

2nd OECD broadband workshop: infrastructure, applications and uses

Seoul, 4 June 2002

THE DEVELOPMENT OF BROADBAND ACCESS IN FRANCE

France's contribution

Joël Voisin-Ratelle

Head International Bureau

*Authority de Régulation des Télécommunications
(ART)*

Contents

THE DEVELOPMENT OF BROADBAND ACCESS IN FRANCE.....	1
I. The strong growth of broadband promotes the deployment of new networks.....	2
A. Strong growth of broadband today depends on the sale of services	2
B. Access to broadband networks requires expanding the available addressing space and new economic models....	3
The IPv6 protocol makes this space available	3
In this respect, the ENUM name database will offer innovative applications.	3
The evolution of services depends on an economic model oriented toward flat rates	4
The emergence of new uses is a major element in creating demand for broadband access	5
II. Broadband should be available via multiple channels and at varying speeds	6
A. Competition on the broadband access segment depends on competition between fixed networks	7
The wireless local loop (WLL) is indispensable to open and effective competition, even though it is experiencing a few development problems.....	7
Cable networks also hold an important place in residential high-speed offers	7
ADSL reaches a more geographically diverse clientele	8
B. Mobile Internet is another exemplary way of developing competition on broadband access	9
The development of GSM is the first issue.	9
UMTS must not remain a myth.....	9
WLAN technology is also of great interest for the sector.	11
Conclusion.....	13

For OECD countries, the development of broadband (or high-speed) access is a major economic and social modernisation issue for consumers nationwide, whether professional or residential. This is the case of Europe in general, and of France in particular, based on the July 1996 telecommunications regulation law and the information society bill.

The framework established by France, via the action of *Autorité de régulation des télécommunications* (ART), aims to ensure that every player is able to participate durably in this major French and European effort under equitable and dynamic conditions.

How can we move from what was originally a "community" of surfers to almost universal use in terms of countries and users?

The discussions at this 2nd OECD workshop dedicated to "*broadband: infrastructure, applications and uses*" will contribute to this discussion. Indeed, this topic represents a necessary and major goal for telecommunications services policies.

While the growth of broadband access in France favours the deployment of networks and the emergence of new uses, we will need access via multiple channels at varying speeds in the future.

I. The strong growth of broadband promotes the deployment of new networks

A. Strong growth of broadband today depends on the sale of services

As of April 2002, there were 7 million residential Internet subscribers in France, of which 6.4% had a high-speed subscription. The number of subscribers has been growing strongly since January 2000. The number of French surfers is now estimated at 10 million, up 52% in one year, with close to 9% broadband subscribers.

In March 2002, there were some 500,000 ADSL customers. The number of ADSL customers more than doubled during the second half of 2001.

At end 2001, close to 200,000 people subscribed to Internet via cable. This segment is also growing strongly.

The situation of high-speed access in France as compared with its European partners is contrasted; although within the European average, it has a lower penetration rate than Germany where unbundling was authorised in 1998, but higher than Italy and the United Kingdom.

The growth of broadband depends today on a set of technical, economic and social conditions. Networks play a critical role, but are just one means of accessing services and content, which constitute the real value added of broadband for consumers. Growth depends on the development of uses and the emergence of viable economic models for all players.

In order to support the development of Internet traffic, Europe has acquired major IP transport capacity, thanks to the investments of its operators, which have built major pan-European infrastructures. Today, massive deployments are well underway, and the focus is now on selling services.

Still, these deployments must encourage the development of network access and network capillarity in all countries. Also, given the emergence of new uses, they must be based on a coherent economic model.

B. Access to broadband networks requires expanding the available addressing space and new economic models

The IPv6 protocol makes this space available

If Internet is to be developed, major technical resources will have to be made available. This is the goal of the new IPv6 protocol which will expand the available addressing space.

On 21 February 2002, the European Commission adopted a communication describing its priorities in migrating to the new IPv6 Internet protocol.

