior motives), or hook up with their usual chat partners. By changing pseudonyms, callers can indulge in mask games and assume various identities. On Gretel and her future little sisters, callers are there without being there; they can see without being seen, play at being someone else, and venture into the unknown — at no risk. They feel protected by the screen and their anonymity.

Adventurers poured through the breach opened up by Gretel, with varying degrees of success. Gretel worked well and, with the kiosk system, there was money to be made, so, went the argument, why not take a chance? Many apparently shared their thinking, because a wave of on-line electronic mail services hit the beaches in 1984-85, at times under comical circumstances.

Such was the case of Doctors François Lagarde and Daniel Hallaby, who found themselves in July 1984 at the head of an on-line electronic mail service, almost in spite of themselves. Both felt it would be useful for doctors to have at their disposal an electronic medical information service. Their basic idea was to offer doctors a no-fee service that would be financed by pharmaceutical companies. Minitel was still relatively unknown, and the companies were not about to be wheedled into sponsoring the operation, so the doctors set up the service themselves with no outside financing. One day they happened upon the makers of the first French microcomputer, the Goupil-3, invested $17,000 in one, outfitted it with a dozen access ports, set it up in a basement in the south of Paris, and started up the service. Six months later, they were on the verge of panic: There had been so few calls that they were about to close up shop. In desperation, Lagarde opened an on-line electronic mail service. A stroke of genius! Those who wished to pay less (*SM* is accessible

through 36 14, the number for accessing professional services) arranged to meet on *SM*, which as no one knew did not signify "sadomasochist" but *serveur médical* or medical host. The two founding fathers bought another Goupil, moved into different quarters, and finally obtained authorization to access the kiosk. Then misfortune struck: Over a weekend the microcomputers had been overloaded with calls and had literally melted down. Everything had to be replaced. Four months later, Lagarde revived *SM*, this time with 48 access points. Today the service is stored on ATT-Olivetti computers, and although the hardware has changed, the service has remained as fresh as ever. *SM* offers four forums: Ankar, Bahia, Capri, and Delhi, which can handle 5 calls at a time, no more. *SM* was a new twist on the concept of on-line electronic mail that was all the rage in 1985. With 40,000 hours per month, *SM* still occupied seventh place among consumer videotex services in the spring of 1986.

*STel* appeared on the scene at the same time and can rightly be considered Gretel's little sister. At the beginning of 1985 it was virtually impossible to get through to *STel*. Calls came in from all over France, and the service was constantly saturated. *STel* was just as interactive as Gretel (it had adopted the same features from the outset), respected no taboos, and was a prime example of an on-line electronic mail service. By keying in MSG or AMI from anywhere along the network, callers had six lines of screen to correspond with the persons of their choice.

With such an access code, *Sextel* makes no bones about its intentions, even though owner Cyril Jubert claims to sell the stuff of dreams, not sex. On the verge of bankruptcy in December 1985, the service now ranks among the most sought-after. And yet sensing the imminent end of easy money in on-line electronic mail services, *Sextel*, despite its name, is currently diversifying to other, "softer" on-line rendezvous services, such as *Tchips* or *Chipy*.

After opening their videotex information services throughout 1984, newspapers could not turn a blind eye to the marked success of on-line electronic mail services. Although they had battled throughout 1980 for the principle of editorial responsibility, one perfectly alien to the world of real-time electronic mail services, and had obtained in return a number of distinct advantages on the new medium, they were tempted by on-line communication services and the profits to be made from them. Slowly but surely, they penetrated the market. At first they treaded delicately by proposing hybrid services combining the electronic mailbox and the

It's like the comic strips, and there's dialog, but it's still videotex — second-generation videotex using the "alphageometric" display format. The "mosaic" days are over — admire the fine lines and rich color range.
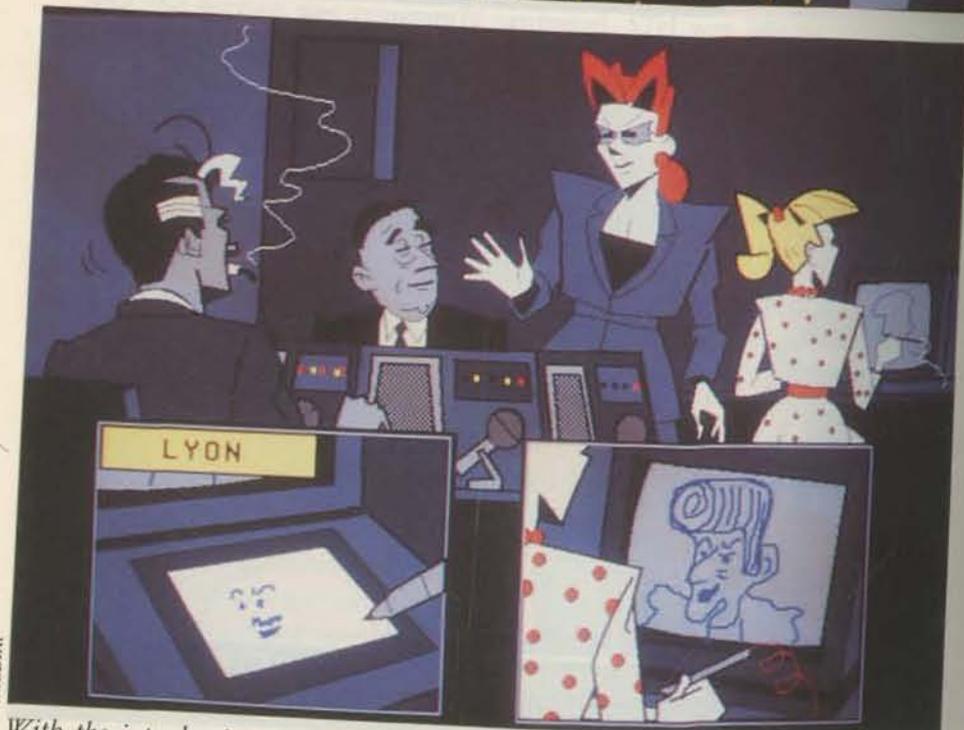
With the introduction audiovisual techniques, audio graphics videotex has hit the scene, combining top quality computer graphics with digital sound sequencing.
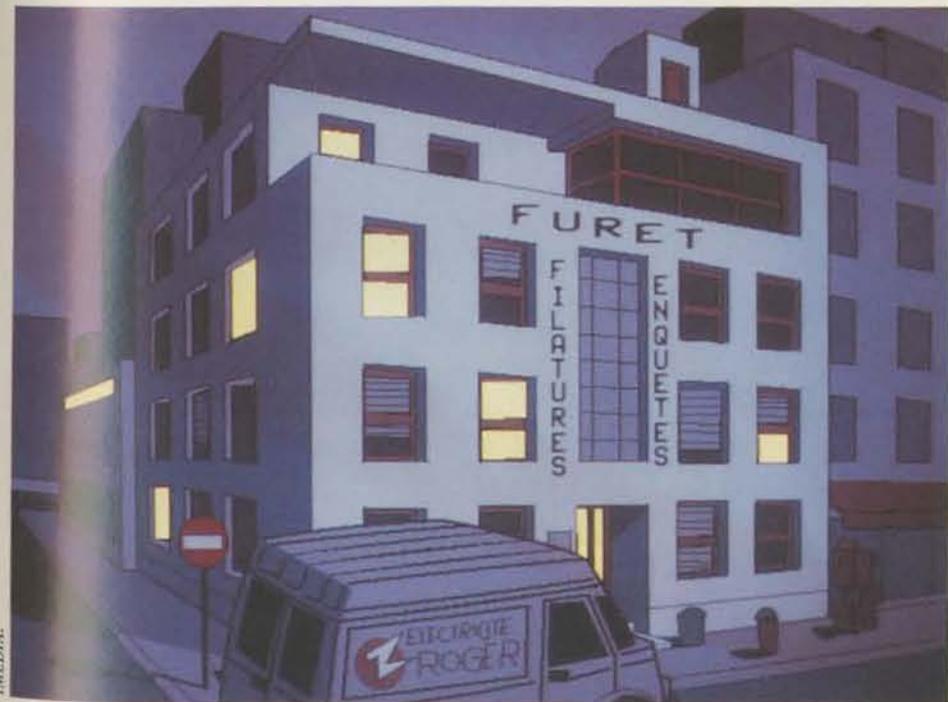
The "Mysteries and Office Automation" training program transports you straight into gangsterdom — follow the sleuths of the Furet detective agency, each investigation leading you to use the right electronic office materials.

Go all out on the Paris-Shanghai car rally! Slip into Denis Roman's shoes, and you're
off! But watch out — you've got a long way to go and the road is treacherous!
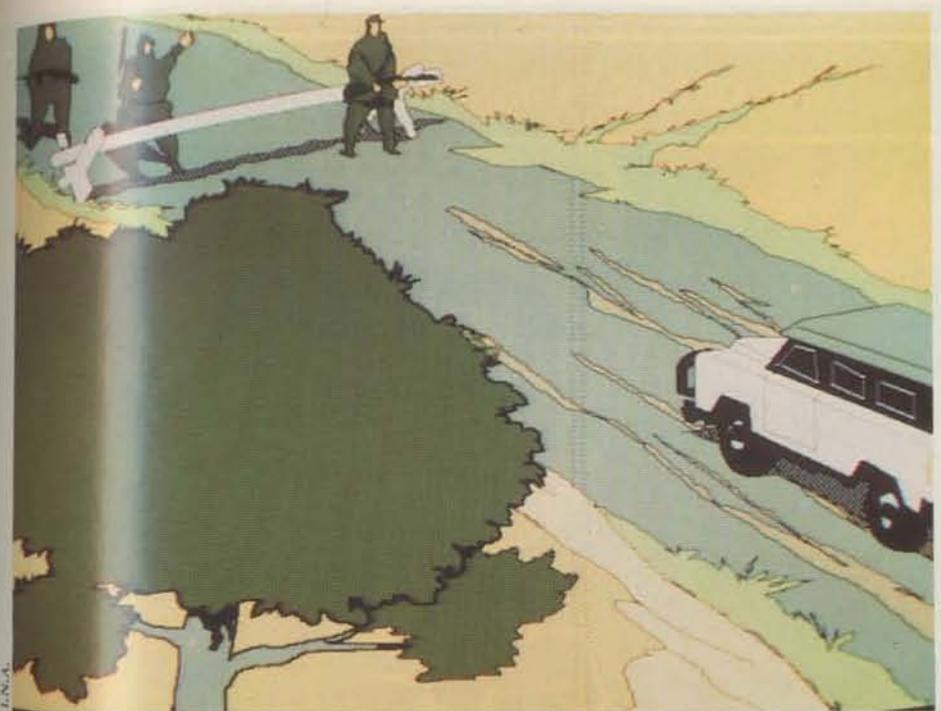
Canal Plus, France's pay TV network, ran a week-long early morning special last
winter. Thousands of lucky viewers played at this audio graphics videotex adventure
game with one eye riveted on the tube and the other on the Minitel.
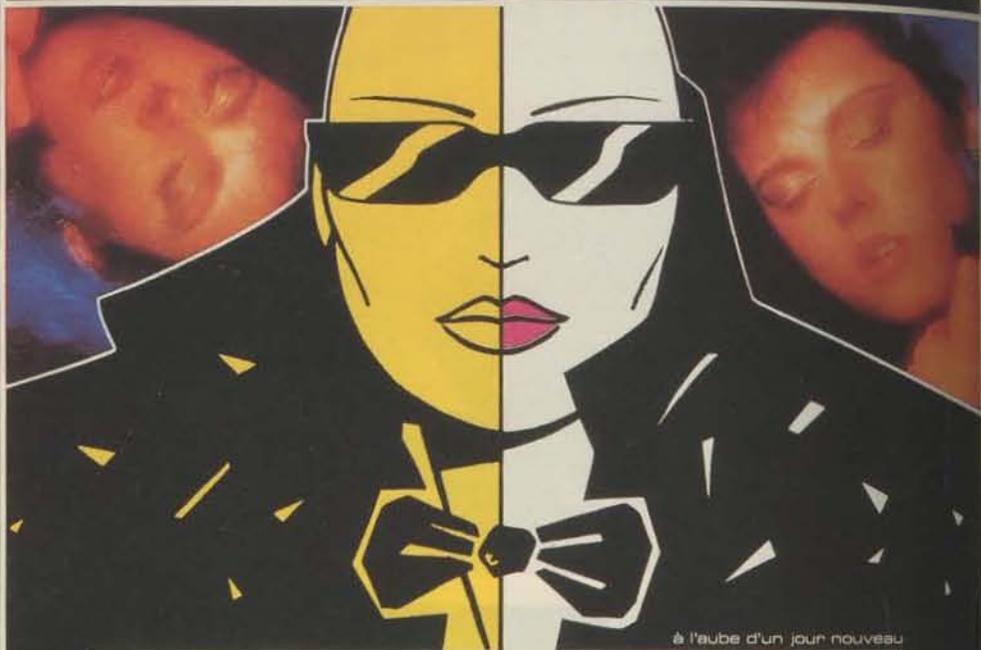
*Posters like this abound in Paris, and the controversy surrounding on-line rendez-vous services is far from over.*

*This face-painting by Serge Diakonof fully conveys the fact that the fine art of Minitel conversation consists in changing identities like so many masks.*
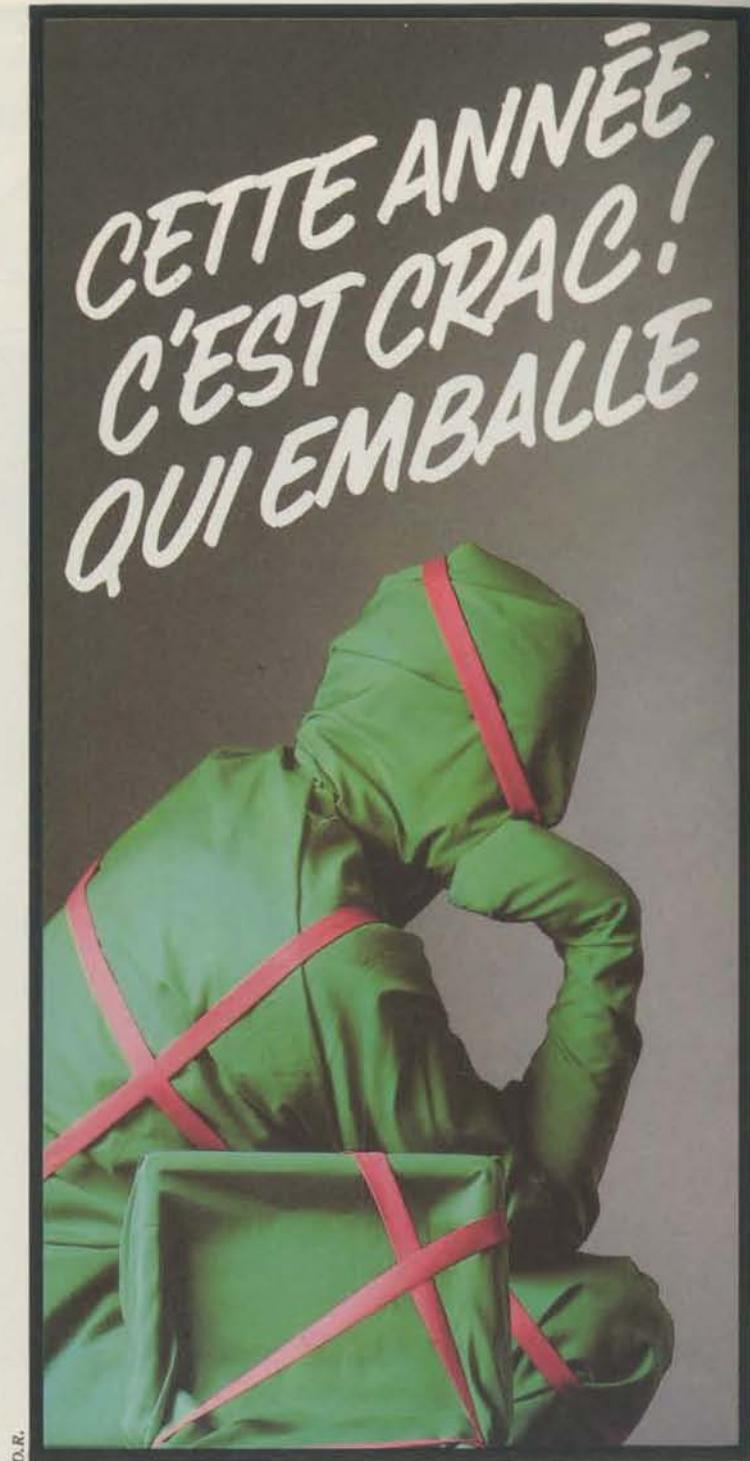
*Shortly after Cristo had startled Paris by wrapping up its oldest bridge, the Pont Neuf, Crac's videotex crew followed suit with this Season's Greetings card: "Wrap' em up with Crac!"*

on-line chat service. Messages left on the service of the newspaper *Dépêche du Midi*, for instance, could be read by all, but the answers could only be seen by the person who had left the original message. In addition, communication was organized by subject matter (bridge, computers, literature, and so forth). The caller was assigned a code that provided access to the confidential information received. But despite the system's code-based structure and compartmentalization, the "rendezvous" messages quickly spilled over into the other boxes. The users of Minitel had *no* intention whatsoever of going along with a system that tried to impede their freedom of circulation.

