



Telematics - Transportation and Spatial Development

Editor-in-Chief: Hans M. Soekkha

Co-editors: Piet H.L. Bovy, Paul Drewe
and Gijsbertus R.M. Jansen

///VSP///

UTRECHT, THE NETHERLANDS
TOKYO, JAPAN

TELEMATICS- TRANSPORTATION AND SPATIAL DEVELOPMENT

Proceedings of an International Symposium organized under the auspices of the Centre for Transportation Engineering, Delft University of Technology, held in The Netherlands Congress Center, The Hague, The Netherlands, April 14-15, 1988.

Editor-in-chief: H.M. SOEKKHA

Co-Editors: P.H.L. BOVY
P. DREWE
G.R.M. JANSEN

The printed contributions in this proceedings volume were edited from the original manuscripts submitted by the authors. Where applicable and necessary, in final editing corrections have been made without affecting the authenticity of the contents of the texts. The editor-in-chief takes full responsibility for the changes carried through in the final stage of editing.

///VSP///

Utrecht, The Netherlands
1990

Telematics, pp. 293-308
H. Soekkha *et al.* (Eds)
©VSP 1990

TELEMATICS DEVELOPMENTS IN FRANCE AND THEIR APPLICATION AT THE LOCAL AND REGIONAL LEVEL

OLIVIER BOISARD

Agence Régionale de Développement Nord-Pas de Calais, France.

ABSTRACT

Telematics is certainly one of the first new technologies likely to have a strong impact on urban planning. In a short survey this phenomenon at the local and regional level with special reference to the Nord-Pas de Calais Region is examined. An attempt will be made to show that, although the networks in themselves can be seen as relatively neutral to the geographical distribution of business development, the new services offered by these networks may induce a profound reorganization of many sectors, especially the tertiary sector.

1. INTRODUCTION.

The idea of applying informatics to telecommunications emerged at a very early date in the technical field. But what at present is referred to as 'telematics' has only recently become more widespread, with the development of micro-informatics and the improvement of the cable network.

Gradually, computer networking, which was once only feasible for large companies, has now become accessible to a much wider range of potential users. Of course, what is observed to be happening today is still in a development stage, and, although 'Minitel' has certainly been a great success among the general public, professional applications of telematics are still only marginal in many sectors.

In this paper an attempt is made to make a clear distinction between future possibilities and what has actually been achieved to date. Emphasis is laid on the potential influence of telematics on the structural aspects of town and country planning at local and regional level.

2. TELEMATICS AND SPACE PLANNING.

The cohesion of any system, whatever it may be, depends primarily on its ability to manage data. This empirical observation can also be applied to economic systems. For business and industry this means:

- being able to locate and collect the necessary information at the right time and the right place
- being able to interpret and process this data quickly
- an ability to integrate and store this data so as to build up a body of know-how.

These three facilities correspond to specialized functions in any complex organization, and new technologies - especially informatics and telematics - have a role to play here.

Of course, in one way or another, they are bound to trigger fundamental changes in the organization into which they are introduced: changes in the way work is organized first of all, and consequently, changes in the working environment.

The understanding of this phenomenon today is still incomplete: although it is, today, possible to estimate the quantitative importance of the infrastructures of telematics, it is proving to be much more difficult to evaluate their real impact on society, either direct or indirect.

Then, there is a growing need for a conceptual framework for the examination of the real social and economic implications of telematics.

In this context many research projects have been carried out over the last few years with a view to establishing a 'general theory of networking' to "define and analyse the latter in its interaction with the socio-economic system which it organizes, and with the region it serves" (Curien and Gensollen, 1986).

2.1. Infrastructural networks and service networks.

'Infrastructural networks' are all infrastructures used for the transmission and processing of information (cable networks, radio or satellite links, telematic terminals, teleports, and so on). The 'service network' determines how the network can be used: in other words, it defines the service offered to users.

It is to a certain extent possible to distinguish between the problems specific to infrastructural networks and service networks. In the first place, the infrastructural network, in practice, appears to be relatively neutral to the user. And, indeed, it seems highly unlikely that a network alone could generate any particular form of geographical segregation, especially in view of the fact that the rate charged for a communication passed through a telematic network - Transpac, for example - is usually irrespective of the distance covered.