This protocol will identify computers connected to Internet using a unique number: the IP address. Currently, addressing is done using the IPv4 standard, which will be able to meet Internet connection demand—and therefore for IP addresses—for only a few more years because of the limited number of available IP addresses. Currently, there are not enough IP addresses (4 billion) to allow everyone to connect to Internet in the short term. The belief that the network will be saturated by around 2005 led the European Union to propose a series of actions to its Member States.

Like the Commission, ART is committed to maintaining objective, transparent and non-discriminating allocation conditions for addressing resources, whose issues are similar to those of allocating numbering resources.

In this respect, **the ENUM name database** will offer innovative applications.

Given this situation, the implementation and organisation of the ENUM name database, whose protocol offers innovative applications, combines the concepts of numbering and naming for the first time.

This is why ART, as manager of the national numbering plan, launched a public consultation jointly with the Secretary of State for Industry regarding Internet naming and addressing. The consultation addressed the principles and conditions of implementing the ENUM protocol in France. The players consulted emphasized, in particular, that the implementation of ENUM must destabilise neither the Internet numbering plan nor its naming system.

ENUM is a protocol defined by the Internet Engineering Task Force (IETF) which creates Internet domain names using telephone numbers and associates them to communication services (telephone service, mail, fax, messaging, etc.). This is the first project which truly brings together Internet and telecommunications, combining numbering aspects with Internet naming and addressing.

The implementation of ENUM-based systems raises many issues internationally, primarily concerning the control of the numbering and naming resources linked to the operation of ENUM and competition between service suppliers based on this protocol.

The contributions to the public consultation emphasized that it is essential that the management of ENUM domain names be subordinate to that of numbering, in order to protect the coherence of the systems and ensure the services are adopted by the general public.

Rules must be defined quickly in order to establish the conditions for inserting and delegating ENUM domain names. These rules should be part of an international agreement between the Internet Corporation for Assigned Names and Numbers (ICANN) and the International Telecommunications Union (ITU), which appear best able to guarantee the necessary coherence between telephone numbers and domain names.

The uncertainty regarding the choice of the reference domain for ENUM names must not prevent clear management rules for delegations from being defined, nor confuse discussions on this question which is, in reality, the primary issue.

Moreover, there is the risk that only the ENUM base manager will be capable of providing services based on the ENUM protocol.

This last question merits special attention. This is why, in extending the public consultation, ART and the Secretary of State for Industry are currently conducting more in-depth discussions with the players, in order to define the conditions which would guarantee a competitive atmosphere between the suppliers of ENUM services.

The evolution of services depends on **an economic model oriented toward flat rates**

The Internet model is constantly evolving and new economic models, which will naturally apply to broadband access, are progressively emerging.

In the period of euphoria from 1998 to 2000, free access, services and content was the dominant model. The return to reality is leading broadband access services toward as-yet ill-defined pricing models, such as flat rates which include the remuneration of services and the relation with the final customer.

Today, flat fees are the dominant model in Europe for broadband access, although there are still free access offers: at end 2001, 75% of Internet traffic in France was paid via flat fees, and 25% with no subscription.

On the other hand, the Internet crisis has rendered extinct the economic model of totally free access. At the same time, we are observing a concentration of the number of players: five access suppliers now serve 80% of surfers in France.

The remuneration of content is also a major issue: the free model is yet again brought into question by content suppliers' need to cover their costs and make profits.

The SMS market is an excellent example of how the new economic models can be applied. This market is in full expansion: with 3 billion SMS exchanged in 2001 in France, it is seeing monthly growth of 20%.

The creation of a kiosk system for SMS is an interesting possibility for mobile Internet.

In 2001, ART held a service quality survey for mobile telephony networks in France, and published its results on 15 February 2002. The SMS measurements taken in the survey show very good service reliability, with all the messages sent and accepted by the network received without error within a few seconds. These innovative measurements open the way to future evaluations of the quality of other data services (WAP, MMS, etc.) in GSM and GPRS technology.