Everyone would have sworn that the newspaper *Libération* would hit it big in videotex, remembering the newspaper's risqué "Chéri(e)s" lonely hearts classified section. It was indeed among the first to take the plunge, but not without putting a toe in to test the water. Callers to *Libé* could read and write love letters, make suggestions, and contact over a dozen privately-owned radio stations. Once again, though, Minitellers decided the service was not interactive enough and proceeded to appropriate the system for their own purposes. They used the classified ads section to correspond with other callers who had called in at the same time. Among the services offered by *Libé*, one, the Videotex Comedy Theater, heralded the great videotex developments to come. By assuming the personality of one of the characters (Lady Dee, Miss Plume, Professor Mortus) callers could read that person's correspondence, knowing full well that today's Miss Plume was not necessarily tomorrow's.

A computer trade paper, *le Monde Informatique,* opened an electronic suggestion box under the code LMI. The *Parisien* modeled its service on the Vélizy electronic mail/mailbox system, replete with password and breakdown into fields of interest. In short, nothing new. The *Nouvel Observateur,* however, made a fantastic breakthrough with *Aline.* Within only a few months of its launching, it had become *the* on-line electronic mail service. As the ad said, "Aline is terrific"! Her more luscious sister, *Jane,* launched a year later, would be just as big a hit.

Then there were those that were not newspaper and magazine spin-offs and that were not specialized, like *SM*, in real-time electronic mail. This was a new breed of videotex publishers offering either information services, like *Crac*, or transaction and comparison shopping services, like *Téléprix,* or specialized information services, like *Elletel,* whose target audience was women. What set these publishers apart was

their freedom of action and their enthusiasm for the medium. Unlike a big newspaper, they had no image to preserve and were free to try out new ideas in videotex without worrying about any potentially adverse effects on other activities. In fact, videotex was often their only occupation. They aimed to build a full-fledged on-line service sector and to rank among the best it had to offer. They would be the driving force for innovation in real-time electronic mail.

When he started up his *Téléprix* service in 1984, the last thing on Hervé Delisle's mind was on-line electronic mail. His aim was to provide consumers with an on-line information service, which he called the first "Videotex Guide to Bargains in Paris". Granted, he introduced a few contests to enliven the system, but he gave no thought to real-time electronic mail until later. In 1985 he came out with a nest of on-line electronic mail services under the access code *AZ*. On the first level there was an on-line chat service by subject matter. On the second level, a private on-line electronic mail service accessible with a password. As to the third level, there reigned unbridled interactivity "à la *Gretel*". Callers wrote whatever they wanted to whomever they pleased. *AZ* is still going great guns, and its promoter is in the process of redefining his strategy around a videotex mall concept. No one can say whether Delisle is returning to the basic premise of his comparison shopping service, *Téléprix*, or preparing to move with the market trend toward more utilitarian services, or both.

*Crac's* services had likewise become more communication-oriented. Cécile Alvergnat had dropped the quality-of-life angle with which she had debuted in videotex for a strategy involving not only more "practical" services, but also greater emphasis on communication. She had always contended that Teletel was a communication medium and so it came as no surprise that she was one of the first to promote an on-line electronic mail/conversation service that would be as free-wheeling as callers would care to make it. What mattered to her was uncensored communication using the finest available techniques. She selected the easiest-to-use software and quickly shot to the top 10 on the videotex service charts, where she remains to this day. Billing itself as the specialist of "live" videotex, *Crac* owes over 80 % of its traffic to on-line electronic mail services.

The story of *Elletel* has all the ingredients of a fairy tale and yet it is true. In 1984 the Women's Information Agency, the AFI, got involved in videotex to offer services for women. Available was information on relationships with men, contraception, feminine hygiene, rape, but also on baby sitting, shopping, bartering, news, and data processing. All of which was presented with the woman in mind. *Elletel* further offered a real-time electronic mail service "for women" under the evocative code name *Amours*. Women were invited to talk about their problems, exchange experiences, and so forth, until the day that this women-oriented service was taken by storm by a masculine force that overwhelmed *Amours* and shut out the women. It is the only instance in the history of videotex that the women promoters of an electronic service for other women found themselves excluded from a service they had set up, but would pocket the proceeds from an operation that was all in all very lucrative.

The turning point in the development of on-line electronic mail services was thus negotiated by a host of outsiders who had no other activity to fall back on. There were many of them and we could just as well have mentioned *Reso* and *Anti* as *STel* and *AZ*. Their hallmark was to move in lockstep with the unmistakable surge in demand of 1984-85. As the communications applications involved are semi-automatic and manipulated by the users themselves, there were no major operating or design problems. The situation changed, however, as users became increasingly demanding with respect to service quality, i.e. access times, response times, ease of circulation, and so on. The outsiders went to work on enhancing service quality to meet the increasingly tough competition from new arrivals head-on, including representatives of the print medium, e.g. *Libération* with *Turlu*, the *Nouvel Observateur* with *Aline*, the *Parisien libéré* with *Plaisir* and *Câlin*, the Hachette-Fillipacchi Télématique Consortium with *Union* and *Parents*. They fine-tuned, modulated, and multiplied their approaches to produce today's host of available conversational forms on videotex, e.g. forums, soapboxes, grafitti walls, blank walls, confessionals, drawing rooms, and on and on. In short, they offer real-time conversation via a screen in all manner of places and environments.

In its own inimitable way, the French PTT followed suit by opening *Mestel*, the first-ever large-scale public on-line electronic mail service in the southern port city of Marseille. It announced the colors from the outset: The system was designed as an alternative to the telephone, the mail, and the telex. A serious tool for serious people, as it were. The

project has enjoyed well-deserved success, and French Telecom is preparing to expand the system, which combines the electronic directory and on-line electronic mail. Callers wishing to send an electronic letter or message will find the mailbox number of their correspondent next to his or her name in the electronic directory.

Controversies surrounding on-line rendezvous or chat services flare up regularly. They fuel conversation at dinner parties, in the office, at home. Those violently opposed take the PTT Minister to task, raising the specters of prostitution, rape, and the resulting sink of corruption. It bothers them that the Minitel is being used to promote behavior they condemn. In September 1986 the holier-than-thous mounted a large-scale campaign against on-line rendezvous services. It was down with the "rose"! (Videotex was first dubbed "rose" or pink in 1981 because of the newly arrived left-wing government's avid promotion of it: The rose is the symbol of France's socialist party. The color "rose" or pink is also associated with amorous goings-on in French, and so the Minitel had gone from being "rose" because of its left-wing affiliation to being "rose" with sexual overtones.) And so the PTT Minister got involved; the chairman of the commission for monitoring videotex experiments announced that a task force would be set up; and the association of Teletel service providers took the same line.

This sudden, negative burst of interest in on-line rendezvous services was due to a rape purportedly committed "through Minitel" and to a prostitution ring that was supposedly started on the medium. But there is no point exaggerating! Since the dawn of time communication has been used as a vehicle for sex. This should come as no great revelation; it is common knowledge that the phone has long served the same purpose (Paris' renowned tarts of the turn of the century, denizens of the Bois de Boulogne, were among the first to subscribe to the telephone!), but that the telephone is put to such use is a fact of life and does not upset many. It may be that videotex is considered something of a minor and in need of protection from those who would "deprave" it. If people really want to clean up prostitution, there are plenty of less intangible places to start!

Devotees, on the other hand, touted the genius of the service, invoked society's liberation and the sheer number of exchanges, and praised the free-wheeling sound of the medium. They were delighted that it rehabilitated after a fashion the art of writing and modernized it by legitimizing onomatopoeia and abbreviations. In their eyes, the Minitel is something of an instrument for making the written word live. They furthermore appreciate the medium's potential for alleviating the rampant solitude of our modern societies.

The PTT Minister tried to soothe ruffled feathers with a few choice words. However, the problem was rooted not in the essence of such services, but rather in the way they were publicized, in the same way that publication is unfettered, but posting regulated. And since this state of affairs was perfectly in keeping with the legal framework governing Minitel (since passage of the law of July 1982, the same as that regulating publishing), France Telecom was well advised to avoid becoming entangled in such a controversy. As a public service, its purpose is to distribute messages, not censor them. There are censorship laws empowering the authorities to act if they see fit to do so. In fact in December 1986 and March 1987, the Minister of the Interior, Charles Pasqua, invoked a 1949 law on the protection of minors as grounds for banning the advertising of sexually explicit magazines. Pasqua's approach to censorship may not have been the most appropriate but would appear to have won the support of Parisians, who had grown weary of the proliferation of erotic newsstand posters.

For professional and for that matter amateur Minitel watchers, the problem is of an entirely different nature. Marc Guillaume, professor at the University of Paris-Dauphine, is a watchful observer of the Minitel, which he sees as the finest example of the communication tool of the third millenium. For him, the fact that conventional morals may be a bit rattled by the new medium matters little; what interests him in the Minitel is to see in what ways it foreshadows the new forms of communication and the new behavior patterns of the coming century. It is his feeling that the Minitel is insinuating us into what he calls the "spectral society", where the individual, protected by screens and relieved of responsibility by anonymity, will be able to communicate without revealing his or her identity.

## The media pounce on the Minitel

As long as no system for billing videotex services had been introduced and any return on investment remained an abstraction, videotex initiatives lived and died with France Telecom subsidies. A

handful of outsiders and municipalities were the exception to the rule. Back in early 1984, though, the French broadcasting scene had not yet changed much. Since passage of the 1982 law on TV and radio broadcasting, local privately-owned radio stations could broadcast legally, but they were barely able to keep afloat for lack of advertising revenue, which was still prohibited by law. Once they were allowed to advertise, as a result of various forces at work and the realization that no medium could long survive on volunteer help alone, local radio stations would be prepared to use videotex to establish ties with their listeners. By late 1985 the move was in full swing, peaking in the spring of 1986. Already in February 1986 'Radio France', 'Radio Music', 'Stéréo', 'Radio Aline', 'N.R.J.', 'R.M.C.', and 'Sky Rock' all had videotex services. 'Sky Rock' service, originally stored on Maxitel, a system known for hosting the high-ranking services of *Antigel* (communications, including on-line electronic mail) and *FNAC* (event ticketing, merchandising catalog, among many), is currently chalking up 100,000 hours of connect time per month. Its new host system, Téléfun, with its 16 different access codes, was the fifth ranking videotex host system in terms of connect hours as of June 1987. During the month of March 1986, 20 new radio stations opened electronic services offering information, games, coverage of various events, rock-and-roll hit charts from many countries, and — guess what? — on-line electronic mail services.

But back in early 1984, it was the "conventional" media that were getting into the act. The publishing groups Hachette and Fillipacchi set up a consortium, Hachette-Fillipacchi Télématique, for research, development, and operation of consumer videotex services. The consortium was headed by Roger Lajus, a videotex leader who had made a name for himself back in the Vélizy days by creating the videotex version of one of Paris' events calendars, *Pariscope*. A few months later, the TF-1 TV network set up a subsidiary, TF-01, which it turned over to Jean-Marc Vernier, with a strategy that called for ventures combining data processing, videotex, and television. In October of that same year TF-1 launched television's first electronic information service. It served up news bulletins, TV schedules, practical information, poll results, and TV-related games.

Audiovisuals and television now form an effective team. The project development director of the Antenne-2 network, François-Henri de Virieu, had analyzed the process correctly. His political "talk show",

*l'Heure de Vérité,* where a political figure is interviewed by three successive journalists, opens and closes with the results of polls conducted on the spot via Minitel. Virieu's example was imitated by others, such as the TV magazine *Thalassa,* which was launched in April 1985 and originally targetted only the 10,000 members of the Thalassa Club. Whenever it covers any kind of special event through videotex (sailing regattas and the like) it is regularly saturated by calls from non-members. The same rush greets the Paris-Dakar road rally, the Route-du-Rhum sailing race, and many other events covered jointly by television and videotex. FR-3 actively promotes the use of videotex, together with a policy of combining various media. It may invest little, but FR-3 gives service providers (CTL for the Ile-de-France region, Gretel for Alsace) opportunities to come up with novel combinations that are guaranteed to produce some kind of reaction on the air that at times overload their partners' host computer with calls.

It was around this time that the French heartland came to know the famous truncated kiosk call number. Thanks to television, the general public was initiated at no cost to the kiosk system in particular and videotex in general. The anchors of TV news programs would frequently exhort viewers to key in 36-15 + Thalassa, or + FR-3, or + TF-1 to find out more about any of the features seen on the air. And it happened none too soon, because France's wire service, the *Agence France Presse,* decided to broadcast its dispatches using the videotex format. In the process, the conundrum of videotex news bulletins was solved for service providers, who for a monthly subscription fee of a little over $800 no longer needed to juggle with their texts but could simply "toss out" A.F.P. dispatches as they arrived.

When France Telecom's very active Commercial Affairs Division manager François Henrot left to go to the Compagnie Bancaire in March 1985, he had every right to be pleased with what he had accomplished. All the communications groups were involved in videotex. The regional dailies, with which he had crossed swords on a number of occasions, were making strides in videotex know-how. The publications of the Hachette-Fillipacchi Group, those of the Perdriel Group, and the magazine *l'Événement du Jeudi* were all present and accounted for. The TV stations were also involved. The advertising sector, still a bit behind the times, debuted with a videotex information service on magazines specialized in classified ads and on the ads themselves, promoted by Contesse Publicité.

And last, but not least, the local privately-owned radio stations would soon climb aboard.

A great believer from the outset in the Minitel's transaction potential, Henrot witnessed the surge of the banking, stock market, and consumer credit services. With the recent opening of *Caditel* and *Télémarket* (the videotex supermarket), Henrot believes he has caught a glimpse of videotex's ultimate application: daily shopping by Minitel.

But he did not succeed in opening up the kiosk to operators other than the press, and radio and TV broadcasters and he was unable to prevent the increase in the telephone base rate — and for these reasons he felt he had to resign. It was his belief that France Telecom's pricing policy — since modified — was unsuited to putting videotex or any of the other services being developed into orbit. Two years after Henrot's departure, the long sidestepped issue of pricing would be settled in such a way as to promote development of a wider range of videotex services. In videotex, as in the marketing of consumer goods, it is not healthy to cling to a one-price strategy, but rather to base prices on the features each product offers. But there are problems with price ranges in a new market whose elasticity and reaction to change are unknown quantities. After much discussion and shilly-shallying, the multilevel kiosk system, which offered service providers the possibility of setting their prices at various levels, took effect in the fall of 1987. It was introduced to lend credibility to the somewhat vague notion of a videotex shopping arcade.

# the malling of videotex | 4

Shopping malls are a mixed bag. In France — Paris to be exact — they have their big-name department stores including such standbys as Darty, FNAC, and Galeries Lafayette, in whose orbit a myriad of smaller stores revolve, drawn by the masses that frequent the big emporiums. Shopping malls also have their predators and their private militias, their hostesses and their foreign visitors in search of "made in Paris". They have their "mallies", those who come in from out of the cold for a little warmth, those who wait hours on end for friends to catch a flick, those who lose themselves in the crowd to forget their loneliness. There are also people in a rush who have timed their purchase to the nearest second. And then there are the staunch mall-goers, to whom it would never occur to do their shopping elsewhere.

The shopping mall is a microcosm of contemporary society, and it is no accident that the recipe clicks every time. The rate at which space is snapped up by businesses despite the high cost of leasing goes to show that they are getting their money's worth. Then there are the beaming customers who, whether busy or idle, whether loaded down with packages or empty-handed, are all happy to be there.

Shopping malls did not spring up over night. In France, the halcyon days of scattered retail shops were seriously disrupted when Mr. Boucicaut, originator of the Bon Marché department store and model for the main protagonist of Emile Zola's novel, *le Bonheur des Dames*, introduced the concept of what was known as "modern commerce". His

lead was followed by the founders of Paris' large department stores, *Grands Magasins du Louvre, Bazar de l'Hôtel de Ville, Samaritaine,* and *Trois Quartiers.* What a torrent of spleen was unleashed as a result! An outburst that would be replayed decades later when the first supermarkets went up outside city limits in the 1960s, and videotex appeared on the scene in the 1970s. It was argued that such new departures would rend the social fabric, upset the harmony of cities and of life in general, wreak havoc with time-honored values, dupe consumers with apparent good buys, raise them above their station in life, and so forth.

The only well-grounded criticism to be levelled at this new form of trade, then as now, concerned the transformation of the useful object (one that is purchased because there is a need for it) into an object of desire (one that is acquired for the pleasure it procures) and a status symbol (conspicuous consumption). In 1965, novelist Georges Perec, who is credited with formulating the most insightful analyses of everyday human interaction, described in a thin volume the attraction exercised by "Things". With his tender yet caustic wit, he depicted a young couple caught up in the vain pursuit of happiness through the acquisition of "things".

Early videotex was the spitting image of pre-Boucicaut commerce. A slew of small-time merchants scattered up and down 36-15 Videotex Drive promoted a narrow line of products at the same price for a more or less loyal clientele. To find something else, the customer — or in the case of videotex, the caller — crossed the street, went inside another store, looked around, and kept going until he found what he had come for. Those choosing to remain loyal to one merchant did so at the risk of never discovering any products not in stock.

# Minitel, a living Everyman's Almanac

The year 1986 ushered in a complete break with the past. Electronic information was now a product like any other and as such had a three-fold appeal: utility (the customer needs information to write an article, for example); desire (the customer feels like having a bit of fun);

and status (the customer wants to join the ranks of those who use Minitel and specifically those who call *Aline*). Minitellers now knew what they wanted. Service providers knew what they could offer and regrouped their products into homogenous lines. The malling of videotex was under way.

