

# **PUBLIC POLICIES FOR BROADBAND DEVELOPMENT IN THE EUROPEAN UNION: NEW TRENDS FOR UNIVERSALISATION OF SERVICES**

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## **1. INTRODUCTION**

Realising the potential of the Information Society requires an adequate infrastructure to smoothly support the offer of contents and services. This is why achieving a fast and generalised broadband development is viewed by most governments around the world as an important challenge to their future. It is also the case of the European Union, as proven by the various recommendations and action plans presented recently, all of them acknowledging the importance of broadband development as a critical issue for economic growth, productivity and competitiveness, and as a guarantee of social cohesion among the various European regions.

According to the eEurope 2005 Action Plan, a “widespread availability of broadband access at competitive prices” will act as the enabler for the objectives summarised in the keystone of eEurope 2005: “an Information Society for all” (European Commission, 2002).

Investment in broadband, requiring a significant improvement of the existing infrastructures or even a new network deployment, will mainly come from the private sector. The public sector must help create a favourable environment and stimulate demand. However, given the existence of regions, in particular rural areas, with no interest for private initiative since they would represent no profit at all for them, governments must also take action on the supply side of the market. In this context, the EU Member States are already launching Information Society development programmes which dedicate major sections to fighting against the digital exclusion and plan, among other measures, the geographical extension of broadband accesses.

The aim of this paper is to review how this objective of broadband development can be achieved, and what instruments the public administrations are using.

We will start by assessing in section 2 the importance of accessing advanced telecommunication infrastructures in the new socioeconomic paradigm of the Information Society; it is in the framework of the fight against the *digital divide* that public intervention for boosting the development of broadband should be examined. The following section provides a quick review of the different mechanisms used to guarantee generalised access to telecommunication services and identifies the reasons why, at least to date, the universal service obligations have not been extended (or have been only timidly extended) to advanced services. Section 4 provides a full description of the tools used for universalisation in this new stage, studying the characteristics and specificities of the European broadband support programmes. The critical analysis is left for the conclusions with which this article ends.

## **2. ACCESS AS THE MAIN CAUSE OF THE DIGITAL DIVIDE**

Two are the key factors on which actions should be taken to fight against the digital divide: *access*, that is, providing connection to the appropriate infrastructures, and *adoption*, or, in other words, encouraging their usage considering the social, economic and political characteristics of the targeted clients and communities. Access is the prior condition: the first requirement for “digital conduct” is the physical infrastructure (ECLAC, 2002). Adoption gives economical and social meaning to access and, consistently, is a much more complex question: content, applications and language, literacy and education, entry barriers (penetration of

personal computers, for example), and community and institutional structures must all be taken into account if meaningful access to technologies is to be provided (Warschauer, 2002).

In those countries with the highest levels of development, where the universalisation of telephone lines is already completed, the access problem focuses on achieving a degree of penetration similar to that of the broadband infrastructures. The deregulation process of their telecommunication markets was completed several years ago and, although with unequal success, competition has reached a certain degree of maturity. As a consequence, the competing operators, in their fight for the most profitable market segments, are the actors that invest the most in broadband.

However, since it is unlikely that operators will maintain any interest outside grouped-and-profitable-customer-filled urban areas, isolated and rural areas may have to wait quite some time until they can enjoy, not the arrival of effective competition, but any broadband connection. Not surprisingly, Grubestic (2004) concludes that, at the most basic level, accessibility is linked with population: more populated areas have more choices of broadband providers. Likewise, Strover (2003) provides some support for the importance of simple market conditions summarized by per capita income and population density in prompting market entry by competitors. Also, there are already some proofs (European Commission, 2004b) of the positive impact of competition in the availability and conditions of broadband access.