This type of project receives the support of users. At the same time, it stimulates innovation for services and promotes the emergence of new players on the value chain, thanks to the creation of these new economic models.

The emergence of **new uses** is a major element in creating demand for broadband access

The diversification of infrastructures and the availability of technologies are not enough to generalise broadband. This can occur only through the meeting of supply and demand, under conditions which are compatible with the development of a market. This means that suppliers need to meet consumer expectations in ways that are compatible with households' limited budgets. In this equation, the development of uses is one of the major elements in creating demand.

The primary uses for low-speed access are e-mail and surfing. Today, new uses are appearing with high speed: comfort of use, speed, permanent connection, videophone, images, peer-to-peer applications (data exchanges between users via a server), downloading, etc.

Uses develop at their own rate, as access infrastructures become available, but other factors such as customer trust or price decreases also affect their growth.

The development of the trust of broadband customers is an important element, especially as concerns the use of personal data, transaction security and the quality of service.

The decrease in access prices is a necessary condition. In this respect, ART regularly contributes to creating the conditions for this decrease through its determined use of a number of tools. Here are a few examples:

- The interconnection catalogue: ART has established flat-rate interconnection offers whose technical and pricing conditions are currently some of the most advantageous in Europe.
- The modification of France Telecom's reference offer for unbundling, using European legislation when necessary
- Pricing opinions: an opinion was given in June 2001, recommending a decrease in the wholesale prices proposed by France Telecom to access suppliers for ADSL services (IP/ADSL), ensuring that the operators have access to a France Telecom wholesale offer (ADSL Connect ATM) allowing them to propose competitive offers to access suppliers.

- Leased lines: ART has adopted two decisions which have led to a decrease of around 10% to 20% in the prices of leased lines for operators: approval of the leased lines offer in the interconnection catalogue, and a ruling on a dispute between MFS and France Telecom.

Other factors are essential to the emergence of new uses, such as training and the qualification level of the public. Other elements, such as the development of broadband (see Internet at school) or the equipment rate of households in terminals (PC, television), have a direct influence on the penetration of broadband. Although Internet is now accessible nationwide via the telephone network, appropriate terminals are still needed. According to Nielsen, the equipment rate of French households in personal computers was 35.3% in 2001, compared to 48% in Germany and 65% in the United States.

II. Broadband should be available via multiple channels and at varying speeds

In the future, broadband access will be made possible via multiple channels (fixed and mobile networks, wire, wireless and satellite technologies), with varying speeds. Among the developments which will profoundly modify the economy and development of Internet, high speed on fixed networks and on mobile Internet are exemplary channels.

Many energies and skills are being mobilised to ensure the development of high-speed access. French authorities are working tirelessly, first by implementing effective competition on the access segment—because competition is the best tool in assisting the diversification and the deployment of offers—and by pushing down prices.

This was shown by the opening of competition for long-distance telephony, with France Telecom's prices falling 26.6% and those of its main competitors' 35.6%, over the past three years. This led to the major decision to introduce competition for local calls in early 2002.

Competition between the networks makes it possible to diversify modes of access, via the wireless local loop, cable networks, or unbundling, but also, in coming years, mobile Internet, satellite, and WLAN technology.

A. Competition on the broadband access segment depends on competition between fixed networks

The wireless local loop (WLL) is indispensable to open and effective competition, despite its current development problems

The wireless local loop is an attractive broadband access channel for small and medium enterprises.

On 11th July 2000, following its national application procedure, ART allocated wireless local loop authorisations in the 3.5 GHz and 26 GHz bands, for each of the twenty-two metropolitan regions and four overseas *departments*. Then, on 31 December 2001, ART evaluated the wireless local loop operators, in particular to compare their actual deployment against their commitments.

Five operators, while not completely meeting their coverage requirements, have begun a credible programme. Their process is truly underway, although not as quickly as expected. These operators are invited to continue their deployment with determination.