## See all, know all

When consulting their *Quid,* a sort of Everyman's almanac published annually in France, there are those who invariably find what they are looking for (they are often under 30) and those who never find the information they need (they are often over 40). And between the two, a veritable no-man's-land; so the odds of finding the data are 50/50. Predicting the chances of success on the basis of age is no joke, either. The *Quid* is in point of fact designed for the under-30 set, and the headings and the information are laid out with young people in mind. Something of the same applies to videotex. Just as bar video games featuring male heroes locked in endless combat with horrible monsters and interstellar spaceships are primarily aimed at the male side of the population and by the same token exclude the distaff side, videotex services are designed for young people, who just happen to be the most avid Minitellers, as statistics go to show. France's privately-owned radio stations caught on to this market immediately. Theirs is a younger audience than that of their older, public- and private-sector counterparts, and they caught the first train for videotexville. As of April 1986, no fewer than 30 radio stations had a videotex service on 36-15.

Won over by the good fortune of the videotex pioneers, the magazine industry found its way to videotex as well, will the notable exception of France's Hersant Group, which apparently did not place a very high premium on the medium but which nonetheless opened a classified real estate advertisement service in March 1987. A total of 150 magazines are now on the kiosk with services. The move to videotex by radio stations and magazines augurs well for the medium's future. They already have target audiences, which often show a high degree of "brand loyalty". They have specialized, high value-added information on hand, with which they could renew the existing videotex product line, rather than settle for the old standbys that are games, news flashes, and on-line electronic mail services. This is not to say that they will not take a shot at the known quantities with proven track records, but in any event they are developing more up-market services.

Conventional publishers, especially those whose mainstay is young people's publications, are beginning to take notice of a medium that is in the spotlight. In fact, a non-presence in videotex is virtually a source of embarrassment for publishing companies that want to promote a with-it image. With that in mind, the Larousse publishing company launched a highly informative educational service in February 1987, a potpourri of games, quizzes for testing I.Q. levels, and educational and leisure activities. The games are original in concept and the multiple-choice quizzes cleverly designed. The service is an elaborate one that, judging from the number of connect hours, has hit the mark with the public.

After some hesitation, French TV networks also latched onto the new medium. The three majors — TF-1, Antenne-2, and FR-3, began with the 1986 fall lineup to incorporate videotex operations in some of their programs. Although considerable traffic is generated by such services, an even more important consideration is the widespread exposure the Minitel receives, exposure that can have such a tremendous impact. After its subsidiary TF-O1 went belly-up, TF-1 set up a consortium, TF-1 Communication, with France's national advertising authority, the Régie française de publicité. Using the mnemonic code TF-1, three of the network's programs were outfitted with a videotex link to services stored on the system of Michel Bouvier, the founder of V.T.-Com, a France Telecom subsidiary specialized in videotex. TF-1 Communication's president, Mr. Dupuis, has ambitious designs for his service and is aiming for a monthly hour count of 20,000.

Since April 1986, several programs on Antenne-2 have been "minitelized", including Bernard Pivot's well-known literary talk show "Apostrophes". In the February 1986 videotex service ratings, Antenne-2 was ranked eighth — well ahead of the other networks.

As a result of its reorganization along regional lines, FR-3 offers 13 different access codes, together with its national mnemonic code. Its service delivers all manner of information, including the popular Thalassa TV magazine. To cover the Route-du-Rhum sailboat race for FR-3, CTL's Jean-Louis Fourtanier did no less than outfit a boat with the signaling and communications system needed to determine the where-abouts of each boat from hour to hour. Just a little matter of a $500,000 investment — and to no avail, since the boat was not fast enough to keep up with the race! Still, it enjoyed a few moments of glory.

For the first time, race organizers were able to pinpoint boat positions in real time and Fourtanier's boat became the race mascot and headquarters for journalists covering the event.

Fourtanier was prepared for the 1987 edition of the race, with a more powerful boat and more sponsors. In the fall of 1987, the most amazing Route-du-Rhum boat race ever was on Minitel for landlubbers. CTL went all out, "not that it's a moneymaker," explained Jean-Louis Fourtanier, "but in terms of PR, it's fantastic". One by one, all marine maps were digitalized for display on the screen. Harbors could be blown up 10 times to allow for the zaniest navigation games on real seafarers' maps, with real sandbanks and currents. The only thing missing was the wind, but hourly reports via satellite kept players abreast of that too! Like other CTL services, it would have been offered to several Minitel-service providers if Fourtanier had not opted to concentrate on exporting his know-how to the United States. In December 1986 Canal Plus opened a service that is quite original indeed. Canal Plus had been using Minitel since opening day to poll its audience and gauge subscriber reactions. Its consumer service naturally provides all the standard operations but is always on the lookout for new departures. In line with this policy, Canal Plus offered viewers a world's first in the spring of 1987: it broadcast in six mostly nightly installments an audiovisual videotex program, a sprawling adventure game called 'Shanghai-Paris', controlled by the viewers themselves. Imagine a color Minitel with picture quality on a par with that found in the comic strips plus audio — that's audiovisual videotex! Today's Minitels cannot use the requisite "alphageometric" display format, which is sharper and richer than the currently available "alphamosaic", so called because the pictures are composed of numerous little squares that come on screen one by one. Canal Plus accordingly used the TV set to receive the picture and sound signals, while viewers themselves operated the controls via Minitel. The program thus unfolded differently for each viewer. The game was straightforward enough. With one eye on the TV screen and the other on the Minitel, players tried to find their way back to Paris from Shanghai while avoiding all sorts of pitfalls and unpleasant surprises along the way. How? By always making the right decision, of course! The viewer had to decide whether to take the northern or the southern route; use the spare or fix the flat; get help from a local or do it alone. All choices that had to be made in the thick of the jungle or the yeti-infested snows of Siberia. Canal Plus racked up

as many as 1,200 calls per show — at two in the morning! It was an unqualified success pointing the way to interactive television. Conceived by INA, CCETT, and IMEDIA, the game featured over 3,000 possible combinations from which each player could pick and choose to construct his own game plan. Virtually no move was obligatory. The player called all the shots and lived or died by them. Credit for a masterly strategy or a sharp move would go to the individual player and no one else.

The print media had gone into videotex with a view to using it to ascertain what their readers were thinking, something otherwise feasible only by polling, perusing reader mail, or analyzing sales curves. They wanted a tool for staying in constant touch with their readership in order to anticipate its needs, listen to what it has to say, and observe its reactions. Videotex is tailor-made for just that. Needed information can always be gathered amidst the games, on-line electronic mail services, and news updates.

However, the mass media, and television in particular, are confronted with the major problem of managing peak call influxes, which varies in intensity depending on the number of ports on the host system. A TV show that attracts only 5% of the French viewing audience — not much in terms of percentage — is nonetheless watched by 1,700,000 people. If only 1% of those viewers call the videotex service involved, 17,000 calls are going to converge on the host computer in a very short lapse of time. As the technology now stands, the problem is insurmountable, as no host computer can manage more than 2,000 simultaneous calls. Computer manufacturers have announced far bigger machines, but they exist only on the drawing board. Clearly, as long as the problem of host capacity goes unresolved and the number of computer entries remains as disproportionate to the potential size of a television viewing audience as is currently the case, the otherwise promising integration of television and videotex will be confined to off-hour or narrowly targetted broadcasts, short of announcing that only the firts $x$ number of calls will be taken, as is the case on radio game shows.

By the same token, television advertising for Minitel, which has ballooned since Alain Moreau's unprecedented campaign of the spring of 1986 for his *Ouitel* service on France's fifth TV station, *La Cinq*, is not without its problems. Alive to the difficulty, France Telecom is currently at work developing a rerouting system that would enable a host computer approaching saturation to automatically divert incoming calls to less

solicited machines. It will be ready by late 1988 and help remove a major obstacle to the mass media's use of videotex.

The TV set was long flatteringly referred to as a window on the world. Today the same can be said of the Minitel, except that it remains very much a product of its environment and even at that is installed in only 10% of French homes. Yet at the pace developments break nowadays, it may be that tomorrow it will be as annoying for the Minitel to be cut off as it is today for water, electricity, or television. After all, where else could you find the exceptional amount of information available on the over 8,000 kiosk services?

## Live via Minitel: six stormy days

"Today, Monday, December 8 is a national day of mourning. Mourning band to be worn for a week. Street processions to be calm and silent. Call to the general population, labor unions, associations, and all democrats for a general strike on Wednesday, December 10." This is what callers keying in 36-15 + *Libé* found on their Minitels December 8, 1986. France was gripped by student turmoil in late 1986 and for six days running two million Minitellers were able to access what amounted to a log book of the unrest. They had their choice of services such as *le Monde*, *PL*, and *le Nouvel Observateur*, but more than any other *Libé* succeeded in making Minitel a peerless tool for information and communication on that winter's student revolt. Its impact was such that, at a procession to commemorate the death of Malik Oussekine, a student who had died in a clash with the police, a lone cryptic banner stood out among the hundreds being paraded about on Paris' Denfert-Rochereau plaza; it read "For *Pasqua*: punch in *Matrak*". *Pasqua* referred to the Minister of the Interior, while *"Matrak"* was the phoneticized spelling of the French word for billy club! Minitel-spawned speech patterns had also taken to the streets!

On Friday, November 28, 1986, the daily *Libération* received an unusual phone call from a student, member of the UNEF, a student union close to the Communist Party, but a member as well of the "ecumenical" Student Coordinating Committee. He asked *Libération* to help him and fellow students mount a videotex service on what was happening in student circles. The daily explained in no uncertain terms that it would not be party to sponsoring UNEF but would do it for the

Student Coordinating Committee. A few hours later another phone call informed *Libération* that the Coordinating Committee would not be meeting until the following Tuesday, but that in the meantime the committees of three Paris universities had endorsed the idea pending the full Coordinating Committee's expected approval on December 2. Satisfied with this partial guarantee, *Libération*, together with student volunteers, set about working up a service that would be baptized *FAC*, short for *faculté*, which designates schools within a university or a university in its entirety. They hammered away throughout the weekend; by Saturday evening the electronic mail component of the system was finished and on Monday at noon the entire service was ready to go. They waited for the go-ahead from the Coordinating Committee, which was given as expected on that Tuesday.

The system included three components: an information service, "Four reasons to refuse the Devaquet bill", draft university reform legislation named after its sponsor Alain Devaquet, which had sparked that winter's student unrest; an interactive communication service; and a game service featuring "Monorypoly", named after France's Minister of Education, Alain Monory. As the crisis festered, new entries were added including a map of France showing which universities and high schools were on strike, appeals to the population from the Student Coordinating Committee, information on demonstrations, government statements, pronouncements by the political parties, and so forth. News bulletins were updated hourly so that callers knew in real time exactly how many people were participating in each demonstration.

To prevent disinformation, the Student Coordinating Committee had a secret code with which it alone could "input" information in the system, information that everyone could read, however. "Violently beaten by three police officers, Malik Oussekine died in the early hours of Saturday morning, rue Monsieur-le-Prince in the Latin Quarter. "Cardiac decompensation", asserts the district attorney. One thing is sure: he was beaten. By three members of the riot police motorcycle brigade, according to a witness, who was likewise assaulted by police in the entryway of his apartment building." Like this one, the communiqués were as straightforward and concise as could be.

Forcefulness and concision were likewise hallmarks of the appeals to the general population: "On Thursday, December 4, a million students demonstrated without incident, demanding that the bill be withdrawn.

It was within Mr. Monory's powers to fulfill the aspirations of young people. His reaction was one of contempt, his reflex to send in the troops. On Thursday, December 4, dozens of students were injured. On Saturday, December 6, our friend Malik from the University of Paris at Dauphine died. A million was not enough! Faced with police repression, confronted with the obstinacy of the government, the Student Coordinating Committee hereby launches an appeal to the general population." There would be many such appeals. But there was also detailed information on the demonstrations (starting points, routes, buttons to wear, slogans to shout) and statements rejecting any attempts by political parties and their allies to co-opt the student movement. They were truly dead set on maintaining their independence and they said as much on display page after display page.

There was also a great deal of fun to be had. There was gladness in the air. The game "Monorypoly" was an outrageous success. "Give Monorypoly your best shot; Devaquet and Monory are on the hot seat! Practice dialectical arm-wrestling! Hammer out your own bill through a thrilling and didactical obstacle course. Ten easy questions for the media generation." So went the opening come-on that greeted callers who had keyed in Monorypoly. First question: Two weeks ago they called us the *"bof"*, i.e. don't-give-a-damn generation; what are we called now: (a) the real generation, (b) the media generation, or (c) the ideal generation? Second question: In the next charter bound for Mali*, you would put: (a) Devaquet and Monory, (b) the originators of this game, or (c) Chalandon (France's "Attorney General")? Third question: During the November 27 demonstration, a member of the *GUD* (far-right student union) tossed a Molotov cocktail. Where did it land: (a) on her neighbor's balcony, (b) on her helmet, or (c) on a demonstrator? There followed a host of other questions of varying degrees of seriousness, at the end of which players were ranked and those willing to identify themselves could see whether they were good, very good, or perfect or only budding revolutionaries.

But Minitel's most telling feature was without a doubt its interactivity, i.e. callers could say what was on their minds and be read by others. The entry "Your reactions" received 3,000 messages from all over France,

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* One hundred Malians had earlier been summarily deported back to Mali on a specially chartered plane.

which were available on-line for anyone wishing to consult them. Of these messages, 10 % would be censored on the grounds that they contained incitements to murder, racism, and informing, or simply because they were incomprehensible. Caller's comments were conspicuous by their variety. Where the university reform bill was concerned, they wanted to know who had understood it and what it aimed to do. They enquired about what action might be taken against striking students who did not hand in their tests; about the government's program for minorities; about the fact that the elitist institutions of higher learning, the *grandes écoles,* remained aloof from the student movement because they did not feel their interests were involved; about the impossibility for a democratic state to talk matters over with students; and about the fact that *Libération* must have got real fat on all the calls to 36-15! One Miniteller who had obviously spent a lot of time in front of the screen during those days of turmoil "penned" the following comment to *Libération*'s editor in chief, Serge July: "Hey sweetheart, you could've lightened up on the prices. We're not rich, y'know."

Like any fast-breaking, fast-developing event (such as the taking of a hostage, execution threats, a political or financial scandal, or, in a lighter vein, a tennis tournament), the student revolt served to point up the Minitel's special qualities. It is a handy substitute for the old phone, since the other end of the line is always busy in times of crisis. It nicely rounds out newspapers and magazines, which can be updated only daily in the best of cases and do not accommodate commentary, except in the inevitably dreary and after-the-fact letters-to-the editor column. Minitel offers both information and games, but above all a forum where readers can make themselves heard. It delivers up-to-date information throughout the day and invites caller reactions. In addition, there is no need to "tune in" at a given hour, as is the case for radio and television news broadcasts. News is at once ever-changing and permanent, and every editor in chief of a videotex news service entertains the hope that each morning will bring some extraordinary event which will light up the service. When one evening in June 1986, *PL* displayed the corrected copies of the French school-leaving exam, it hit the mother lode! The Minitel is ideally suited to managing and monitoring surprise events. Through its twin features of interactivity and anonymity, the result of confidential access codes, callers can both communicate and make inquiries. With the addition of a toll-free number service, the Minitel can also be used to gather information from various sources, thereby enhancing its publishing capacity and furthering discussion.

# Videotex networks

"Videotex is no longer the realm of dabblers; make room for the kings of marketing!" Thus ran the headline in the journal *Médias* on the occasion of the release of their assessment of the sector in February 1987. Today they could just as well advocate making room for managers. In any event long gone are the days when would-be entrepreneurs could get started in videotex, with some reasonable hope of success, using a souped-up MacIntosh. In the worst-case scenario, the business quickly goes bankrupt, and in the best of cases, the service system operator ekes out a living doing a little consulting work on the side. To make a go of a videotex business is a horse of a different color nowadays. The sector has matured and competition is rife. Newcomers easily lose their way amidst some 8,000 existing services if they do not have access to a communication medium or already enjoy a well-defined image. Today the advertising budgets of consumer videotex services have reached dizzying heights. Insiders claim that it is impossible to make it under $80,000 a month in advertising, a hefty admission fee, especially in view of the fact that the market demands increasingly sophisticated and novel, i.e. expensive, services.

Even for front-runners who have been pulling in receipts and have forged an identity for themselves, diversifying to new services is no easy matter. Either for convenience' sake or quite simply because they do not have the know-how, existing services seek out partners that have the necessary skills or the requisite capital they lack. They then either coproduce a service or let their partners produce one themselves in exchange for the use of their videotex "window". In 1987 the concept of "videotex networks" was taking on substance. The idea, which only a year before had met with smiling condescension, may now radically alter the world of videotex, including the distribution of the proceeds.

## Le Monde, Crac, AZ, Pluriel...

*AZ* hosts 100 services. When Hervé Delisle went into videotex in 1984 with his *Téléprix* service, he regarded himself as a service publisher rather than host system operator. The relative success of his actually quite appealing comparison shopping service persuaded him to tack on a few on-line electronic mail and games services. *AZ* was born. Delisle's second life as host operator did not really get under way until 1986. His company, AZ Télématique, then launched an all-out campaign to corral service providers. Topping the bill was the on-line electronic mail service *Sophie*, published by the Filipacchi-Group, whose advertising bills were featured on all the newsstands of Paris in the spring of 1987. That year's campaign stood in marked contrast to the previous year's. The 1986 sexpot, decked out in leather with whip in hand, had been replaced by a nice young girl, wearing a white T-shirt with an ever so slightly plunging neckline, who, glasses in hand, claimed she could "answer all your questions". *AZ*'s door was open to all privately-owned radio stations, like 'Sky Rock', which came knocking with proposals for "live" services in conjunction with their radio broadcasts, their videotex hit charts, and other videotex-based radio games.