In many cases the access problem is directly linked to the adoption issue. A greater penetration of the services would imply an increase in the demand for connectivity. Once a minimum profitability threshold is surpassed, the offer would react to that demand. In any case, it seems that, with the costs inherent to current technologies, there are a series of minimum parameters which, if not reached, create an objective barrier. In these cases, even with high adoption levels among the available population, not enough aggregate demand will be created to cover the costs of providing access. Despite orographic and territory occupation conditions can determine results of quite a different nature, we can use as an example the study on a Spanish region by Gómez Barroso and Pérez Martínez (2004) establishing the difficulty of ADSL or cable<sup>1</sup> operators reaching localities of less than 500 inhabitants.

As a consequence, public intervention is necessary if the universalisation of these infrastructures is intended. Most governments are designing (or have already designed) broadband plans pursuing their ubiquity and an increase in usage of the applications that can be provided thanks to it. Conceptually, this is nothing new. Generalised access to

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<sup>1</sup> Affordability is another parameter that must be taken into consideration. Satellite-based broadband solutions are available anywhere throughout a territory although, for now, their prices are, generally, much more expensive than those of wire-based broadband solutions.

telecommunication services has been, regardless of the degree of success achieved, an objective of every government during the last century. This suggests that the advantages of a massive connection to telecommunication services have been understood regardless of the political option in power.

### **3. MECHANISMS FOR TELECOMMUNICATION SERVICES ACCESS UNIVERSALISATION**

One of the main justifications protecting the existence of the monopoly was its condition of being in charge of a public service. Despite this public service aspect, in most countries the commitment to extending the service was more implicit than explicit. Citizens did not benefit from an individual right of demanding the telephone service, or, from the opposite perspective, telecommunications administrations were not legally bound to providing this service (OECD, 1991). Thus, the development of both networks and services has been interpreted essentially in a voluntaristic way by administrations, being subject to the political changes and/or administrative priorities, the sensitivity and interest of the governing class towards the industry, and the degree of general development of each country<sup>2</sup> (Gómez Barroso, 2005).

In the new liberalised environment, the figure of universal service appears as an attempt to reconcile the principles of public service with those of the market economy (Gómez Barroso, 2005). There is no single global definition for universal service. There is however an agreement on the basic core of the concept that usually covers national availability of a series of specific services for which non-discriminatory access, generalised economic affordability and some level of quality are guaranteed (ITU, 1998).

At present, universal service guarantees, essentially, access to the fixed telephone network. Despite it is now widely accepted that universal service will have to be redefined time and again (Sawhney, 2003) problems exist for adapting this figure to the new stage which is currently opening.

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<sup>2</sup> In the United States, network deployment was quite regular: residential telephone penetration had exceeded 40% around 1945 continuing, from that moment on, with a sustainable growth until reaching an asymptote during the initial seventies when 90% of the homes were connected (Sawhney, 1994; Albery, 1995). European countries had to wait for the seventies for service universalisation to really move forward. So much that Noam (1987) considers that the role of the monopoly in the extension of the service is incorrectly taken as a historic rule extrapolating the investments made during this period.

The *developed concept* for the universal service faces three major problems that have corrupted the idea used in its initial development: its identification with one of the possible practical articulations (the one financed by the sector's companies), its improper usage as a regulation instrument and, particularly, its inflexibility to adapt to conceptual shifts.

- First, there is a dangerous association between universal service and “operator-financed mechanism”. This is, without a doubt, the circumstance that has fed its armies of critics and poisoned any debate on its evolution.
- Second, the regulation of universal service is plagued with “open” terms; the need for interpretation gives rise to forms of action that are poorly regulated<sup>3</sup>. Therefore, universal service is sent to the toolbox of the competition policy, thus “contaminating” its first and utmost nature of being a social policy.
- The third problem is the lack of flexibility of universal service to adapt to the new stage which is currently opening. The specific legal instrument defined as universal service in developed countries' legislation is designed to support the *corrective* notion of the concept (correcting problems in the offer only on a network which is almost universal by now) making it difficult to introduce any alternative *driving* conceptions into it (referred, for instance, to the deployment of new broadband infrastructures).

Obviously, we must not lose sight of the economic dimension of a series of obligations which could extend to broadband accesses. The final consequence is that, today, broadband universalisation faces other instruments. Governments seek solutions that are more flexible than those provided by universal service as regulated at present. The “information society development programmes” are the tool that allows the public sector to tailor the intervention pattern to the measure of their preferences and possibilities.