On the other hand, the situation is clearly unsatisfactory for four operators: Landtel France SAS, Broadnet France SAS, XTS Network Caraïbes and XTS Network Ocean Indien. For example, Broadnet has developed nothing in fourteen of the fifteen regions it received, and Lantel has done nothing in six of its seven regions. ART has therefore decided to initiate a formal notice procedure for these four companies ordering them to take measures within one month to ensure they respect their deployment requirements.

Cable networks also hold an important place in residential high-speed offers

Cable technology is an important element in the development of high speed, as part of the necessary diversity of access offers.

When ART was created in 1997, it quickly ruled on two disputes opposing the operators Lyonnaise Câble and CGV with France Telecom, which at the time owned the networks they operated under the cable plan. These and other decisions have permitted the development of Internet on cable.

In France, we still need to resolve the issues of industrial structuring which are at the heart of the total elimination of the cable plan.

ADSL reaches a more geographically diverse clientele

Digital subscriber line technologies (DSL) optimise existing telephone installations and transmit data at high speeds over the telephone line. They require a modification to the telephone switch and therefore an investment for the operator, as well as the installation of a special modem on the subscriber's premises.

This technology presents a triple advantage: permanent high-speed Internet access, the possibility—as with cable—of telephoning while surfing on the Web and keeping the existing installation (the copper pair).

Local loop unbundling, which gives physical access to alternative operators to the terminal part of the incumbent's network, should encourage their deployment in France. Therefore, ADSL is the preferred channel for generalising high-speed Internet with the general public.

Competition on the ADSL technology requires several types of offers.

Unbundling is a complex process; as has been seen across Europe. This is one of the essential conditions for competition on the local loop. ART is working with France Telecom in improving its reference offer in order to allow operators to provide services in more than just a few major cities and business segments. ART's goal is to revise the prices of full access and shared access.

At the same time, the wholesale offers proposed by France Telecom to operators (ADSL Connect ATM) and access suppliers (IP/ADSL) will be improved, both in terms of prices and their structure. This will bring a broader range of formulas to competition, and ensure the ADSL market is effectively opened to a broad range of players.

In this respect, a recent decision of the *Conseil de la concurrence* temporarily suspended the sale of Wanadoo ADSL packs at France Telecom shops. In giving its opinion on this file, ART's aim was not to slow market development. On the contrary, this decision reflects the need to choose between an offer that is apparently attractive for the short term and the protection of competition over the long term. It reflects the need for durable competition to the benefit of consumers.

B. Mobile Internet is another exemplary way of developing competition on broadband access

The second priority to allow the use of broadband: mobile telephony.

The development of **GSM** is the first issue.

In the prospect of mobile Internet, the continued development of Global System for Mobile Communication (GSM) networks is definitely a priority issue. As shown by the success of Short Message Services (SMS) and the preparation of General Packet Radio Service (GPRS), second-generation networks have a role to play in preparing this new phase of the evolution of Internet.

In this respect, the geographic coverage of mobile networks is an important goal. The three mobile operators have already made major investments to guarantee the broad distribution of their services, and often more quickly than required. Still, they must go further. This is the objective set by the *Comité interministériel de l'aménagement du territoire* (CIADT) on 9 July 2001, to which ART adheres, although some of the means for its implementation should be clarified and others need to be amended.

The results of measurement campaigns done in the field by the *départements*, using the measurement methodology developed by ART, will be used to determine the necessary investments. It is in the interest of municipalities, the State, operators, and above all consumers, that efforts in extending coverage be based on actual conditions.

Moreover, the local roaming solution, explicitly planned by the CIADT, must not be excluded in preference of sole sharing of passive infrastructures. This second solution is more costly and could exclude some consumers from the program, if they have the misfortune of dealing with an operator not participating in sharing.

UMTS must not remain a myth

Considered just a short time ago as the new *Eldorado* of telecoms, Universal Mobile Telecommunications Service (UMTS) is certainly not yet a reality. Still, it is not a myth. ART is convinced that this technology will be a success.

- The conditions for a progressively emerging market

First, operator selection procedures have been held, despite the difficult conditions of UMTS introduction across Europe.