Still, Delisle was not about to put all his eggs into the mass-market basket. Firm in the belief that the videotex market was too unstable to anticipate, he took an active interest in more professional-oriented ventures. He thus agreed to host *TDM (Tarif des Médias)*, originated by Hervé Blandin, which provided advertising professionals with information on buying space in real time and the possibility to estimate media planning costs and reserve advertising space. In the same vein, Delisle brought out *CPR*, a service designed for use by journalists casting about for succinct, to-the-point information. He is apparently bent on continuing down the same road and aims to make *AZ* nothing less than a videotex network, which, like a TV network, would schedule "programs" for all audiences and purposes. Another graduate of one of France's most prestigious engineering institutes, the Ecole Centrale des Arts et des Manufactures, Delisle was one of the first to enter the realm of videotex and has not ceased to grow. He started off with a utilitarian service but, sensing that the demand was elsewhere, he adjusted accordingly. And now that the highly fickle demand in things videotex has worked its way back to less frivolous services, Delisle has returned to his first love: he

aims to make Minitel a tool for consulting various kinds of data, games-oriented as well as utilitarian, something of a multifaceted videotex network.

In April 1985, *Pluriel* arrived. Its promoters, G-CAM and TF-01, dubbed it the "first videotex shopping mall". It was designed to appeal to the 15 to 35 year-old set. Using one code name and the 36-15 call number, *Pluriel* brought together under one roof various service providers offering Minitellers a new twist on old services. On the communication front, it served up a videotex forum, a conventional on-line electronic mail service, a "dazibao" or blank wall for graffitists, a teleconferencing service, and a classified ad section. For gamesters, it proposed an interactive detective novel and a bevy of games and contests such as could be found on *Gretel* and *Crac*, for instance. Callers could also make inquiries by accessing services such as *Camera presse* for show times and the like, *Monde Informations Spectacles* for event ticketing, and the *Guide des droits et des démarches*, a citizen's handbook. Those looking for entertainment needed only consult the service's listings for shows, restaurants, and night spots.

*Pluriel* billed itself as a multimedia information machine. Its two partners truly went hand in glove: G-CAM with its technical know-how and TF-01 with its information and show-business expertise. All the ingredients were there for a classic success story, especially considering that a limited truce had been called in the TV network war in the sense that FR-3's videotex magazine Thalassa was listed in *Pluriel*'s table of contents and TF-01 was collaborating with the Antenne-2 network on new projects.

Oddly enough, though, *Pluriel* never really took off. Admittedly, the access codes GP-1, GP-2, and GP-3 were not what could be called sexy. The real reason it never really clicked lay elsewhere, however. There is a season for everything and even a good idea at the wrong time is bound to misfire. At the time, the public was not yet prepared to cruise around in an open videotex area. What was more, *Pluriel* had failed to introduce some method in the madness of the amalgamation of various services it hosted. The service really had more in common with a curiosity shop than a supermarket. Lastly, its attempted move to more value-added services fell wide of the mark. Callers accessing *Pluriel* today will find games and on-line electronic mail services but nary a useful bit of information. And yet *Pluriel*'s kick-off campaign was cleverly done.

"Waiter, a cocktail, and make it snappy!" ran the ad inserts, adding: "*Pluriel*, a cocktail of services".

True, "*Crac* is all it's cracked up to be" as the ad says, but it has even more to crow about since the fall of 1986. Cécile Alvergnat runs a tight ship and did not want to be hamstrung by on-line electronic mail services. Her enthusiasm for communication notwithstanding, she very early on sensed that the market was ready for something new. In the spring of 1986, she unveiled *S.O.S.-Devoirs* (Homework) to help children with their schoolwork in the evening. By keying in 36-15 + *S.O.S.-Devoirs*, they enter into contact with an on-line teacher. This premiere was not an immediate success, which goes to show that like any other product a videotex service has to be broken in, but it was the forerunner of a more comprehensive service launched in the fall of the same year under the same *S.O.S.-24/24. Crac*'s strategy called for enlisting the skills and know-how of companies specialized in practical information services to produce a complete line of products for everyday needs. They proposed eight entries, six of which were coproductions: law, education, data processing, insurance, events calendar, travel, and books. The novel aspect of *Crac*'s new set-up resided in the fact that the data base was only one component of the system, which in addition featured real-time communication (a specialist on-line a few hours a day) as well as off-line communication (answers to complicated questions sent to designated mailboxes the next day). This three-pronged approach is close to Alvergnat's heart; she wants to avoid losing touch with her customers at all costs. Otherwise, how would she know which way the wind was blowing so she could plan accordingly. *Crac* resembles a shopping mall in that it offers a wide range of services, and furthermore introduces a personal touch in its customer relations through ongoing direct contact. *Crac*'s videotex services are people-hosted, and "crackers" are proud of the fact.

The newspaper daily *Le Monde* did not see fit to enter the videotex market until September 1986. Antoine Beaussant, who had come over from the Sligos Company, and Gilles Katz, who had mounted *Liberation*'s videotex service, were the artisans of the project, along with Philippe Desmet, head of videotex at Segin, the host system. *Le Monde* had long vacillated between buying out or buying into an established videotex company or starting up its own service, and in either case there arose the issue of whether the videotex service should be kept separate from the paper or whether it should bear its name, i.e. its image. The newspaper's persistent ill health throughout 1984-85 only served to compound the difficulty of making a decision. In the spring of 1986 *le Monde* elected to start up its own videotex service, which would inherit the family name. Together with a team of 10 people, Beaussant boiled down the basic options of the *le Monde* service. The guiding principle was that of a "videotex network", a concept that the *le Monde* team would be the first to put into practice although it had already been expounded in 1984 by Alain Le Diberder of the economic forecasting bureau, BIPE. The service was more akin to a distributor than a producer, distributing products purchased outside in addition to its own programs. Moreover, the service was somewhat austere, an inevitable outgrowth of the fact that it bore the paper's name and the image that went with it. In fact, the service had more in common with a large-scale distributor than a specialized retailer.

The fact that "*le Monde*" was the offshoot of a serious, hard news daily explained why it offered 11 sections, including news, weather, home shopping, a real-estate service (FNAIM), stock market updates, and an impressive number of news briefs and in-depth analyses. It failed to explain, however, why the service was so slow in catching on. The great variety and large quantity of information involved, which made it difficult for designers and users alike to get a handle on the service, were undoubtedly to blame. But the service's stunted growth was also attributable to its rocky start, which partners Beaussant and Desmet will not soon forget.

*Le Monde*'s videotex product was conceived in July and born September 15. Two and a half months of sheer hell for all concerned, aggravated by the fact that plans called for bringing the entire service on-line from day one. "To stake out our turf," as Beaussant put it. Seventy-two hours before D day, however, and with the advertising campaign all set to go, Desmet informed the newspaper that too many rough spots remained and that the service could not be opened as planned; a great deal of work remained to be done, and the home shopping service *Télémarket*, which they had been asked to host at the last minute, was not readily adaptable to their machines. Beaussant and Desmet, (one at the product end, the other at the host end), kept each other abreast of every step forward and every step backward.

In Lille and at *Le Monde*'s Paris headquarters, the teams hammered away night and day. The telephone was ringing off the hook and tempers

flared occasionally. The service had to go into operation on Wednesday September 15 — come hell or high water. Ordinarily as cool as a cucumber, Beaussant began to lose some of his poise. Desmet, who is kindness incarnate, found the whole affair a bitter pill to swallow. The partnership was showing signs of strain. And yet the service would open September 15 as planned, with four finished chapters out of the 11 called for, all of which were nonetheless listed to show people what was in store.

"I.Q. is our business" ran the ad in *le Monde*'s special videotex section, which devoted considerable space to the host company Segin and *Télémarket. Le Monde* was looking to carve out a niche not yet occupied by its competitors. After much thought, it opted for the "serious" audience, a move that would naturally be frustrated to some extent by the introduction of on-line electronic mail services to boost traffic. But none of *le Monde*'s staffers were aware that a little service called *IQ* existed on 36-15 and that thanks to their own paper's advertising and its cryptic ad slogan readers would promptly key in the mnemonic *IQ*, whose promoters gleefully looked on as their traffic count shot up! As blunders go, this one was a lulu! *Le Monde* immediately shelved the campaign and asked its advertising department to come up with some new proposals. The admen proudly submitted a new slogan ("C.Q.F.D."), but Beaussant was not about to let history repeat itself. He knew his Minitel services directory and remembered that a service by the same name was already on the kiosk.

Six months following the opening of the *le Monde* service, Desmet was still claiming that "no host system could accommodate *le Monde* and that it still holds true today". He is naturally proud of the fact that he pulled it off, an achievement that confirms the extraordinary surge of Segin, today second in a host system market where it was a virtual non-entity three years ago. The *"le Monde"* experience — and the attendant "birth pangs" — may have brought home to both partners the fact that new partnerships are being forged not only in videotex but in the emerging information technology sector as a whole; that conventional supplier-buyer relationships are dead and buried; that in this sector individuals and businesses are all in the same boat; and that the success of one means the success of the other. These new partnerships span the entire new technology sector, superimposing and dovetailing disparate and complementary skills, without which intangible goods cannot be produced.

## Videotex: a new alliance

Back in 1981, videotex players had clearly defined roles to play. Either they were well versed in the mechanics of videotex, like the systems and software houses, or they had information to put on-line, like the press. And then there were others who were in both ends of the business. Mail-orders houses, for instance, were highly computerized and had the information from their catalogs to feed into the system. And there was the SNCF, whose train timetables and computerized reservation system constituted an electronic data system as such.

In 1981 videotex entrepreneurs accordingly had three options : They could be service providers or host system operators, or both. With a few notable exceptions such as major companies that chose to do both, videotex trailblazers specialized on the basis of the know-how they brought with them, a state of affairs that persisted until introduction of the kiosk, i.e. of a charging system that as videotex traffic rose made it possible to calculate economic factors and determine break-even points.

In the meantime, host system operators had expanded their product-lines, and hardware had become more reliable and better suited to the specific needs of videotex. The profession of host lost some of its mystery for the computer illiterate, and some publishers, seeing that the business of hosting was the more lucrative, decided to become their own hosts. The *Nouvel Observateur,* which had changed hosts twice, jumping from SGIP to CTL, discovered to its great wonderment that Jean-Louis Fourtanier, CTL's fiery director, was raking it in thanks to his on-line electronic mail service, *Aline.* Following bitter and ultimately fruitless negotiations to lower hosting costs, the *Nouvel Observateur* decided to mount its own host system and in the process pocket all the remittances from France Telecom. Many service providers, the *Parisien libéré,* from *Libération,* and *Crac,* to name just a few, went the same route.

Of the $10 an hour paid by the user of the kiosk, France Telecom remits approximately two thirds to the host. The host then decides what portion of this amount goes to the provider of the services stored on the system. In the very early going, to simplify matters, it was decided to split the pie three ways since no one knew exactly what cost what. While France Telecom's one-third share for distributing the data has remained the same, the division of the other two thirds between hosts and service providers has changed considerably. The host nowadays remits 50%,

70%, up to 80% of the amount to the service provider. A price war among hosts broke out in mid-1985 and raged on into 1986, and only a few companies were able to stay above the fray. The best, i.e. the most reliable, were able to maintain their margins as prices plummetted. Their gamble paid off and since the 1985-86 shakeout they have reigned supreme on the host market.

Besides the aforementioned price war, 1985 witnessed the emergence of another phenomenon related to service providers' diversification of their product lineup to appeal to a wider segment of the public. The concept was valid but difficult to implement without the requisite specialized skills. How could journalists be expected to design games? How could on-line tutoring services be offered without teachers? How could home-shopping services be offered without a marketing and sales infrastructure to serve the customer?

The videotex medium's accross-the-board applicability, which its originators had reckoned on all along but whose feasibility had not yet been borne out, assumed its full potential in 1986. People realized that a Minitel could do much more, that there was a demand for other kinds of services. Videotex publishing came into its own and was recognized as a profession in its own right. Videotex pioneers, who had worked and reworked their first services, certainly did not need any convincing. Although they were fully aware that videotex publishing know-how was one thing, they had come to realize that specific types of services required specialized publishers. A team of top-notch journalists would not necessarily know how to design interesting sports and games entries. Specialists had to be found for putting new contents on videotex.

The precariousness of the sector precluded the hasty recruitment of people with the requisite new skills, and common sense dictated that new know-how be acquired through agreements with companies that had information to sell or qualified people on hand. Thus issued forth the race of content providers. They form a new class of videotex professionals who have no electronic publishing experience *per se* and who in fact intend to use that of their associates, but who have advanced qualifications in contents or large stocks of information.

Generally speaking, the nature of relations between service and content providers are difficult to pin down. Although calling them fickle would perhaps be going too far, they are nevertheless highly prone to change, and any attempt to squeeze them into a descriptive straitjacket

is futile. One thing is certain, however: They are rarely spelled out in regular contracts. Nor are they based on a clear-cut division of labor. It is a fluid world of one-to-one relationships in which emotional ties seem to be preponderant. Every case is unique. These "couples" are generally based on gentlemen's agreements, with their ups and downs, bitter disputes and irreparable break-ups, and passions fired by the thrill of discovery and shared creation. There is, however, one constant in these agreements: The pioneer spirit invariably prevails with its pragmatism, adaptability, flexibility, capacity for continuous innovation, and genius for salvaging the most compromised situations. Against this backdrop, no one fears being tagged a weathercock for suddenly changing course or violently denying what he publicly asserted the previous day.

Cécile Alvergnat is tops in this field. Her *Crac* service no longer employs content developers. With the exception of *S.O.S.-Devoirs*, the on-line tutoring service, no data sets are produced on *Crac* premises. A lone "house editor" gives the videotex *imprimatur* to final products developed by outside content providers. At the French book publisher Gallimard, staffers are busy turning out for *Crac* an electronic edition of the children's book collection *"Les livres dont vous êtes les héros"*, bestsellers of the role playing genre, while *Crac* has provided its videotex expertise in return. They exchange know-how but no money, and contracts are nonexistent. Barter is back! No matter, they continue to work together on other products that are published on paper at Gallimard and on videotex at *Crac*. At the 1986 Paris Book Fair, Gallimard installed some 40 Minitels at its stand to promote their jointly produced videotex services.

The nature of partnerships with small content publishers is really no different. Along with Capform, a small travel agency, *Crac* publishes a travel service. Needless to say, there was no call for bids; the heads of Capform and *Crac* are neighbors. They ran into each other on the stairs, got to know one another, talked shop on occasion, and decided it would be a good idea to do something together. What happened next was a replay of what had gone before with Gallimard. Capform contributed its travel industry know-how and *Crac* put it on videotex. Joint ventures of this type are commonplace and are characterized by a *carpe diem* approach rather than a thought-out diversification strategy.

The *le Monde* daily's Antoine Beaussant, who is pushing his "videotex network" strategy, has entered into the same type of agreements — albeit

of a more formal nature. His partners often run established businesses. Occasionally they are people who have already given videotex a shot and have consequently already done their data layout work, but because they have not been able to make a go of it — often because of a flawed marketing strategy — they are out to sell their wares to programmers casting about for products. Le *Monde*'s major content agreements have been concluded with the *Cote Bleue*, the official stock market information agency; the FNAIM realtor association, well known for the high quality of its classified real estate ads; *Télémarket*, the Minitel home-shopping service; the AFP, the wire service heavyweight; and the national weather bureau. Many agreements are in the negotiation phase and the results will be announced shortly.

Until now, the hallmark of such agreements has been their diversity. Diversity in terms of remuneration, services, and editorial involvement. It all depends what the main concerns are. For the FNAIM, for instance, what matters is building up its store of classified ads, i.e. increasing the number of transactions, not making money on the calls. *Le Monde* accordingly pockets the entire kiosk fee, a portion of which it remits to Segin, its host system. As to the AFP, which sells its information as such, as does the national weather bureau, the kiosk fee is split down the middle-half for le *Monde*, half for its partner. The case of *Télémarket* is different. It does not sell information but rather a home ordering and delivery service. Callers accessing *Télémarket* on the *Monde* service should know that a percentage — secret — of the money they plunk down goes into Le *Monde*'s pockets. Something of a royalty on *Télémarket*'s gross income.

Legally speaking, though, matters are more complicated. *Télémarket* is available on several kiosk "windows": on *Libération*, *Marie-Claire* (a women's magazine), and its own access code. The FNAIM also offers a direct access to its service. The *Cote Bleue* sells its information to a service called *A. J.* and to an increasing number of others — videotex services are decidedly bullish on the stock market! Content providers retain ownership of their information, but publishers, who would like to reinforce ties to their favorite information providers, are now giving thought to contracts of association that take account of the specific structure of each service. If the details can be worked out, data will no longer be purchased outright but rather kiosk resources as well as ownership of the services will be shared.

Advertising is also a significant factor. It is no accident that content providers seek out a le *Monde*, a *Libération*, or any other videotex window. They hope to reap considerable publicity advantages, hence increased traffic. The service provider, which has a vested interest in the success of its services, naturally promotes them in its columns or through any other advertising outlet — and both parties reap the rewards. As for the host, its role is to see to it that there are no breakdowns, a task of paramount importance in view of the technical complexity of hosting multiservices.