The infrastructural network therefore adapts to demand, and after the initial development and installation phase, which admittedly will require substantial investment, one would logically expect the user to see the distribution infrastructure as something completely neutral, like the telephone network today.

Far from being a constraint on regional development, the infrastructural network actually opens up new perspectives for development by giving all users the same access to information, regardless of their geographical location.

But, paradoxically, this universal accessibility of information suggests two opposed future scenarios: on the one hand, a reinforcement of centralized structures deepening the gulf between the highly developed centres and those of minor importance, or, on the other hand, the alternative hypothesis that it would result in a greater uniformity of the tools available to all centres of activity everywhere, thus giving all users a greater degree of autonomy.

As yet it is still too early to discern which of these two scenarios is materializing today, even though telecommunications in France are entirely under the wing of the State, and the efforts undertaken over the last ten years to equip the whole of France with telematic networks are explicitly linked to a policy of decentralization.

In the private sector interest in telematics is very uneven. In fields where telematics could play an important role, a variety of situations can be observed. There is the example of a mail order company based in the north of France which is developing telematic contact channels with its clients (8 per cent of the orders it receives, amounting to about 8,000 a day, are placed through Minitel, and this percentage is increasing by an average of 2.5 per cent per annum), but still prefers to maintain more traditional channels of communication with its distribution network as part of a centralized structure.

On the other hand, in the banking sector, which was one of the first sectors to introduce telematics, the internal use of telecommunications has become commonplace, and is still increasing. One large French bank expanded its telecommunications budget by 50 per cent between 1983 and 1986, bringing its expenditure in this field from 100 million to 150 million FF.

It is much more difficult to obtain reliable statistics for the multitude of small and medium-sized businesses. Although more than two-thirds of these businesses use informatics and micro-informatics, it appears that managers see the potential of telematics as a delocalization factor, as something in the medium- or long-term future. A survey carried out in 1987 among 2,600 managing directors of small and medium-sized businesses (URBANISME, 1987) showed that the criteria they considered to be the most important in choosing the location for a new establishment were: proximity to a town centre, proximity to the other branches of the company, and proximity to the clients.

But these three conditions of proximity were relegated to the background when the same question was posed in the context of the improvement/development of the place of work to be undertaken within the next five years. In this context '**attractive workplace**' and '**natural environment**' took precedence.

This interesting change of opinion can be attributed to the growing feeling in these companies that the new communication technologies are becoming increasingly important.

However, one will only be able to see clearly what effect these infrastructural networks will have on the restructuring of business activities in a few years' time, when telematics has had time to adapt to the needs of a greater number of professional users.

This effect will also be influenced by the less quantifiable, but certainly more profound effect of what the service network has to offer.

By definition, the service network will determine how the infrastructural network is used. A typology can be drawn up classifying the different types of service networks (see Figure 1):