In France, the process will be completed by the end of September at the latest. The technical and financial conditions established in our country can now allow the dynamic development of the market with four operators.

Next, industrial processes are making progress, both for networks and terminal equipment. The number of experiments on test sites and clienteles will increase throughout this year and develop in 2003.

These progressive developments are positive and normal, as long as everyone agrees—some to not promise, and others not demand—the impossible. The process should be completed in early 2004 with the opening of a life-sized market.

- The **MVNO** will have a role to play

Service suppliers will have a role to play in UMTS. In this respect, discussions were held by a working group on virtual mobile operators at the *Commission consultative des radiocommunications* (CCR). The primary conclusions are the following:

- The success of UMTS depends on the development of truly innovative service offers. The operators will need to use partnerships, through sales agreements with third-party service and content suppliers.

- The regulatory framework must be compatible with the appearance of Mobile Virtual Network Operators (MVNO) and third-party service suppliers. The recommendations made by ART in November 2000 on mobile Internet are an initial approach. They are still pertinent and are currently the most enlightening document for the market.

- Until we have clear visibility on the development of these partnerships, an *ex ante* regulatory intervention is not justified. It is still important to ensure that regulation encourage this development, in that it can ensure an acceleration of the use of UMTS services. The opening of networks to content services was one of the keys to the success of Minitel, then Internet.

- A French issue

UMTS is more than ever a French issue. Europe has successfully adopted a common standard, with all selected operators having chosen the UMTS standard.

Clearly, regulators generally agree on the question of sharing infrastructures. However the consequences of the dispersion of allocation conditions, as we have seen recently, call for a degree of harmonisation at the European level. This approach is necessary to the most basic survival of the market and to its dynamics; it concerns the future of operators, new entrants, and equipment manufacturers.

WLAN technology is also of great interest for the sector.

On 4 April 2002, ART published the summary of the 73 contributions it received to its public consultation launched in December 2001. The purpose of ART's consultation was to examine the issues raised by the provision of public telecommunications services using Wireless Local Area Network (WLAN) technologies currently available in the 2.4 GHz and 5 GHz frequency bands, such as Bluetooth, Home RF, Wi Fi (standard IEEE 802.11b) and HipeWLAN 2.

WLAN technology uses the 2.4 GHz and 5 GHz frequency bands, which are not specifically assigned to their user and for which no fee is charged.

The regulatory texts applied by ART reserve WLAN use to local ("independent") networks and to low-range, low-power devices. The maximum power authorised indoors is 10 mW for the entire 2.4 GHz (2400 MHz–2483.5 MHz) band, and 100 mW for frequencies between 2446.5 MHz and 2483.5MHz.

The possibilities of outdoor use are very limited: on private property or on the private property of public entities, use is subject to an authorisation procedure with the Ministry of Defence, with a maximum power of 100 mW in the 2446.5–2483.5 MHz frequency band. Use outside buildings on public property is not authorised.

These constraints result from the agreement signed on 11 January 2001 by the Ministry of Defence and *Autorité de régulation des télécommunications* regarding the introduction and development of low-range devices in the 2400–2483.5 MHz band. The agreement with the Ministry plans the use of maximum power of 100 mW indoors in the entire 2400–2483.5 MHz band, and outdoor use with maximum power of 10 mW by early 2004.

In accordance with the decisions of the European Conference of Postal and Telecommunication Administrations (CEPT), the use of frequencies in the 5150 MHz-5350 MHz band is authorised indoors with a maximum power of 200 mW, and prohibited outdoors. The 5470 MHz-5725 MHz band is not currently available. The consultation helped us identify the current situation at the industrial level, determine needs and possible uses and the suitability of the regulatory framework in this area.

Contributors to the public consultation were equally divided between representatives of sectors involved in WLAN technologies (telecommunications operators, equipment manufacturers, consultants, integrators) and other players (individual users, associations, municipalities, businesses using this technology for their own needs).