When the *Monde* service opened for business, its namesake ran an advertising supplement that was the product of unprecedented bartering. A front page advert featured the products of *Télémarket*, complete with the prices of whiskey and sardines, a first for as prestigious and austere a newspaper as le *Monde*, which had reason to fear reader rejection. Inside the paper, a double-page advertisement was devoted to its host, Segin. The publicity was "free" but the partners (host and content providers) had "financed" the supplement.

The essence of the new videotex partnerships is to be found in this one-good-turn-deserves-another approach, where the fair-market value of new services, because they are new and changing, has not yet been determined. On the other hand, it is common knowledge that the worth of a videotex service derives from the interplay of its component systems. And so partners share the good times and the bad, exchange "freebies", and return favors. For its part, the host anticipates software and hardware upgrades that may prove vital for service providers. As to content providers, they format their data stocks in anticipation of putting them on-line when the time comes. For their part, service providers promote all their services, regardless of origin, and work ceaselessly on their editorial look to maximize traffic — the driving force behind these partnerships.

Segin's Philippe Desmet asserts with conviction that the new partnerships are based on confidence, a fact that sets them apart. In the world of videotex, pacts are often concluded with a handshake, rarely with a signature. A return to the past or sign of the times when innovation proceeds from the ill-defined amalgamation of various and sundry and seemingly unrelated skills, which no conventional contract can accommodate?

# The new professions

The salient feature of the communications sector is its vitality. Over a 10-year period of sluggish economic growth, it recorded a 24 % increase in jobs. But the contents sector has shown the most impressive strength. All 10-year projections highlight the pronounced vigor of new electronic publishing contents products. An increasingly demanding public where new information products are concerned is calling for more services that are more sophisticated and better hosted, some by on-line moderators. This has translated into more jobs, a fact confirmed by the French economic forecast bureau, the BIPE, which predicts the creation of 5,000 new jobs in the production and marketing of videotex services by 1990.

Designers, graphics specialists, on-line hosts, trade journalists, and network guides are the most easily identifiable of thee,ew professions spawned by the Minitel boom.

## Designers, graphics people, on-line hosts, and chroniclers

To succeed, a videotex service must have "screen presence". The early days of cluttered, indecipherable pages are over. The age of product design has dawned. The prerequisites are interactivity, rapidity, and user friendliness. Advertising agencies, which were long in making the jump to videotex, now do consulting work in videotex product design, market positioning, and product adaptation. The Havas Group, through its subsidiary Havas Télématique, was one of the first to look into the matter. Of course it had every reason to keep a weather eye open for videotex developments since its subsidiary ODA publishes the paper telephone directory. Recently, however, other agencies such as Publicis, Young & Rubicam, RSCG (who have taken Henri de Maublanc on board), Bélier, and Perceval have begun advising their clients on videotex advertising strategies. The virtues of the Minitel have not escaped the attention of direct marketing specialists either, who a bit late in the game have moved massively into a medium that has proved to be highly interactive and well suited to direct use.

Numerous independent consultants also have services to propose.

Laurent Dubé and Bernard Liscia do, however, stand out from the crowd of videotex consultants. Any chronicler of the history of videotex would be woefully remiss not to recount their stories. Both Dubé and Liscia are videotex pioneers who are veterans of Vélizy — each in his own field. Dubé was one of the first designers of videotex "pages". He got his start at Vélizy and has since made his mark by training dozens of graphics specialists. He acquired his second claim to fame by developing the formats of the *Funitel* service, which were regarded as masterpieces of layout design and have preserved their charm and appeal to this day. But Dubé continued to forge ahead, meeting along the way Hervé Delisle — my, the world of videotex is small! — with whom he founded the consultancy firm Laurent-Dubé, which employs a staff of seven and has an annual gross income of some $700,000. They have projects galore for the media of the future. For Dubé, who believes in his lucky star — which has never let him down — it does not matter whether he works on Minitel, videodisk, or even interactive compact disk.

Bernard Liscia and Triel are one and the same. One man, one company; they go hand in glove. Liscia's guiding principle is to be neither host operator nor service publisher, but to help design services where the user is king. His original team included a determined young woman, Pauline Georgiades, who had worked full-time for the Vélizy project team. Triel was involved in the project well before other companies. Georgiades, who has a knack for putting her discoveries across to people, was something of the user-friendliness inventor in the Teletel experiment. Through the electronic mail service that she hosted day and night, Georgiades was in the best position to take the Minitellers' pulse. She was aware of their problems, desires, and frustrations.

Slightly cramped by the necessarily rigid framework of a national experiment that left no room for flexing one's imagination, Georgiades had to settle for running an off-line, i.e. delayed-time electronic mail service. She nevertheless gained invaluable experience, which Xavier Viollet, the "statistician" of the experiment and today consultant at the well-known Oresys consultancy, set about interpreting statistically. The whole Triel team reaped benefits from the experiment. Since then Liscia has made great strides forward and today can take pride in having worked for every major media group. Triel has some $ 1.4 million in annual gross earnings and a staff on which no one has the same background, except

the five computer people. Triel owes its originality to this melting pot of skills.

Jean-Paul Figer, vice-president of CAP-Sogeti France, is an old pro. He has been working in data processing for 20 years now and for just as long has vented his distress over the poverty and inadequacy of man/machine interfaces — without much response. He has always been surprised by user tolerance for his profession's handiwork and now says that the Minitel was a watershed in that it was designed for use by the public at large, who would never have endured dialog sequences designed by specialists for specialists. It was at that juncture that a small team formed to specialize in the very special occupation of user-friendliness designer, whose job it is to raise the comfort level of videotex instructions.

Today a small team of 10 is operational and plans are to increase it to 40. Until now, primarily computer specialists have applied for the positions of user-friendliness advisers at CAP-Sogeti, an understandable state of affairs since there are so many of them. Figer, though, knows of non-computer people who have proved they can do the job, and does not feel that EDP experience is a must. What is more, Isabelle Perrot, who originated the profession, is not a computer expert, but she happened to have worked on the software dialogs for the electronic directory during her tenure at the Havas subsidiary ODA. She now applies her know-how to all manner of videotex dialogs, whether for professional or consumer use. To do so, she takes up position among future users, watches them at work, identifies their reflex movements, analyzes their difficulties, and takes it all into account when setting up the videotex service they will be using. Her job is at the center of design work situated between the computer specialists and the users. She arbitrates between the system's technical constraints and its potential. Her skills are as sought-after in data processing as they are in videotex, where the same software dialog problems arise. The same holds true for software package designers, who incorporate this know-how upstream so that their products are accessible to the general public.

Without François de Valence, however, videotex might not have been condensed into a coherent whole comprehensible for the layman and the would-be videotex operator alike. In 1979, before the first inkling of an interest in videotex was yet discernable, de Valence, who sensed the advent of the electronic information era, founded the publishing house *A jour*. Its first production was a newsletter entitled *Infotecture*, which

*The Paris metro abounds in videotex advertising. In February 1986 Parisians discovered "Désiropolis" and the delights of Minitel conversation.*



*Since the spring of 1986, Paris newsstands have been sporting videotex ads that might not be rated for family audiences.*

*The mail-order merchandising sector was keen on Minitel right from the 1982 Vélizy experiment. The French leader, La Redoute, was among the first to take the videotex plunge.*



Plus vif que La Redoute, tu trouves pas.

La Redoute

*Gamma-Vioujard.*



3614 TSUISSES :
la façon la plus libre de dire j'achète.

A midi comme à minuit, vous tapez, il obéit, vous changez d'avis, il rectifie. Vous choisissez votre mode de paiement et votre lieu de livraison. Un geste et il vous dit tout sur vos commandes : disponibilité des articles, date d'expédition et délais de livraison. Il vous fait profiter en permanence de toutes les bonnes affaires et vous pouvez même lui poser vos questions en direct. Ça se passe sur Minitel avec votre Chouchou : ça s'appelle le Chouchoutel. Entre lui et vous, c'est l'accord parfait.

**3 SUISSES**
PAR MINITEL

Commandez par Chouchoutel,
24 h sur 24, même le dimanche.

*Mafia D.R.*

*Today you can consult catalogs and place orders via Minitel. Mail-order houses can hardly wait for the day smart-card readers are connected to Minitels so you will be able to pay as you order.*
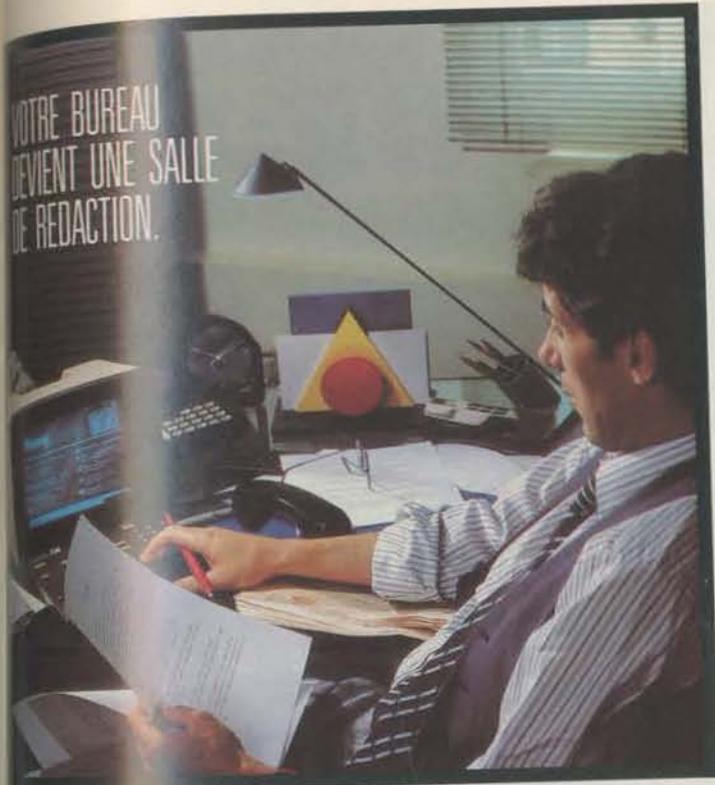
Le Nouvel Observateur *weekly went into videotex with chat services before expanding into more utilitarian on-line information such as stock market quotations, news, and horse racing results.*



VOTRE BUREAU DEVIENT UNE SALLE DE REDACTION.

Below
"Libération", *a daily that was a videotex early bird, has substantially modified its menu. It went through a string of ups and downs on the way to a comprehensive service that has kept the paper's distinct flavor.*



ENFIN SEUL...
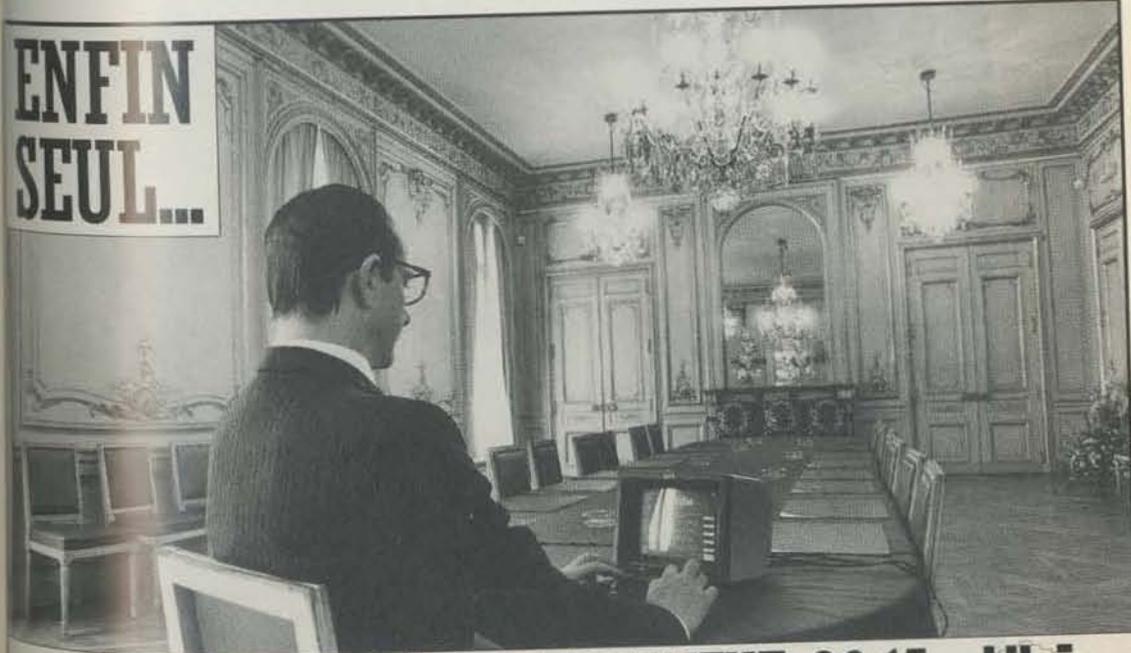
**LE JEU DU GOUVERNEMENT. 36.15 Libé**
Gagnez le fauteuil de Mitterrand dessiné par Starck.

# L'aventure humaine en Minitel.
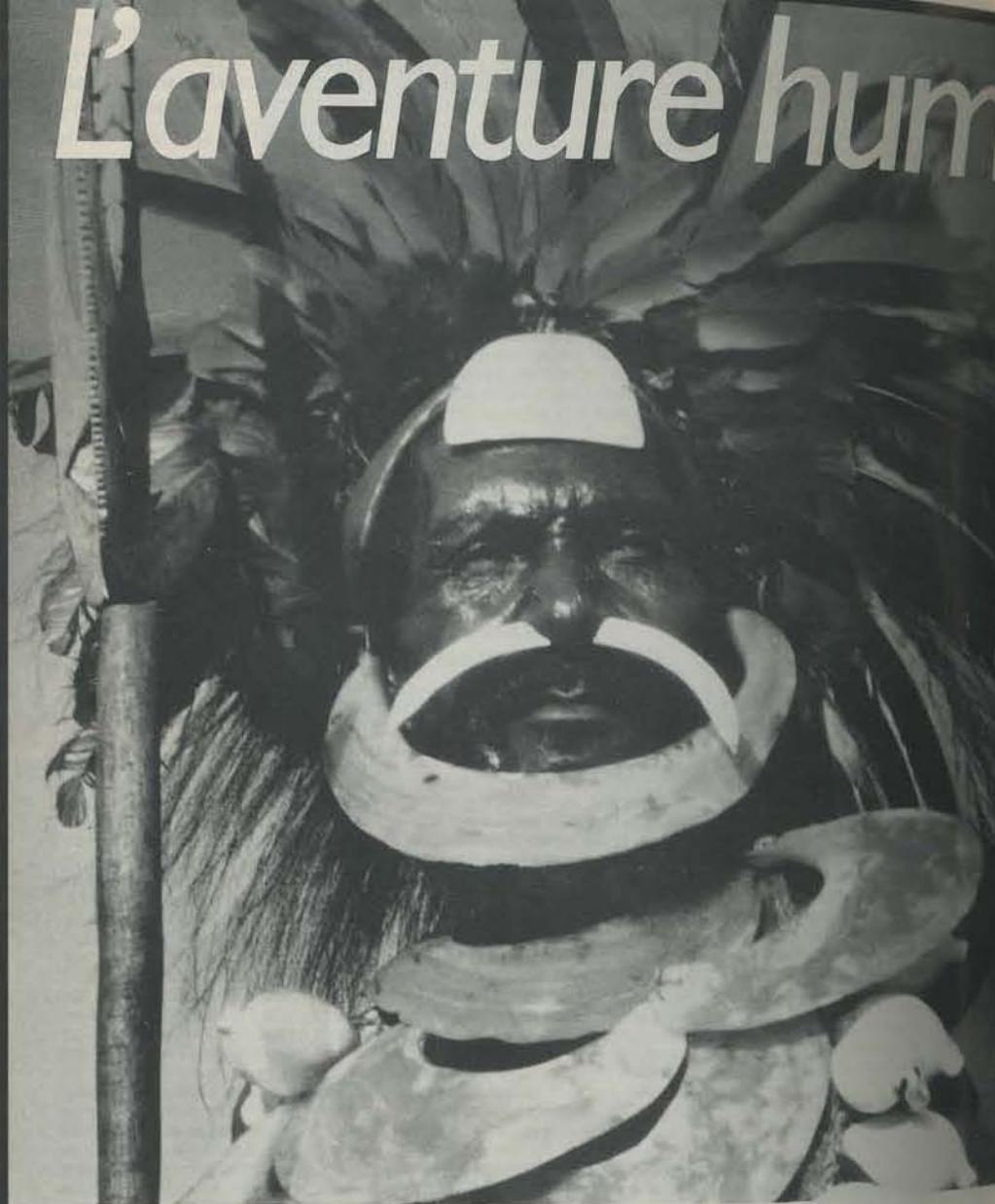
**Sévil:**
le magazine
télématique
de la Cité.

Parés pour l'aventure ? Alors, branchez votre Minitel !
Sur Sévil, découvrir est un jeu, l'aventure est collective.
Ouvrez-vous le monde. Sévil vous connecte avec
tous les découvreurs. Partez avec eux au cœur de la
matière ou aux confins de l'univers. Puis tapez

...OTUS, et vous voilà sur le forum permanent.
...vous s'y parlent librement. Envie de jouer ?
...hoisissez votre aventure : entrez dans la peau
...d'un animal, jouez les détectives privés, ou

confrontez-vous à d'autres joueurs dans des parties
apocalyptiques à travers l'espace.
Retour à la Cité. Visite anticipée ? Sévil vous pilote
et vous ouvre déjà les portes. Bon voyage !