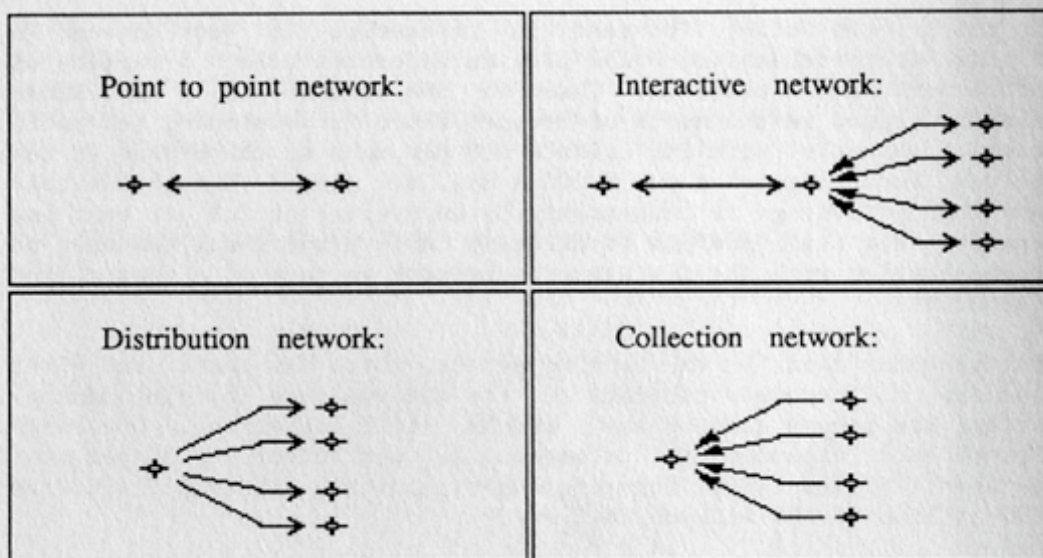


Figure 1. Service networks.

- Two-directional '**point-to-point**' networks will connect up two users, much like a telephone line. This type of link can be used, for instance, by a head office to generate interactive contact with one of its branch offices. In the area of the general public the '**Minitel dialogue**' was developed on the same principle to enable two users to communicate by means of a keyboard/screen system.

- 'Distribution' networks are set up for unilateral transmission from a central unit sending out the same information over the whole network. Here, the network plays the part of a traditional medium.
- Conversely, the 'collection' networks gather into a central point all data transmitted on the network. This type of service is less common, and is applied mainly in the field of telesurveillance and teledetection.
- Finally, the 'interactive' systems represent more complex hybrid solutions, setting up a bilateral link between a network 'nerve centre' and a given body of user centres.

The present aim is to regroup and integrate all these services on one single infrastructural network, so that by the 1990s, through digitalization, an Integrated Services Digital Network (ISDN) will have been established.

This normalization (or standardization) of networks, which will also open the way to a greater diversification of services offered, cheaper communication, and greater flexibility of use, will undoubtedly have the most profound effect on land development planning.

Finally, the improvement of the quality of services through the steady process of technological development will be yet another decisive factor in the trend towards a wider use of telematic tools, resulting eventually in the fundamental reorganization of certain sectors of activity (the services sector in particular) around these new tools, and even in some cases the substitution (at least in part) of the exchange of information for the exchange of material goods.

Although that stage has not yet been reached, a great number of experiments have been undertaken in this field, from telematic teaching aids to telemonitoring, or from teleconferences to the development of Télétel data bases for professional use. These examples point to the existence of a characteristic phenomenon directly linked to the spectacular rise of telematics in the workplace.

2.2. Space, time and information.

Telematics is a force powerful enough to alter the fundamental elements of space, time and information: space by eliminating distance as an obstacle, time by making almost instant communication possible, and information by the introduction of computer aided data processing. This has fundamental implications which should be seen in a wider context.

As emphasized at the Colloquium 'Prospective 2005', organized in 1985 by the Centre National de la Recherche Scientifique (CNRS) and the Commissariat Général du Plan (Prospective 2005, 85), the full implications of information technology can only be grasped by a new approach to the situation as a whole:

'Since it is not founded on cutting costs by the application of electronic systems (as was the case in the seventies), but on integrated data management (this new approach) should mobilise all new technological advances in the direction of joint and intensive development. The target is the establishment of a data-based economy built on the fundamental principles of efficacy and equilibrium: these principles are of a different order from those of the industrial economy'.

The foreseeable effects of this new data-based economy on traditional structures are many and varied:

- The reconsideration of traditional industrial zoning in the context of national development.
- The greater accessibility of information could modify the balance of power between competing companies, local and national groups, and so on. For example, data banks drawing on various economic and social sources could contribute to a wider distribution of information of a general nature: legal information, market information, new business locations and amenities available, and so on.
- The development within the companies of data transfer and processing functions with the risk of specialization of tasks at operational level.
- The introduction on a wider scale of telecommuting, teleconferences, telemeetings, and so on, all of which will modify the individual's relationship with the workplace.

Directly or indirectly, telematics is clearly going to lead to many changes in the fundamental conditions on which local and regional planning is based.

3. TELEMATIC TOOLS TODAY.

Although the impact of telematics on spatial planning may not be discernable for several years, one can already see an impressive boom in the development of telecommunications infrastructures today.