#### **4. EUROPEAN PROGRAMMES FOR BROADBAND DEVELOPMENT**

European countries are launching information society development programmes that dedicate major sections to fighting against the *digital exclusion* and plan, among other measures, the geographical extension of broadband accesses, even when operators are still moving towards covering the territory with their offer.

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<sup>3</sup> Consider the evaluation of the “net cost”: much closer to politics than mathematical economics, its calculation has often become a weapon in the State's global negotiations with operators, especially with the incumbent one. Also consider the unknown translation into practical terms of the concept “functional” access to Internet, included in the most recent review of universal service

The need for public intervention in order to help deploy the broadband networks had been officially assumed while the new Directive on universal service<sup>4</sup> was being debated. However, the new Directive, which was basically continuistic, never refers to broadband. As a consequence, national broadband strategies are taking other courses.

The boost of the different national strategies (as well as their orientation) comes from the *eEurope* programme. *eEurope* was set out as a basic piece of the so-called Lisbon strategy, targeted at turning the European Union into the most competitive and dynamic *knowledge-based* economy by 2010. The objectives established in the first *eEurope* presentation document are truly ambitious: “bringing every citizen, home and school, every business and administration, into the digital age and online” while guaranteeing that “the whole process is socially inclusive, builds consumer trust and strengthens social cohesion” (European Commission, 2000).

The *eEurope* 2002 Progress Report addressed to the Stockholm Spring Council refers to investment in broadband for the first time, defending that it will *mainly* come from the private sector, without specifically referring to state intervention on the offer side (European Commission, 2001). Its successor, *eEurope* 2005, maintains the predominant role of the private operators, although it authorises the Member States to support, where necessary, deployment in less favoured areas. The Action Plan also proposes a series of initiatives to accelerate the taking-up of broadband.

Following the master guidelines set out by the *eEurope* programme, all national programmes acknowledge the primary role of the market in broadband deployment. They also admit the role of public policy in complementing the effective operation of the market, addressing both the supply and demand sides to stimulate a virtuous circle whereby development of better content and services depends on infrastructure deployment and vice-versa (European Commission, 2004a).

As a consequence, public intervention is moving forward on two separate paths: contributing to network deployment directly as well indirectly, promoting demand, in the latter case, in order for currently non-profitable regions to exceed the business threshold required by operators for investing and providing service.

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<sup>4</sup> Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive). See Official Journal, OJ L 108, 24.4.2002, p. 51.

#### 4.1. Direct measures: network deployment

As stated above, *eEurope 2005* maintains the predominant role awarded to the private sector although, among the proposed actions for broadband development, it declares that “Member States, in co-operation with the Commission, should support, where necessary, deployment in less favoured areas, and where possible may use structural funds and/or financial incentives (without prejudice to competition rules)” (European Commission, 2002).

Making use of this authorisation, most central governments in the Europe of the Fifteen (with the exception of Belgium, Denmark and Germany) allocate public funds, or have declared they will do so shortly, to programmes related to broadband development.

Following the recommendation, a part of the money comes from structural funds, wherever the conditions for their usage apply. The Commission released a working paper with the guidelines for their usage (European Commission, 2003a). Over the period 2000-06, the structural funds are expected to allocate €6.1 billion for investment in electronic communications and the information society (European Commission, 2003b). Giving a more defined form to these initiatives, the Initiative for Growth (European Commission, 2003b) announces “Digital-Divide Quick-Start projects” to accelerate broadband deployment in remote and rural areas through a technology-neutral approach.

Central government plans are not, however, the only ones allocating funds to broadband network progress. Regional and municipal governments are, frequently, those taking the initiative of promoting and extending broadband in their territories. Sometimes their actions are incardinated within national programmes, but in many other cases they are independent. Given that regional and municipal governments can manage an important part of the structural funds, the fact that a considerable number of broadband universalisation programmes will be boosted from local decision centres is thus confirmed.