■ **cité des Sciences et de l'Industrie** | la Villette

*The science and technology complex at La Villette certainly wasn't going to miss out on ...eotex — it has been on-line with its Sévil "magazine" since 1984.*

# TAPER TELETEL C'EST TAPER FORT EN AFFAIRES

**PLUS DE 1000 SERVICES DESTINÉS AUX PROFESSIONNELS**

Choisir Télétel aujourd'hui, c'est accéder directement à plus de 1000 services destinés aux professionnels : annuaires professionnels, annuaire électronique ; informations économiques, financières, sociales, techniques et juridiques ; services bancaires et boursiers ; services internationaux ; services de gestion et de comptabilité ;

*MINITEL 10*

informations pratiques. Choisir Télétel et le Minitel, c'est communiquer plus vite et moins cher. C'est accélérer la marche de ses relations commerciales, améliorer la productivité de l'entreprise, simplifier les circuits d'information internes et externes, optimiser sa gestion. C'est gagner en performance pour taper fort en affaires. Pour vous renseigner, appelez notre Numéro Vert.

**NUMERO VERT** APPEL GRATUIT 05 41 51 61

**teletel**

**TELECOM**

*France Telecom's 1987 Teletel campaign was geared to professionals, with slogans such as "3,000 bikes with none in stock", "Find out by midnight which of five stores in Saint-Cloud have 5,000 of the flat-headed kind", or "Order 5,000 samplers of Cognac from Francisco in 2 seconds flat".*

focused on data bases. In 1980, he launched *Vidéotex,* still the only professional videotex industry journal. It had a circulation of 10,000 in 1981. In 1983 he came out with a general public magazine, *Minitel Magazine.* De Valence's group, bolstered by capital infusions from the newspaper *Ouest-France* and the *SPER* company, today has gross annual earnings of over $ 8 million. A staff of 45 puts out an impressive number of specialized newsletters. Nothing escapes the shrewd de Valence: videodisk, computer-assisted education, biotechnology, telecommunications, and so on.

*A jour* was highly instrumental in structuring videotex in France. It channeled useful information to all the sector's players. By printing an abundance of articles on the innovating applications of videotex, it helped lend credibility to the Minitel. Until 1985 and the emergence of other publications in the same niche, credit is due *A jour* for being the only source of information on the French videotex experience and its repercussions on professional and mass-market sectors. Paradoxically, *A jour,* which thinks of itself as a publisher turned to the future — and is — has also chronicled the history of videotex, in spite of itself. A witness to its history from the very beginning, *A jour* is an indispensable guide for anyone wishing to retrace the history of this medium from day one.

*A jour*'s arch competitor hit the newsstands in 1985. The Perdriel Group's *Revue du Minitel,* directed by Patrick Bernard, promptly shot to first place in terms of paid circulation. In 1986 competition heated up — as did tempers. In 1987 the two rival publications went through numerous layout and design face-lifts. They were both aiming to convince advertisers of the medium's value. Since then the two protagonists have been to court. De Valence had registered the trademark "Minitel"; he sued the *Revue du Minitel* claiming it had misappropriated the name "Minitel" and won his case in the lower courts. The Perdriel Group has appealed the ruling. The *Revue du Minitel* has become *Télématique Magazine.* Stay tuned for further developments.

So many people have had a hand in the genesis and development of the Minitel, so many have helped establish its credibility, that it would be preposterous to draw up a hit parade of the great figures involved. Even if it were feasible, such an idea would run counter to the essentially collective nature of the Minitel saga. Designers, user-friendliness specialists, and graphics experts have all made a contribution to the transformation of an engineers' contraption into a tool of communica-

tion. Journalists, by reporting on videotex ventures, companies, people, and new applications, helped weave these disparate strands into a living tapestry. On-line network hosts are the latest players, and have given the system the human touch.

## Of networks and men

One sometimes wonders whether society at large is doomed to a push-button existence. Whether the fear of a future world where man will speak to machines only, through other machines, is warranted. Whether the communication needs of the 21st century will be met by robots. Although the advent of new technology did indeed arouse this shadowy fear a few years ago, today it can be asserted that it was groundless. One need only look around, simply turn on the Minitel, like over three million Frenchmen, to see that something else is afoot.

A phalanx of new professionals has penetrated to the heart of communications networks and information systems. Together they aim to make communication less intangible, less artificial, but also to facilitate it and mesh it with the desires and needs of those who call in. Communication loses its tangible quality whenever effected over networks, whether transmitted for utilitarian or entertainment purposes, whether used for professional ends or not. All the conventional references of communication are lost. The eyes, tone of voice, facial expressions, impromptu exchanges and the adjustments they permit, all this material is charged with clues and markers and is replaced with written information that can be consulted or not, stored or not, discussed or ignored.

Machine-based communications systems like the Minitel combine the disadvantages of the telephone and the mail compounded by the new difficulties of man-machine communication. Given the circumstances, there is an understandable need to provide users with a framework that helps them get their bearings, comprehend and follow through a call or search for information. Enter the on-line network hosts, who are there to see that the call gets through, that callers find what they are looking for: pleasure, assistance, orientation, company, adventure, or a simple piece of information.

Over 8,000 services are currently available on Minitel, an embarrassment of riches. Two years ago, on-line network hosts were unheard of.

Not that they did not exist, of course, but people looked askance at their occupation, which was lumped together with soliciting. Today an on-line host is considered a plus. There are some 200 practitioners of the art in France. The question is whether they know it. They are scattered among various companies, two or three per firm except for two that employ over 20. They are all new to the job and unaware of their numbers. They were drawn to the profession by the prospect of contact, diversity, and change, many of them simply happening upon it. When asked to enumerate the qualities of a good host they invariably reply imagination, openness, a feel for person-to-person contact, a healthy dose of tact and diplomacy, but above all a sense of humor and a solid knack for summarizing.

And indeed a good measure of humor and imagination is called for when receiving the day's umpteenth declaration of love or when confronted with a caller's fathomless loneliness. Coming up with the right words, therein lies the art of a good host. As for the ability to summarize, it is essential when dealing with 150 callers on-line, 20 of whom are engaged in conversation. At times like these, network hosts have to be able to resume any of 20 conversations at any point. They must remember who is who, to whom they have replied, who has said what, who is on-line but has not yet "talked", who is hiding behind the new pseudonym, who is lost on the network, and on and on. They have to have the knack of picking information out of the air, replacing it in its context, and resuming the exchange.

Some network hosts work in a narrower, more specific context. Some, like Philippe, are specialized in on-line teaching. Every evening for one and a half hours, he helps children do their homework from his home Minitel. Secondary schoolers who have keyed in 36-15 + S.O.S.-Devoirs and asked to be connected with an on-line teacher find themselves with Philippe, who helps them on- or off-line. If the question is easy or of interest to all those on-line, Philippe transmits the answer immediately, thereby enabling the students to help each other and to give thought to the same subject, like in class. If the problem is knotty and not particularly pressing, Philippe deposits his response the next day in an electronic mailbox. He is of the opinion that the future of teaching depends on the new forms of guidance offered by videotex. He has long-term plans for the medium and is a great believer in a videotex

school, the warp and woof of which would include on- and off-line communication, and computer-aided teaching.

Yves Marie hosts *S.O.S.-Juridique,* a legal advice service on *Crac,* and shares by and large the same view. The legal world quite obviously strikes him as dreary and videotex seems to him just the thing to liven it up. There are no loopholes for the legal eagle on Minitel. Callers expect clear-cut answers to specific questions. Yves Marie follows the same procedure as Philippe. Easy answers are transmitted immediately and more complicated ones sent the next day, unless the user is rerouted to the data base, which is always more to-the-point since it has been assembled from actual cases.

Michel, 22 years old, has knocked about the communication sector. He has been involved in photography and advertising, and did a stint in a disco as disk jockey. He prefers the title "mediatitian" to host, because he feels that the ultimate ambition in this job is juggling the various media. Videotex is all well and good, but combined with radio and television it is even better — and it is already a reality. He is experimenting with all manner of combinations in his region in conjunction with FR-3 and local radio stations in search of formulas that will make videotex a feedback tool for one-way media, thereby lending them the missing interactive dimension.

One would be mistaken to believe that professional communications systems can forego network hosts simply because they are utilitarian in nature and have something of a captive audience. Because such was long the commonly held view, generations of technical systems — in particular numerous electronic mail services — have been consigned to the dustbin of technology. The loss of the usual features of communication — the sound of the voice, facial expressions, eye contact — also affects professional communication when the latter is effected via a technical system or network. People cannot for long simply talk into a void. Wex company has grasped this fact; it sells software communications systems, but not without a host element. Its systems are highly advanced and one might think that they would run autonomously if outfitted with a sophisticated electronic mail service. This is exactly what Wex, a Franco-American firm, wanted to avoid by integrating the human factor as a permanent feature into its network. Ghislaine, who has been in the business for a few years, is convinced that it is bound to catch on in Wex's client businesses when they discover that employee use of

available communication tools depends by and large on the helpful presence of systems hosts. In addition, hosts are the first to realize what upgrades and new products are needed. They quickly become the pivotal piece in the puzzle of new technology distribution. They are also instrumental in meshing supply and demand. Theirs is a two-fold assignment: familiarize users with the technique in question while seeing to it that they do not feel rejected and can handle the system; teaching users and avoiding that the technique becomes an end in itself but rather is put to a social or corporate use that makes it meaningful.

On-line network hosts and systems hosts are brand-new occupations. Small wonder, then, that their definitions and mechanisms are a bit nebulous. The on-line teachers of *S.O.S.-Devoirs* who teach *Crac*'s student clientele have little in common with Wex company's systems hosts, who facilitate their clients' commercial operations. Both may appear superfluous in an age of computer-aided teaching, sophisticated data bases, and user-friendly communication software. And yet, they play a very important role in smoothing the development of network-based communication.

Advances in the development of artificial intelligence undeniably offer an answer to difficulties in using communication and machine-based information systems. Videotex can take advantage of the situation in terms of both savings on system operating costs and system comfort levels — and it would be foolish to deny the fact. It would be just as dangerous, however, to oppose human presence and artificial intelligence on the network, as was long done with home and network systems until their complementarity was recognized. Such mutual exclusion theories only fuel "theological" debates on "good" vs. "bad" technology.

# Foreign lands

For Gérard Théry, former France Telecom general manager and architect of the launching of Minitel, the 1987 vintage of the little machine is light years from what he had envisioned. He does not even recognize his own child any more. His offspring was more intelligent and more adaptable. It had been raised to go into data processing,

communication, and graphics information using an enhanced display format; to be outfitted with various peripherals and become a constituent part of office automation systems and home electronics. And 10 years later they show him the same little machine — as rudimentary as ever but built to take a licking — and which has not yet caught on outside of France. Granted, the Minitel has succeeded in marshalling into action a host of players in the publishing field. And indeed their numbers have increased in recent years. But the industrial end of business presents a far less sanguine picture. First, the videotex terminals, exposed to normal market forces, have been upgraded — Minitel 1 was followed by Minitel 10, with Minitel 20 in the offing. Upgrades notwithstanding, no real technological leaps have been achieved, even though the terminals are now computer compatible, whereas over the same period of time the range of microcomputers has greatly expanded. Furthermore, French videotex has not as yet really gained a foothold outside France, this despite the fact that exporting had been assigned top priority in France Telecom's and the government's 1978 policy statement governing new telephone-related services. The success of French videotex is the envy of the world, but this has not translated into any noteworthy penetration of foreign markets.

Despite its undeniable appeal, Minitel has yet to catch on abroad. It was originally argued — and rightly so — that a product following in the wake of another that has already imposed its standard and forged a captive market faces export problems. It was alleged that the British had "traumatized" the European market by imposing their Prestel videotex format, to which Europeans remain attached despite its relative failure to measure up to expectations. The word "Minitel" sends shudders through the European body politic. To justify resistance to the interloper, questions of technical compatibility are also trotted out, although that tack has lost some of its power of conviction in view of the fact that 28 countries have so far authorized Minitel. Lastly, some contend that other countries' restrictive legislation effectively erects barriers to importing of communications systems.

The Minitel export dilemma would appear, however, to have other causes. The *sine qua non* of exporting something is to agree on what is being exported. The paradox is that videotex, so seemigly straightforward for those who work with it, is difficult to define as a product. The question of what is being sold often elicits contradictory responses. Some would submit that the "videotex product" includes all its constituent elements. They accordingly reason that the Minitel, the kiosk system, the videotex access points, and the packet-switched network form a whole whose components could not be sold separately, or only with great difficulty. This line of reasoning, which has apparently been discarded after a brilliant career in the role of conventional wisdom, shrinks export potential by dangerously restricting the possibilities of adapting the system to different technical and legal contexts. Others would allow that videotex *à la française* does not constitute a system strictly speaking but rather is the sum of the know-how of a number of economic players, the combination of which in France has made for a system that works. This more pragmatic outlook clears the way for identifying what know-how stands a decent chance of being sold on foreign markets. France Telecom, for instance, has potentially marketable expertise in networks and billing; the systems and software houses in hardware and software; manufacturers in terminals and peripherals; and service providers in publishing electronic services. Each of these skills and areas of expertise, which together are responsible for the success of videotex in France, could be exported separately or in combination. Lastly, many feel that exporting videotex hinges on the internationalization of the Teletel network and videotex traffic flows. Recognizing the fact, France Telecom has opened its Minitelnet service, which enables service providers from many countries in the world to access French host systems. Any hope for breaking French videotex out of its ghetto, so the argument goes, depends on internationalizing the use of the Minitelnet network and using it to host the services of foreign providers such as USA Today and the BBC. In line with this approach, agreements were recently concluded with the Belgian telephone company, the RTT, for interconnecting the French videotex network to the Belgian network and delivering 1,200 French videotex services to Belgian users equipped with either microcomputers or videotex terminals. The situation is so complex that many have given export of the Minitel up for lost. They argue that the first abortive attempt is the last, that youthful errors cannot be redeemed, and that the runner-up position in the communications market constitutes an insurmountable handicap — unlike in conventional markets where second-place finishers can learn from the mistakes of those that preceded them.

Recently, however, some have taken to whistling a different tune.

These sanguine souls maintain that the time is ripe for exporting French videotex. Because the success of videotex in France is undeniable, and because its economic viability has been proven, they reason, the first stirrings are being felt in Europe. In the van are private operators who have been won over by the French scheme and have adopted it for opening electronic information markets in their own countries.

New developments have been reported in the United States too. The American context has shifted and the Baby Bells — products of the divestiture of ATT — are purportedly ogling French videotex with a view to diversifying their activities. But American common carriers are not alone in their interest in videotex. In both the United States and Canada other initiatives are shaping up that may be concluded in the very near future. Is this yet another mirage or the end of a long series of setbacks on the export front? Are years of effort finally about to pay off, despite abortive attempts and rude awakenings in the past.

## Bright spot in the United States market

Europe's grim opposition to an across-the-board videotex standard in 1982 all but dashed French hopes of penetrating the Old World's videotex market. It was initially felt that the countries of southern Europe, less solicited by the British, might provide an opening, but they had all they could handle just to bring their phone networks up to par before giving any thought to videotex. France accordingly turned to the United States, which can be approached either as an equipment market or a systems market. The French opted for the latter approach for which their know-how is the most marketable. In addition, Japanese competition in this area was less fierce than for the terminals.

The 1980 Intelcom Trade Show in Los Angeles gave France its first opportunity to mount a large-scale mass-media offensive. Of the exhibitors, 22 % were French and 87 % American. There was one Japanese company and no Scandinavian or British representatives. To lend greater credibility to its demonstrations, France Telecom organized an on-site industrial-scale experiment. As part of an agreement negotiated by France Telecom's subsidiary, Intelmatique, between the Havas subsidiary ODA and the Continental Telephone Company (the fourth largest American carrier), the near-by town of Big Bear was designated to host a test of the French videotex system, beginning with the electronic directory.

Back at the Trade Show, Intelmatique and Tymshare announced an agreement calling for the Matra company to sell Tymshare 100,000 directory- i.e. Minitel-based terminals in three versions, for office automation, mass-market data processing, and point-of-sale use. The aim was to jointly explore existing markets and opportunities. Tymshare was primarily interested in the market for a videotex terminal with integrated smart-card reader and, through its subsidiary Tymnet, in electronic funds transfer. The parties involved were trading in systems, not hardware, and the software and systems houses would play a leading part. Elsewhere, in April 1981, under the auspices of Intelmatique, the French software house Stéria joined the consortium that conducted the Teletel test in Sao Paulo, Brazil and was to conclude an agreement with CBS.

Announcements of French operations abroad routinely punctuated the news until 1983. In his February 4, 1983, address inaugurating the electronic directory in Rennes, PTT Minister Mexandeau referred to the 100,000 terminals sold by Matra, the 25,000 sold by Telic, and the establishment of a French industrial consortium for promoting the French videotex system in the United States. It was also a fact that companies like Cap-Sogeti, Sligos, Télésystèmes, and others would in turn express an interest in the United States market. It was regularly announced that such and such an agreement had been signed, such and such a test had got under way, such and such a partnership had been formed — and that was as far as it ever went. It may be that in the wake of Théry's media blitz French manufacturers thought victory was a foregone conclusion and did not see fit to make any further effort or forge a long-term strategy. In their defense it should be said that the Americans themselves were unable to impose videotex despite the respectable results of various tests. The Times Mirror and Infomart Company conducted a test in the summer of 1982 in 350 California homes that yielded just about the same results as the Vélizy experiment. One year later, again in the same area, the Times Mirror teamed up with Videotex America for the Gateway experiment, the outcome of which was just as encouraging. So encouraging, in fact, that Videotex America entered into several agreements with other partners to conduct videotex feasibility studies in Maryland, Virginia, and Washington, D.C.