The most spectacular proof of this in France is the development of Minitel. This telematic terminal, which was distributed free to the general public from the beginning of the eighties onwards, was initially designed to replace the traditional, expensive, printed directories by a more sophisticated system: the 'electronic directory'. Soon after, thanks to the deployment of the Transpac network (packet data transmission network, put into operation in 1978), new services, some of which were of a commercial nature, were made available to users.

After initial trials on a local scale, Minitel is now available all over France. There are almost two and a half million terminals in service today, totalling more than three million hours of connection time (see Figures 2 and 3). At the same time, the number of server terminals accessible through Minitel has also multiplied (more than 1500 were listed in 1985, and two more are added every day).

TELETEL	No. Miniteils Installed	Number of Calls/Month	Total No. of Hours of User Connections
End 84/Bcg 85	0.5 million	4 million	350 000
End 85/Bcg 86	1.3 million	14 million	1.5 million
End 86/Bcg 87	2.2 million	32 million	3.3 million

Figure 2. Number of Teletel calls/month.

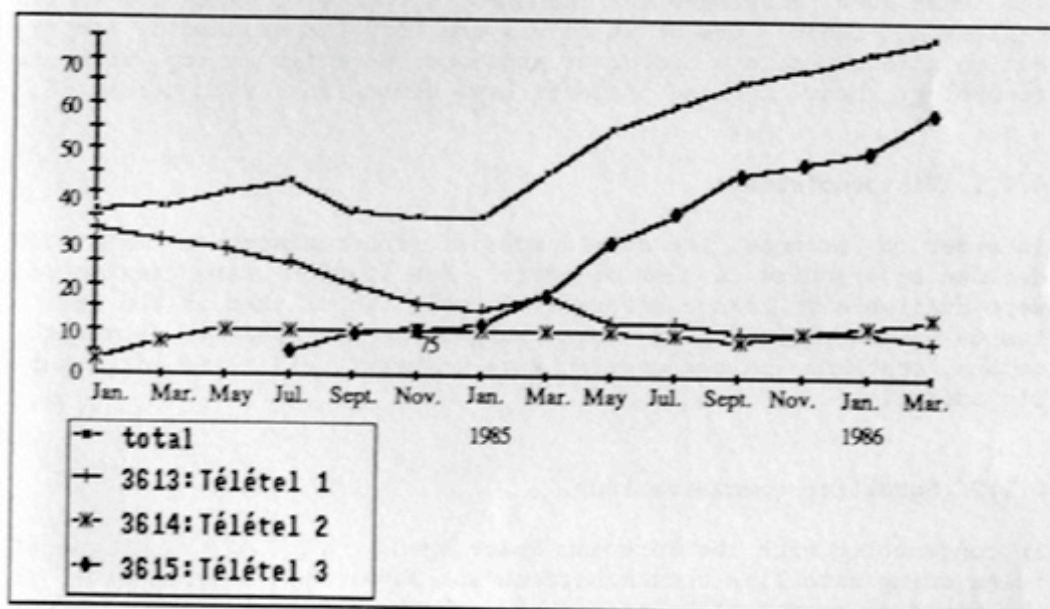


Figure 3. Minutes of connection per month per Minitel.

New digital transmission services have recently been introduced in addition to Transpac, for instance Transdyn and Transcom. These systems as a whole are a prefiguration of the Integrated Services Digital Networks (ISDN) of the future.

For the construction of the networks (including telephone networks), the emphasis has been on optical fibre technology, as set out in the Government's 'Cable plan' launched in 1982, so as to connect up more than 6 million homes by 1992. Although the project was revised for various reasons in 1987 (mainly to give a more important role to traditional coaxial cables), it has been followed up in fifty large towns in France.

According to the Bureau d'Information et de Prévisions Economiques (BIPE), telematic infrastructures should continue to expand at the same pace during the coming years, with the number of terminals in operation expected to pass the 10 million mark in 1992 (2.2 million in 1986) (B.I.P.E., 1986).

4. APPLICATION OF TELEMATICS AT LOCAL AND REGIONAL LEVEL.

It is impossible to give a complete survey of applications of telematic tools on a local and regional scale here, but the following are a few significant examples, some of which are drawn from the Nord-Pas de Calais region.