Their contributions reflect the high sector interest in this technology, following the arrival on the market of relatively low-cost and easy-to-install products. A number of opinions were expressed in this consultation:

- A widely shared desire to be permitted to offer high-speed Internet access in high-traffic public places (so-called "hot spots"), such as train stations, airports, hotels, etc.
- General demand for an easing of the conditions of use of these technologies, outdoors, and a raising of the power ceilings currently in force

- Demand to allow the use of WLAN technologies in building infrastructures in isolated regions
- The need to protect the integrity of the many authorised independent networks which develop WLAN services in these frequency bands
- A warning against the risk of distorting competition with existing or future networks UMTS networks

ART is naturally attentive to the potentials of these technologies as a vector of high-speed Internet access, and the stimulating effect these technologies can have on local loop traffic.

ART also noted that this technology is to be included in an access logic (connection of radio relays to networks), which is more naturally complementing, rather than directly competing with, local loop technologies. Therefore, it has already initiated in-depth regulatory and technical discussions to allow an easing of the current system, and will soon be meeting its usual institutional contacts (Armed Forces, National Frequency Agency) in order to work in this direction.

Today, these bands are shared, and any easing of the constraints can only be done with the approval of the Armed Forces.

Conclusion

Broadband is a reality both in Europe and in France. Its access for all has led French authorities to take two additional measures.

While competition must remain the impetus behind the development of broadband, a degree of complementary intervention of municipalities may be justified in order to guarantee the equitable and rapid development of technologies nationwide and to promote the information society. Two initiatives were taken by authorities in this sense last year.

The first initiative concerns the conditions of intervention of municipalities which were modified by the law of July 2001. ART's position on this question reflects a large community of views with the local government associations. The new law represents an interesting advance in this respect. Municipalities can assist operators by providing infrastructures. Their interventions must protect, and even encourage competition. But municipalities may not be operators.

The second initiative was a meeting of the *Comité interministériel de l'aménagement du territoire* (CIADT) on 9 July 2001. This initiative reflects the government's commitment to conducting a public policy involving a sharing of the financial burden of infrastructure deployment, both for broadband and GSM network coverage.

Today, we see that operators clearly want financial assistance from authorities and more specifically from municipalities, to assist them in deploying their networks.

At the same time, some local governments have expressed the desire to encourage operators in a concrete way to deploy their service offers locally.

From ART's point of view, the intervention of municipalities must fundamentally respect the principle of competition. To this end, the infrastructures sold must allow the establishment of several networks, which will also allow the sharing of costs between operators.

The two goals of facilitating the task of operators, and public assistance to operators must remain separate.

Because of its importance and complexity, the involvement of municipalities in assisting and monitoring operators must respect legal and economic requirements, in accordance with the issues of competitive regulation of the sector. ART considers it necessary that this monitoring be organised in such a way as to take into account all of these concerns as far upstream as possible and in a coherent way. This will certainly require the strong involvement of the regulator and a strengthening of its operational cooperation with the municipalities and the State.

Discussions on the direct or indirect use of independent networks by municipalities are also underway. These networks are reserved to closed user groups, used primarily by businesses (e.g. EDF or SNCF), universities (Nancy, Ile-de-France) and local governments (city of Besançon, the Tarn *département*), which do not have operator status.

The issuing of independent network authorisations, under ART's responsibility, depends on the freedom of choice of the municipalities. It offers a concrete solution to the need for high-speed local networks and it allows the expression of the regulation. It is already a very constructive approach in the current debate, although it could use a few adjustments.

To conclude, I should like to share with the participants at this second OECD workshop two ways to assist the development of broadband:

- The first is competition: the future of broadband depends to a great extent on competition. Competition will allow the greatest number to take advantage of the innovations offered by this new medium at the best price.
- The second is the necessary European—and even global—harmonisation. Harmonisation must become a reality for all issues in question. The new European directive should contribute to this, and ART is committed, in the framework of its transposition, to its full application.

I thank you for your attention.