Why the devil, then, do such pilot-scale initiatives invariably fail to reach the industrial phase, regardless of the promoter? The question is a sensitive one and the answer must take account of a number of

elements. It would appear, however, that the widespread use of home computers is not entirely blameless. When videotex was introduced, Americans already had a rival electronic information tool. But this did not account for everything, for there is nothing preventing the use of home computers for videotex purposes, i.e. connecting the two in an organized network that would more easily accommodate a line of services. The ultimate cause can arguably be attributed to American deregulation. It was in the wind as early as 1980 and virtually all observers knew that the object was to reshuffle the information industry, although no one could say just how the chips would fall. This climate of uncertainty was to persist for some four years and discouraged people from taking a chance on a market that was at the epicenter of deregulation in that it involved both the telephone and data processing. The prevailing confusion threw American manufacturers off guard and limited their scope of action to mere field studies and demand forecasts. It also impacted from the outset on foreign companies, which were at a loss to understand what was at stake. And understandably so since American deregulation was designed to enable domestic companies to capture foreign markets and to prevent foreign firms from staking any claims in the United States market. At the time, however, no one was capable of such an analysis, especially not the French, who were blissfully ignorant of American law and its development. It is understandable, then, that they walked straight into a trap and that, in the process, any notions of exporting they might have had were nipped in the bud.

And so in the spring of 1987 the question persisted whether French efforts had been in vain. Whether the Minitel was destined to remain a purely French product. Whether despite its appeal to foreigners, and Americans in particular, it would always lack that international seal of approval that confers legitimacy on communications products. Whether the simplicity of Minitel — a machine that can be used from the word go, whereas other terminals require training — was unconvincing. Whether in a broader vein it was the role of rigid government agencies to conduct export policy. Lastly, whether the United States market was not simply impossible to penetrate, especially in the area of new information technology, where innovations crop up everywhere. But the United States communication sector is changing by leaps and bounds. Since ATT was divested, the Regional Bell Operating Companies (RBOCs) or Baby Bells have petitioned for the right to distribute data over

their networks. After a protracted lobbying effort, they have been granted that right in principle. The September 10, 1987, ruling handed down by Judge Harold Greene, who rules the roost in matters of telecommunications deregulation in the United States, is by no means a panacea paving the way to cost-effective videotex operations, but it is nonetheless a step forward. With this first success under their belts, the RBOCs are pushing their advantage. Judge Greene, a recent convert to French videotex, has asserted that he aims to usher in something along the lines of the French approach in the United States and the RBOCs hope to take advantage of it. In an interview with the French business newspaper *les Échos* at the Telecom 87 Trade Show in Geneva, he disclosed that upon his return to the United States he was going to work on a new set of regulations authorizing the Baby Bells "to become videotex operators like France Telecom", adding that "it was by no means unlikely that they would distribute terminals free of charge and recover their investment on network traffic".

Behind the scenes the RBOCs are mounting a videotex offensive. Videotex is gaining ground in the deserts of Arizona and Colorado where the local carrier United States West is arguably the farthest along in formalizing its venture. The company aims to interconnect independent host systems and, using the kiosk system, offer a complete line of available electronic services. It further intends to use dormant packet-switched data networks and make money doing so. United States West will reportedly invite American service providers to take part in a test it will conduct in conjunction with France Telecom. Nothing has been signed, however, even though Intelmatique has already sold United States West two feasibility studies that have considerably cleared the way.

In the spring of 1987, the French press devoted considerable space to an agreement between France Telecom and Nynex, a regional phone company in the Boston area. This protocol agreement was greeted with silence. The silence was all the more deafening for French telecommunications people, who saw in the Baby Bells' selection of their videotex system — apart from the ensuing export revenue — a vindication of their marketing strategy and technical decisions.

Vindication may ultimately come from the city of Houston where United States Videotel company, headed by Amin J. Rahme, has earmarked $15 million for launching French videotex. In conjunction with Southwestern Bell Corporation, which is supplying local area

network access free of charge and has anted up $50,000 for the operation, United States Videotel has decided to conduct a market test on 500 people equipped with Minitels from Telic Alcatel who will initially receive some 30 data bases including the Dow Jones and the Source. Beginning in 1988 the company plans to expand its network to include 30,000 people, finishing the year out with 100,000. Out of a first purchase order for 30,000 Minitels from Telic, 10,000 have already been delivered.

With the American flair for communication, United States Videotel has come out with a four-color brochure showing an immaculately white Minitel, which moreover has never been photographed to such good effect. Customers leasing the Minitel, or any other interfaceable computer, for $20 a month will have access to pay and toll-free services. Technically speaking, the network is the spitting image of the French version, except that its bills are more detailed. And Amin Rahme, who acts like a regular systems operator, does his shopping in France. He takes back text editors, printers, layout equipment, and the like, as well as purchasing the know-how he needs. United States Videotel will soon be connected, at its request, to the French network, and its customers will get a taste of services à la française. The same type of set-up is apparently being put into place in Montreal, Canada. At the initiative of a local financial institution, the CETI, some 100,000 terminals will reportedly be made available to the public in the very near future. 30,000 terminals have already been ordered from Telic, and the CETI, manifestly more enthusiastic than ever, has announced that five million users should ultimately be connected to the network. The promoters intend to adopt the French system lock, stock, and barrel. However attractive this venture may be in the sense that it brings together partners with complementary areas of know-how, its political origin — and the ensuing fragility of the whole operation — should not be lost sight of. The project was the brainchild of the Summit of Francophone Countries that had met in Montreal and no sooner was it announced than it ran head-on into a Bell Canada counteroffensive, who was evidently not about to stand by idly while it was overtaken by this upstart. The CETI project did have one advantage in that it had a terminal, the Minitel, something that could not be said for Bell Canada, which had baptized its future terminal "Alex" (as in Alexander Graham Bell) after toying with the idea of calling it "Minibell".

The CETI venture is one of those fabulous projects. It aims to duplicate French videotex on North American soil, which is agreeable to French national pride. In addition, it is billed as a French-language data network for the general public. As such, the project is invested with a high degree of symbolism, which explains the aggressiveness of Bell Canada and the amount of space that French newspapers have devoted to it.

Jean-Louis Fourtanier must be ranked among the adventurers of the New World. Game for any venture, he surely would not have wanted to miss out on this one. For months now he has spent almost as much time in the air as on the ground. He has accepted the challenge of bringing America round to French videotex. French Connection is the trademark of his United States venture and his response to the question of how to prime the videotex pump in France. Before opening his New York City office, he conducted a months-long test using leased lines from his host computer in Paris. He calls the results encouraging, for "the minute an American lays hands on a Minitel, he becomes a fan". True enough, they spend their time in the electronic mail services, not often exploring the other services, but admittedly the rest of the service is still in French. This is all well and good for French expatriates in the United States, but a market naturally cannot be built around French information services designed in France. Fourtanier will therefore have to find local publishers who know how to design and operate services for Americans, which is just what CTL is doing at the moment. Fourtanier intends to extend his system from city to city on a partnership basis. For now he is concentrating on New York City and will move on to others as he finds ideally suited videotex publishers.

Compatibility problems with the American network are not insoluble. The X.25 standard interface protocol that defines packet-switching networks is international, even though a few little black boxes (furnished by OST company) are needed to interface them to the Transpac network. In Memphis, Tennessee, Fourtanier cornered the best known man in town and convinced him of the advantages of the Minitel. He aims to pursue the same approach, entering into partnership after partnership, and thereby covering an increasing number of American cities. A pipe dream or conscious and determined risk taking? Fourtanier has given himself a year and $700,000 to make a go of it. Since the bulk of the cost of the operation is chargeable to his American videotex partners, his $700,000 is the price of persuasion. He already has the needed

technological infrastructure in Paris and so has to make no additional investments in hardware.

The crux of the problem is to find reasonably priced Minitels on the American market. Consumer videotex could very well be delivered through available home computers, but Fourtanier believes that the Minitel keyboard with its integrated control functions is irreplacable. He has approached a number of hotels, which as a rule are not too strapped for cash, and which that are delighted to offer their guests an extra, offbeat service, and he himself distributes as many Minitels as the market will bear — already 200 — in an effort to make converts.

Americans want to use the Minitel for home shopping. Christian Marchandise, head of *Télémarket*, was quick to realize the Minitel's suitability for home shopping. He has reserved an access number on French Connection and is bent on becoming the Minitel home shopping leader in the United States. Now, the average mail-order house switchboard keeps 200 operators busy. Once the bill has been recorded, it has to be validated, whereas the home shoppers using Minitel effect all the operations themselves. This fact alone is enough to attract mail-order house professionals who want to realize substantial savings. However, home shopping in the United States means cable television. Catalog merchandise can be shown, indeed "staged" on the television screen. Far from the dry-as-dust videotex format of their *Télémarket* service on *le Monde* or *Libé*, the Marchandise brothers, one technician and the other marketing man, are moving into visuals. Already they are eyeing Paris Cable, the cable TV network in Paris, with a view to testing their wares.

Will the United States take to French videotex? At last the American market is showing signs of life and ever more projects are in the works. This is already a first step, but what really reassures the average observer is the sight of American operators taking the bull by the horns. The prospect of profits — witness those made in France — is finally attracting capital and entrepreneurs looking for new media. And the French now wonder whether they will get a fair price for their know-how in view of the amount of information they had to disclose to make a name for their system.

## Europe's slow awakening to French videotex

In January 1981, the British changed course. With 7,400 subscribers to their Prestel videotex system at the time, they had fallen short of their 1980 target figure. The British videotex strategy was the domain of government agencies that had adopted no workable policy where terminals were concerned. They were therefore expensive, and especially so — comparatively speaking — in a country where TV sets are rented. And so, since the consumer market that British Telecom had originally set its sights on was proving uncooperative, it was decided to veer for the professional market.

The Prestel system was designed in such a way that British Telecom is both host and data distributor. Unlike its French counterpart, it can change policy as it sees fit, one reason being the limited number of available "pages" in the system that allows it to pick and choose service providers. In the spring of 1981, British Telecom decided that its professional clientele was better prepared for videotex than the general public. The success of services such as that of the Channel ferry company Sealink, which had subsidized the purchase of Prestel decoders by 1,300 travel agencies, and that of airlines such as Pan Am, TWA, and Quanta confirmed its supposition and started it thinking that professional providers might turn out to be effective promoters of videotex terminals. Private systems — either intracorporate or those run on a subscription basis — also met with considerable success. The thinking, then, was that thanks to British Telecom's new strategy Prestel would be the system to beat in the world professional videotex market. The course would be maintained throughout 1982. Today Prestel, with 7,000 subscribers, can lay claim to having made a real breakthrough in professional videotex. The public at large is no longer being wooed.

The Netherlands and West Germany have both adopted the British system, under the names Viditel and Bildschirmtext, respectively. And both are subject to the vicissitudes and methods of Prestel International. At the end of 1980, there were 1,200 terminals in operation in West Germany and 1,800 in the Netherlands. In late 1981, each country numbered 6,000 and 5,000, respectively at a cost of 3,000 DM and 7,000 guilders. The two countries were thus unequally equipped in terminals, and France would only take the lead with the opening of its electronic directory. Already, though, West Germany and the Netherlands were

experiencing growing resistance to purchasing terminals. The situation was such that in 1980 the Netherlands' PTT indulged in a fit of state interventionism alien to its usual practices and compelled service providers to outfit one subscriber with a terminal for every 50 "pages" stored in the Viditel host computer.

For their part the Canadian authorities have not given up all hope of one day marketing their Telidon videotex system. The Canadian government invested $ 27.5 million in 1981 and 10 more in 1982 in an effort to sustain the system and bolster its export potential. Telidon officials have focused their efforts primarily on the United States market, particularly in the area of one-way broadcasting as opposed to interactive communication, where the United States and Canada are expected to adopt the same standards. To date Telidon has not met with the success that the very high quality of its display format should have earned it. Telidon has furthermore encountered the same difficulties in the United States market as Teletel.

As for the Japanese, who take the field for all the technological battles, they are naturally present and accounted for in the videotex market. Japan's public videotex service is called 'Captain'. The Japanese postal authorities, the NTT, conducted the first tests in late 1979 in Tokyo. The pilot network was expanded from 1,000 to 2,000 users in 1982, at which time Captain contained 20,000 "pages" of information, hosting 200 participating service companies free of charge. Once again the findings bore an uncanny resemblance to those of the Vélizy test and NTT officials decided to market the system starting in 1984 in the form of a package deal costing some $20 a month. Today, like its videotex brothers elsewhere — with the notable exception of Teletel — Captain is barely scraping along. And rumor has it that service start-up was stopped cold by the Japanese moral majority, who could not swallow the fact that the only cost-effective sector was the on-line rendezvous services!

With so many systems on the loose — Prestel, Telidon, Captain, Bildschirmtext, Viditel — the videotex market is understandably congested, and no one is about to throw in the towel. Moreover, since the systems and the tests that led to their selection were often the doings of large government agencies, something of national prestige is on the line. The line of reasoning that advocates abandoning an unprofitable system for one that offers proven cost-effectiveness is easier said than done. Apart from the matter of national pride, there are the various

competing standards involved that have been devised to be as incompatible with one another as possible and the difficulty governments have to admit error and the attendant investment losses.

The European market is thus in a state of shock and until very recently the odds of exporting French videotex — however impressive its performance — to the rest of Europe appeared slim indeed. Today, though, there are faint indications that suggest things are changing. A few private-sector operators who have been emboldened by the sight of successful enterprises in France and who want to do business on the new medium have begun turning up in the electronic publishing market. They are keen on adopting the French system regardless of how they have to package their decision to make it politically palatable. Thus promoted by individual European operators, French videotex might gain acceptance beyond the borders of France.

The Madrid-based Santander Bank is a veteran user of French videotex outside of France. In 1986 it decided to upgrade its semi-interactive voice inquiry system by outfitting it with an inexpensive little terminal with which its customers could use other services in addition to mere account verification. Radiotechnique, a subsidiary of Philips, was called in to do the job and "summoned" to install Minitels at one end of their voice concentrators. The partners were promptly confronted with the complex and, on the face of it, insoluble compatibility problems, which they managed to resolve only because of their combined willingness. Would the outcome have been the same if the network provider had not been, like Radiotechnique, a subsidiary of Philips and if the affairs of the "family" had not prevailed over each party's divergent vested interests. The network has since taken off. Fifty access points cover all the Spanish provinces and 50,000 Minitels can access the Santander Bank's information system. Santander has adopted the French strategy by distributing Minitels for a few dollars a month to its customers, who then have access to a wide range of banking services. Needless to say, the Bank had to be aided and abetted in its operation. It so happens that the bank is on excellent terms with Spain's telecommunication's administration, la Telefonica, of which it is a shareholder. Telefonica accorded the bank the necessary waivers to install a limited number of Minitels. Every year since, 15,000 terminals have made their inconspicuous way into Spain, whose declared choice in videotex by the way is the German format! Santander has already invested some $35 million in its videotex

system and appears unwilling to pull the plug on an operation that is doing so well. Nor does it take a genius to see that one day the Bank will move to make a return on the money and know-how it has invested in a sector more directly concerned with electronic publishing. After all, it already has its own private network and, after France Telecom, more terminals than anyone else in the world. But bankers have never been very talkative, and the Spanish branch as well hews to the notion that good business is best done quietly. It would therefore be risky, in this information vacuum, to venture any unconfirmed assertions. The story of the Santander Bank would not be worth the telling if it had not occurred in 1986 in a country that had officially adopted the German videotex format. What makes it even more intriguing is that the Santander operation would appear to have spawned a movement: On October 16, 1987, in the Spanish Embassy in Paris where a wall of Minitel screens had been installed, the King of Spain keyed in 36-15 + *DIALOGO* to inaugurate a Franco-Spanish service — using the Teletel format.

Michel Landaret, the originator of Gretel, is one of those videotex mavens who believe that the future of the French system hinges on its acceptance abroad. He is convinced that it is best to forego the services of technicians who always want to force-feed their technical solutions to reluctant customers. On the contrary, what is needed are marketing and sales people capable of drawing up communications plans in a pinch, mounting joint-ventures, adapting quickly, and making any and all modifications, including those that seem impossible at first glance. He contends that humility is a requisite characteristic for successful exporting, especially to "traumatized" markets. To his way of thinking, the key to success is getting others to overlook a product's technical superiority.

Living as he does in Strasbourg where he has powerful regional multi-media connections, Landaret has as a matter of course put them to use by mounting in conjunction with the Swiss newspaper *La Suisse* a videotex service called *Swisstel* on the Swiss public switched telephone network. The paper itself distributes Minitels to its readers, charging them SFr 69 a month including 10 free hours of consultation. The service is hosted on a 150-port system furnished, together with the contents, by *Gretel,* which offered the newspaper a tailor-made turnkey videotex system, the result of its own experience as service provider and host.

*Swisstel* alone already accounts for 50% of Switzerland's total videotex traffic. To avoid any potential problems, and also perhaps because Switzerland is Switzerland, a set of ethical ground rules has been worked out and applies to all wishing to take part in the operation. The success of *Swisstel* is of more than just symbolic importance in France. It means that it is possible to devise services abroad based on the electronic directory — without a directory plan and without government subsidies. No need to dwell on the prospects for French exporters as a result. Moreover, if all goes well in Switzerland, Landaret's feeling is that West Germany might be the scene of the next operation, provided the same incremental and modular strategy is used — and no brass-band parades!