4.1. The URBA 2000 project.

The URBA 2000 programme was launched a couple of years ago in two regions of France, one of which was the Nord-Pas de Calais, to try out on a local scale a number of projects directly linked with new technology. Many of these projects have close links with telematics:

4.1.1. Visioconference.

In order to promote the development of visioconference, URBA 2000 decided to organize a club of users. New studios were created (65 were available in France before 1987, only two of them in the Nord - Pas de Calais region) for three purposes: professional communications, teaching (in conjunction with universities), and large public animation.

4.1.2. Satellite communications.

In conjunction with the European Space Agency (E.S.A.) a system of telex using satellite communications was developed. For instance, in the field of road freight transport, thanks to this system, it was possible for the Trans-Artois-Frigo company to establish a direct link between six of its lorries.

4.1.3. The 'Interactive Living' project.

This project aims to introduce new technologies, especially telematics, into the domestic environment.

Information is provided to architects and artisans, in order to aid them in the design of new electronic equipment for housing.

4.1.4. The microchip card.

With the advent of the microchip card (similar to a credit card, but with a microchip capable of storing data), it is now possible to provide everyone with a simple means of entering personalized data directly into a data acquisition terminal. This card is used for many different applications: a large number of students at the University of Lille Flandres Artois is already using it to speed up their administration (compiling their dossiers, validation of diplomas, and so on); a 'biocard' is being developed at the moment for use in the field of medicine (medical dossiers to be carried on the card); and finally, the 'transcard' will soon enable users of collective transport to pay through one single paycard.

4.2. Technopoles.

Technopoles are designed to group together in one geographical location scientific, technical and industrial companies and bodies active in the 'Triangle of Innovation': research, training and high-tech manufacturing.

The new town of Villeneuve d'Ascq near Lille is one such technopole. Created less than twenty years ago together with a large scientific university complex, it is served today by the first fully automatic driverless metro-line. It also has a large cable network serving more than 12,000 homes with local, national, and international TV channels.

4.3. Teleports.

To meet the growing demand for telematic links, a Euro-Teleport will be put into service in Roubaix, following the example of other towns in France; this project, realized with FRANCE TELECOM, aims to provide businesses with a wide range of products and services:

- TRANSCOM, TRANSPAC and TRANSDYN services
- access to the 'STAR DIRECT' service (for communications between Europe and the U.S.A.)
- and so on.

4.4. Professional telematic services using Minitel.

As can be seen in Figure 4, a large part of the Teletel traffic is devoted to professional uses.

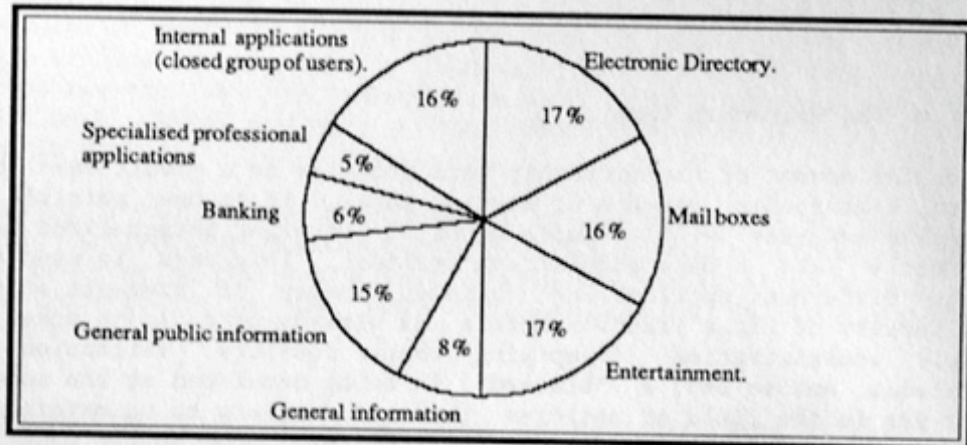


Figure 4. Teletel traffic (according with D.G.T.).

Some companies already have servers to contact clients, or for internal communication.

At regional level, the examples of servers created by institutions such as the Regional Council or the Chamber of Commerce can be given:

- ORIAN, which was set up in cooperation with the Nord-Pas de Calais Regional Chamber of Commerce and Industry. This service provides an updated data base for company directors listing details of all sites, premises and offices available in the region.
- The Regional Council's BEFFROI which is a means of passing information to and entering into a dialogue with the public.

The Minitel 'screen pages' shown below illustrate the variety of the services offered.

DEBUT DE COMMUNICATION		32
RECHERCHE PAR NOM OU PAR RUBRIQUE		
NOM:	
RUBRIQUE:	
LOCALITE:	
Facultatif		
DEPARTEMENT:	
ADRESSE:	
PRENOM:	
Comment formuler la demande		→ 001000
Les services et le tarif		→ 00101000
NUMEROS D'URGENCE		→ 00101000

Figure 5. Electronic directory.



Figure 6. Guide of servers.



Figure 7. The BEFFROI server.

BEFFROI	
NORD - PAS DE CALAIS	
HISTOIRE DE LA REGIONALISATION	1
ORGANISATION DE LA REGION	2
REGION DANS L'ORGANISATION FRANCAISE	3
AGENDA DU PRESIDENT	4
DONNEES DE BASE SUR LA REGION	5
LES PUBLICATIONS	6
VOIRE CHOIX <input type="checkbox"/> ENVOI <input type="checkbox"/>	

Figure 8. The BEFFROI server.

JOBS ETES-VOUS JOBE	
AVOCATS AU BARREAU DE LILLE+ AVOCALIA	
REGION → 1	REGION A PARIS 15
CONSUMATION 2	CERCLE BLEU 16
COUT DU CREDIT 3	AUDIOVISUEL CRRAU 17
PRIX DES CLIP 4	AGENCE REGIONALE 18
ELECTROMENAGER 5	DE DEVELOPPEMENT 19
BATIMENT : CTH 6	INFOS EXPORT 20
ENVIRONNEMENT 7	TOURISME/ETOILE 21
DISPOSITIF TUC 8	AEROPORT: HORAIRES 22
LA FORMATION 9	METEO 23
JEUNES-CRIJ 10	SPECTACLES 24
FEMMES-CORIF 11	CULTURE-ALIAS 25
SANTE 12	C.R.O.U.S. 26
DROIT-CIRA 13	SPORT - VOILE 27
ANIMAUX-LPA 14	MESSAGERIE 28
APPELS D'OFFRES 29	VOIRE CHOIX+ ENVOI 29
LISTE DES MISES-A-JOUR LEXIQUE ENVOI	

Figure 9. The BEFFROI server.



Figure 10. The BEFFROI server.



Figure 11. The BEFFROI server.

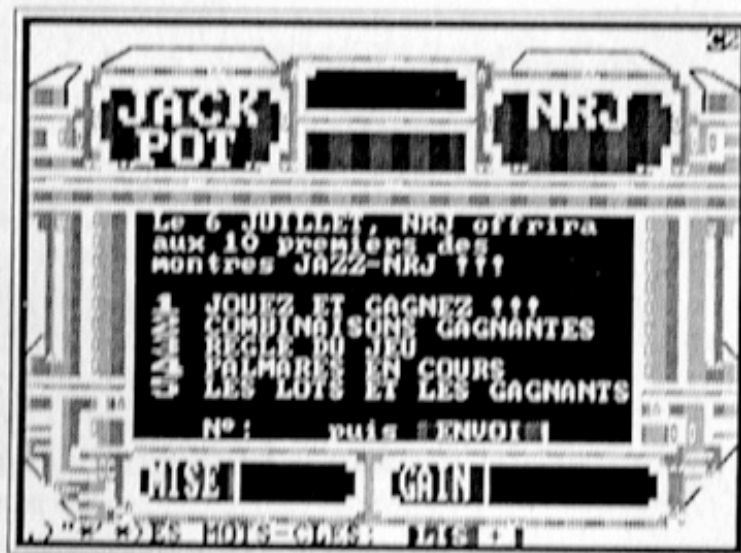


Figure 12. Server of a local radio.