Things are budging in the Netherlands as well. It may be argued that Viditel's partial misfire has reinforced the iconoclastic tendencies of those who are tempted by the French system. The Stichting Telematica is an association that promotes new technology in the Netherlands. This umbrella organization brings together some 30 partners, including representatives of Viditel and Philips. All were excited about the success of the French operation and began contemplating the advisability of sponsoring the same type of operation in the North Brabant province of the Netherlands. Radiotechnique, Philips subsidiary and Minitel supplier, was immediately asked to organize a series of contacts with French videotex operators. A get-together was organized in Paris, where the French demonstrated their wares, and another in Eindhoven in the Netherlands, where the French again demonstrated their wares, this time, though, before 300 paying customers. Service providers, contents providers, and systems operators recounted their experiences and explained the philosophical underpinnings of the Teletel network.

Today Telematica has confirmed that it wants to install in North Brabant a videotex network accessible to remote hosts, using the kiosk system. 100,000 Minitels will be distributed and the operation financed by a consortium that may be joined by the Netherlands PTT if it is won over by its marketing strategy. Needless to say, it is difficult to evaluate progress of the Telematica project. It would be equally risky to venture any predictions about the contents of the development projects of the Santander Bank in Spain or the newspaper *La Suisse* in Switzerland. It would be just as foolish to cry victory on the basis of two or three scattered tests, especially in view of the manifest fragility of these projects — despite their promoters' determination.

Apart from the increase in project start-ups, a further recent change that has thoroughly modified the videotex landscape concerns the origin of the sector's players and the financing terms they propose. Here is to be found one of the keys to exporting French videotex. Contrary to a long-held belief, it is not a matter of exporting terminals or any other piece of the technical puzzle. It is also not a question of exporting turnkey services. Even turnkey services would be of French, i.e. foreign origin and would in all likelihood not meet user needs and expectations. An exportable system has to be completely overhauled and repackaged for each new cultural, economic, technical, and legal context. Furthermore, videotex is not exportable unless promoted by local partners who sell their fellow citizens on the merits of the system, without which salesmanship no communications-related project can take hold.

The truth of this has become axiomatic and nowadays all those involved in one way or another in exporting French videotex give top priority to seeking out local players to see projects through — although it is up to them to arouse initial curiosity among potential operators. Their task has been facilitated in that the concept of a low-cost mass-market videotex terminal is now a fact of life thanks to the success of Minitel.

If the French successfully develop suitable communications and partnership strategies, one can be forgiven for thinking that Teletel oases will slowly spring up all over the place. Such videotex islands might multiply and become interconnected, in which case videotex would not have developed as originally imagined — through government fiat. Government agencies would ultimately come round to the thinking of their citizens, and Teletel would then have become a *de facto* standard. And yet such an idyllic scenario can only succeed if, in France, the various areas of know-how are staked out, clearly ranked by priority, and expressly worked into a clear-cut export strategy.

French Telecom's export policy is gradually taking shape. Granted, the advocates of selling the system as an indivisible whole and those in favor of a modular approach are at loggerheads. The latter, however, are gaining ground. The partisans of the modular approach, whose ranks are swelling, and Marcel Roulet, French Telecom general manager, who senses that foreign markets are ready to convert to Teletel, are of the opinion that there are numerous strategies to choose from and that selection should be based on the partner involved, local circumstances,

and prevailing constraints. Finally a note of pragmatism in an institution where technology often rhymes with theology.

Understandably, though, Telecom engineers are so proud of the success of their technology that they just naturally consider it unique. To their way of thinking videotex is a sort of four-cylinder engine including Minitel, Transpac, VAP (videotex access points), and the kiosk system. As far as they are concerned, there is no salvation outside of the quad. And yet the export set-backs of past years have gone to show that it was impossible to sell this compact block anywhere.

Even in the United States, where the issue of networks is less burning, changes in the texts governing deregulation make the business of running telephone companies unpredictable. Since September 10, 1987, the regional operating companies born of the divestiture of ATT, the Baby Bells, have been authorized to transport data. They had since pursued negotiations with Judge Greene with a view to persuading him to modify his most recent ruling so they could operate videotex systems profitably. The latest ruling was handed down on March 7, 1988, and although it strengthens the hand of the Regional Operating Companies in voice and electronic messaging, the decision hardly opens the door any wider for them to "videotex". Still, the regulatory process in the United States is highly "open-ended", and takes account of changes in the economic ground rules and the positions of the players in the sector involved. The regulatory texts will change with time, thereby modifying the rules of the game, but the status of the Regional Operating Companies in the United States will certainly never be comparable with France Telecom's. This difference will necessarily be reflected in the respective technical schemes and billing systems.

From the outset, French videotex policy stipulated the need to export. Ten years later, this objective has still not been achieved — even if there are signs that an export breakthrough is around the corner. In the meantime France Telecom had to develop videotex in a hostile environment — France — and sell reluctant Frenchmen something they are crazy about today. The goal of exporting, though, has gone unfulfilled.

The proven success in France of an information and communication technology is grounds for optimism. Another asset is the international-ization of the Teletel network, which can be accessed from just about everywhere in the world, including Australia, the United States, Canada,

and virtually every country in Europe. Depending on the country, data are distributed via telephone networks, packet-switched networks, and leased links. The internationalization of the network not only enhances its export appeal but also opens up new vistas to those engaged in transnational activities. The French have been hard put to devise and implement a consistent videotex marketing strategy, a handicap virtually commensurate with any technical success it has achieved. This egregious deficiency explains that, despite the success of French videotex and the ensuing notoriety, foreign markets have turned a deaf ear to it.

In addition, the absence of competitors is not necessarily a blessing. Racing against no one but themselves, French videotex manufacturers have not been exposed to competition. They have never been able to compare their product's merits with those of others and have the necessary counterreferences that would have unabled them to upgrade it. Thus the Minitel has come of age far from the fields of competition, and one might reasonably wonder whether French manufacturers would prevail in a confrontation with rival firms.

To point out that there are none around today would be the easy way out. What possible interest would the Japanese or Koreans have in developing terminals to be purchased solely by government agencies concerned about bolstering national industry? But if the market blossomed and private-sector operators started buying, it cannot be ruled out that Southeast Asian countries — with their characteristic rapidity — would not take the terminal market by storm.

Is such an assessment enough to motivate those who shy away from exporting because the fruits of such labor are harvested late? Will the French succeed in devising a range of systems suited to foreign markets in those countries where both the market and the videotex mentality have to be created from scratch. Or are they attempting to reproduce abroad the same model that was so successful in France? The international future of French videotex depends on which of these two courses is charted.

# Conclusion

B arely out of swaddling clothes, French videotex was deprecated for its primitive graphics capacity, its long display time, lack of color, and puny screen. None of which stood in the way of its ultimate success — unique to date. The six-million hurdle in connect hours was cleared in the spring of 1988 with some three and a half million terminals — a figure unmatched elsewhere. An undeniable success story. Credit for it goes as much to the technical people who chose the most open for it goes as much to the technical people who chose the most open networks as to the contents professionals who made the most of the constraints of the medium to invent new services, thus expanding the range of Minitel uses.

A product of monopolistic forces, the Minitel achieved economic viability thanks to the early decision to distribute it free of charge and to leave the field open for all manner of services. The only country in the world where the terminal is free and where host operators enjoy the same legal status as print publishers, France is also the only country that has made a go of videotex. Everywhere else, operators have been stymied by the chicken-and-egg dilemma. France Telecom's strategy has paid off but, on the other side of the coin, 5 % of terminals are never used and 30 % are used only to consult the electronic directory. Given the circumstances, the continued routine distribution of Minitels free of charge is obviously risky, bearing in mind that a great many Frenchmen who were not offered a free terminal subsequently leased one. It is a good

bet that people still without a terminal will not soon number among big videotex users. Hence the decision to charge a few dollars a month, at least early on, to separate serious users from the rest.

The question arises as to what such a policy change coupled with a revamped rate schedule might bring. The days of the $10 per hour across-the-board calling fee are gone. Now that the flat-rate approach of the early days has been shed, a more flexible pricing system will be available based on the new rate schedule provisions adopted in the spring of 1987. Henceforth, product lineups will be billed variously, depending on their features. Professional services are available on 36-16 at $10 to $12.50 an hour. The 36-17 delivers more sophisticated services and will cost a little over $21 an hour. The question is how the public will react to these changes and whether videotex demand will prove elastic, i.e. whether demand will increase whenever prices fall off. No one can answer these questions and only the 1988 year-end results will shed any light on the matter.

Service providers are already anticipating and preparing publishing strategies to make the most of the new rate schedule by organizing their services with the new price range in mind. Ultimately though, the merits of a given policy can only be judged in the light of the facts.

At the same time, and thanks to the new rate scale that makes for a lineup of high value-added products, service providers are preparing new types of products and services that will give the Minitel a new dimension. Today, available services are diverse; tomorrow, they will also be worth money. This new offer will without a doubt alter the world of Minitel by making it *the* channel to the rarest of information, but it will not radically alter its basic character.

The Minitel will not move up a step in quality unless integrated with audiovisuals and data processing. In this construct, the Minitel could function as a feedback channel for the mass media, through which they could improve communication with their audiences. Likewise, it could give a boost to closed data processing systems by offering a means of greater user-friendly access.

By now it is common knowledge that a given medium changes quickly and that a new technological generation sweeps the previous one aside before it has even had a chance to demonstrate its full potential. The advent of increasingly sophisticated graphics in home computers, with the marketing of machines like Commodore's Amiga and Atari's

ST-520 and ST-1024, means that computer manufacturers are attempting to widen their customer base and are betting on the appeal of high-quality graphics to do so. Can videotex people afford to ignore these developments? Whether they like it or not, the use of videotex in the heart of professional systems renders it dependent on such trends, a fact that operators of services on integrated service digital networks (ISDN) would come to realize fully.

But the most eagerly awaited innovations from mass-market service providers do not involve improvements in existing functions, such as better quality graphics, richer colors, and faster display speed. Service providers are focusing their efforts on devising new features that catalyze demand for new products.

The Minitel has already done much to familiarize the French with remote accessing and machine-based communication. However, unless notable improvement is made, the Minitel may soon be under-powered for remote transactions. The Teletel network will have to offer transaction verification and payment features. The main consideration is not whether a smart-card reader is connected to the Minitel or whether a card reading function is integrated in the terminal, but rather that the features of identification, verification, signature, authorization, and confidentiality are made available — whatever the approach. This upgrade is especially necessary because videotex is increasingly used for transactions involving amounts that require a minimum of guarantees.

Videotex has not seen its last enhancement; there is room for improvement in the 1988 model. It has flirted with interpersonal communication, information services, and games; it has yet to discover the new areas situated at the heart of the golden triangle of data processing, telecommunications, and audiovisuals. Currently hovering somewhere between data processing and telecommunications, first-generation videotex has proven it exists. It must now prove it has a future. A second-generation is called for that may integrate audiovisuals but that above all adds value to the publishing services, i.e. services that offer a real comfort level or a decisive advantage to those using them.

Projects are waiting on the shelves, pilot-scale services are available, technological alliances are in the offing, and new people are ready to run the risks of a Minitel II. It is known as enhanced videotex, supervideotex, audiovideotex, audiovisual-videotex, and interactive video. It is looming elsewhere, in the area of videodisks and cable, in the hub-bub of

international competition, and under the pressure of a deregulated United States industry.

French industry is at its finest when involved in grand national projects. But will it invest its energies in a field where the risks are greater, alliances more unpredictable, and profits uncertain? This in a nutshell is the question that a government pullout would pose to the telecommunications and communications industry in France.

## Mini-glossary of the Minitel

**ANTIOPE.** The French standard of one-way broadcast of information (teletext) in text form.

**AZERTY.** Name of typewriter keyboard used in France; refers to the first six keys of the top letter row.

**BAUD.** Unit of measure of data transmission speed on digital networks (1 baud = 1 bit/second).

**BBC** (British Broadcasting Corporation). British public television.

**BILDSCHIRMTEXT.** Name of West Germany's videotex system.

**CAPTAIN.** Name of Japan's videotex network.

**CCETT** (Centre Commun d'Études de Télédiffusion et de Télécommunications). France's Center for Broadcasting and Telecommunications Studies.

**CCITT** (Comité Consultatif International Télégraphique et Téléphonique). International Telegraph and Telephone Consultative Committee.

**CEEFAX.** Name of the teletext system in Great Britain.

**CEPT** (Conférence Européenne des Postes et Télécommunications). European Conference of Postal and Telecommunications Administrations.

**CITV** (Centre d'information Télétel Vélizy). Name of host system used for the Teletel experiment at Vélizy.

**CNET** (Centre national d'études des télécommunications). National Center for Telecommunications Studies.

**CNIL** (Commission nationale Informatique et Liberté). National Commission for Data Processing and Citizens' Rights.

**CONTENTS PROVIDER.** Company that offers videotex publishers information to put on-line.

**DACT** (Direction des Affaires commerciales et télématiques de France Télécom). Commercial and Data Communications Division of France Telecom.

**DAII** (Direction des Affaires industrielles et internationales de France Télécom). Industrial and International Affairs Division of France Telecom.

**DGT** (Direction Générale des Télécommunications). Telecommunications branch of France's P & T Administration, now called France Telecom.

**DIDON.** French system of one-way broadcast of information using the Antiope format.

**ELECTRONIC DIRECTORY.** It replaces the print directory and is accessible via Minitel throughout France.

**FACSIMILE.** Electronic transmission of

documents via the public switched telephone network.

**HOME BANKING.** Remote payment using an electronic smart card.

**HOST.** Computer that delivers videotex services.

**IBA** (Independent Broadcast Authority). Organization in Great Britain that monitors private TV networks.

**INTERACTIVITY.** Exchange of information between a user and a host center using a conversational mode.

**INTERFACE.** Device that makes it possible for two unlike pieces of equipment or systems to communicate.

**MNEMONIC CODE.** An abbreviation offering rapid access to a service or "page" of information.

**MODEM** (modulator-demodulator). Apparatus for transforming digital signals into analog signals and vice versa.

**NAPLPS** (North American Presentation Level Protocol Syntax). Videotex system developed by ATT.

**NTSC.** American color TV format.

**OPTICAL FIBER.** Glass fiber for transmitting high-speed light signals. It is used in the Biarritz network.

**PAL.** European color TV format.

**PRESTEL.** Name of videotex system in Great Britain.

**PSTN.** Public switched telephone network.

**QWERTY.** Name of the typewriter keyboard in use in many English speaking countries.

**RBOC** (Regional Bell Operating Company). Regional United States common

carriers, products of the divestiture of ATT.

**SECAM.** French color TV format.

**SERVICE PROVIDER.** Publisher of videotex information.

**SICOB.** Paris professional trade show on data processing and office automation.

**SIMULTANEOUS ACCESS POINTS** (also called ports). Loosely, interconnections whose number equals the quantity of calls that a host system can process simultaneously.

**SOFT ALPHABET, "ALPHAGEO-METRIC", "ALPHAMOSAIC", "AL-PHAPHOTOGRAPHIC".** Display formats of varying graphics capacity. The current French videotex standard is "alphamosaic".

**SYSTEMS PROVIDER.** Company that makes computer hardware and software available to videotex publishers.

**TDF** (Télédiffusion de France). TV regulatory and production body in France.

**TELETEL** (contraction of telephone and television). Name of French interactive videotex.

**TELETEXT.** One-way broadcast transmission of information using spare television channel capacity and received by domestic TV receivers, known as Antiope in France.

**TELIDON.** Name of the videotex system in Canada.

**TIC-TAC.** Terminal integrating television and push-button telephone.

**TITAN.** Interactive terminal.

**TRANSPAC.** National public packet-switched data network in France. The network ensures links between or with remote computers.

**VAP or VAPI** (Videotex Access Point). Equipment linking the public switched telephone network (PSTN) and the Transpac packet-switched data network.

**VIDEOTEX.** System providing dial-up access to one or more remote services providing information. "Pages" of graphics and alphanumeric information are coded according to a specific format, transmitted via the telephone network and displayed on screen.

**VIDITEL.** Name of the videotex system in the Netherlands.

**VIEWDATA.** Laboratory name of the interactive videotex system in Great Britain, marketed under the name Prestel.

**X.25.** The CCITT standard interface protocol for packet switching networks that defines the message structure required by data terminal equipment to interface to a public packet network conforming to CCITT standards.

## PHOTO CREDITS

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Why has videotex been so successful in France, when it has failed to catch on anywhere else?

How is that the MINITEL, regarded at the outset as a long shot by the experts, now tallies six million hours of connect time a month?

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Marie Marchand is thoroughly conversant with her subject and recounts the inside story of the MINITEL miracle with humor and gusto. She vividly portrays how men and women from various walks of life, alternately fired by enthusiasm and plagued by doubt, were instrumental in making the MINITEL what it is today – a resounding success.

MARIE MARCHAND has been an avid chronicler of developments in new information technology for 10 years.

A researcher at France Telecom's Service de la Prospective, she is well placed to analyze the introduction of communications systems in France.

She has written numerous articles and supervised several books, always providing concrete analyses of the emerging trends and markets that herald tomorrow's information-based society.

HUBERT CURIEN is Professor at the University of Paris and former general manager of the CNRS, France's National Center for Scientific Research. In 1976 he set his sights on the stars, taking the helm at the National Center for Space Studies and subsequently serving as chairman of the European Space Agency's Council.

From 1984 to 1986, he was Minister of Research and Technology before assuming chairmanship of the Scientific Council for National Defense. He has since been named Minister for Research.

Hubert Curien admits to a two-fold ambition: building bridges between research and industry and promoting a United States of Europe.