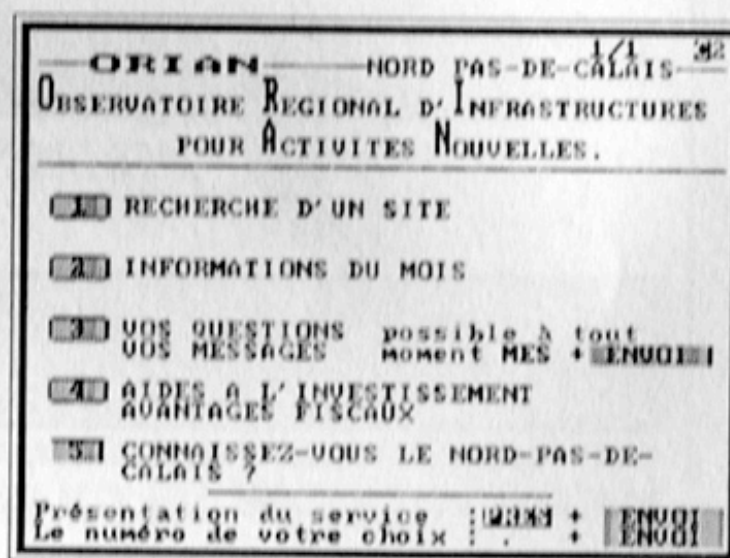


Figure 13. The ORIAN server.

1/1 31

AIDES et SUBVENTIONS

SUBVENTIONS ACCORDEES PAR L'ETAT ET LES COLLECTIVITES LOCALES.

Prime à l'aménagement du territoire	1270
Prime régionale à l'emploi	1280
Prime régionale à la création d'entreprises	1290
Prime d'orientation agricole	1300
Prime départementale à la création d'entreprises	1310

AVANTAGE REMBOURSABLE OU SUBVENTION

Plan productique régional	1320
---------------------------	------

INTERVENTION DES SOCIETES DE CONVERSION

FINORPA et SODINOR	1330
SAINT GOBAIN DEVELOPPEMENT et ALSTHOM	1340

Le mot cle choisi : et
 Le sommaire d'ORIAN :

Figure 14. The ORIAN server.

1/1 31

AIDES et SUBVENTIONS

SUBVENTIONS ACCORDEES PAR L'ETAT ET LES COLLECTIVITES LOCALES.

Prime à l'aménagement du territoire	1270
Prime régionale à l'emploi	1280
Prime régionale à la création d'entreprises	1290
Prime d'orientation agricole	1300
Prime départementale à la création d'entreprises	1310

AVANTAGE REMBOURSABLE OU SUBVENTION

Plan productique régional	1320
---------------------------	------

INTERVENTION DES SOCIETES DE CONVERSION

FINORPA et SODINOR	1330
SAINT GOBAIN DEVELOPPEMENT et ALSTHOM	1340

Le mot cle choisi : et
 Le sommaire d'ORIAN :

Figure 15. The ORIAN server.

5. CONCLUSION.

As emphasized earlier, the information industry is still in its infancy, and this is even more true of telematics. Nevertheless, through the Minitel experiment, the emergence of a new balance of power can already be seen among the many users of telematics.

A similar pattern of events can be expected to erupt even more forcefully in the context of regional planning and development.

6. REFERENCES.

- BUREAU D'INFORMATION ET DE PRÉVISIONS ECONOMIQUES (1986). Les réalités régionales: La Télématicque, mai 1986, Paris.
- CURIEN NICOLAS, GENSOLLEN MICHEL (1986). Réseaux de Télécommunications et Aménagement de l'Espace. Metropolis, N°.73/74, 64.
- JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE (1983). Avis et Rapports du Conseil Economique et Social. La Télématicque et l'Aménagement du Territoire, 21 avril 1983.
- PROSPECTIVE 2000 (1985). Sept explorations de l'avenir: Rapport des missions de prospective. Commissariat Général du Plan, Centre National de la Recherche Scientifique.
- URBANISME (1987). Enquête 2600 Dirigeants répondent. N°.221, septembre 1987, p49.