Their participation allows to extend the range of conceivable solutions. Avoiding the multiple peculiarities resulting from heterogeneous realities and requirements, the different interventions can be grouped into the following categories, which are not mutually excluding<sup>5</sup>:

- Municipality-driven wholesale networks<sup>6</sup> (Denmark; in Belgium municipalities have historically invested in cable networks where no private network already existed).
- Public-private partnerships (Greece, Ireland, Austria).

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<sup>5</sup> Refer in detail to the national strategies in the annexes of European Commission (2004).

<sup>6</sup> The new regulatory framework would require that access to such networks be available at non-discriminatory conditions (European Commission, 2004).

- Direct construction of the infrastructure (Ireland, Southern Italy).
- Subsidies to network-builders operating in the private sector offered to the market in a tender (some regions in Austria) or a public procurement process (Sweden, where if private contractors are not interested, municipalities may build the infrastructure themselves).
- Long-term reimbursable loans (Spain) or preferential loans (France) to operators for the deployment of infrastructure in selected areas.

The technological trend is also manifold: some municipalities have intervened by rolling out fibre optic rings; others intend to look into wireless technologies to extend connectivity. When no other technological alternatives exist, the establishment of free public access points based on satellite technology is usual. In some cases, local governments have installed Wi-Fi networks extending the connection to the whole municipality.

Public access points are one of the most usual tools used in universalisation programmes. Despite the most ambitious projects have been launched in France, Italy and Spain, their usage can be considered generalised. Their installation expects to meet several objectives simultaneously. Where there are no other broadband alternatives at that locality, their construction can be included in this section dedicated to network extension. However, they also promote digital literacy of marginal groups and stimulate the usage of advanced services, thus boosting the future demand, a fact that connects with the other great branch of the broadband promotion strategies.

#### **4.2. Indirect measures: demand aggregation and stimulation**

As stated in section 2, from the market perspective, the access and adoption issues are inextricably interwoven: adoption is impossible without access, but access is economically difficult to provide without the prospect of rapid and widespread adoption (Hollifield and Donnermeyer, 2003). Occasionally, the encouragement of adoption can lead to generating the sufficient increase in demand to attract the offer, thus resolving some of the access problems.

Encouraging and aggregating demand is, thus, a policy that should result effective. Aggregating customers is common in urban areas, where providers compete to hook office buildings and other nearby clusters of “data customers” to Internet backbones; it is more difficult in rural communities, yet not to do so virtually guarantees that rural demand will remain “off the radar screen” of large service providers (Malecki, 2003). As a consequence, a chapter shared by many national strategies consists in grouping the broadband requirements of all public institutions located in the appropriate area to provide a crucial pull for new networks.



The United Kingdom and especially the Netherlands are the countries where more trials and experiments are being carried out in this direction, leading, in some Dutch regions, to bundling the demand of consumers, schools, libraries, hospitals and companies.

On the other hand, demand stimulation offers an enormous field for public activity. Although demand stimulation policies can include from digital literacy promotion to initiatives addressing the development of new contents, applications and services, there is a group of core measures we could consider directly targeted towards improving the appeal of broadband in the short term:

- All Member States are promoting the development and use of online e-government, e-health and e-learning services as part of their national strategies.
- All plans are also focusing on promoting ICT in enterprises (particularly SMEs)<sup>7</sup>.
- Work is being carried out to increase the number of broadband accesses in schools and libraries. As we noted above, the establishment of public access points complements this strategy.
- Some countries are providing financial incentives (Austria for new broadband access; Denmark for companies; Italy for broadband access, digital TV and PCs; Sweden for broadband access costs in excess of a threshold).
- In almost all cases these actions are accompanied by an effort to improve confidence in the usage of networks and stimulate consumers' trust in information society services such as electronic signature and e-payments.

## 5. CONCLUSIONS

Universal service is the figure that guarantees citizens the access to basic telecommunication services. As a consequence, the “natural” option to achieve broadband access universalisation would be to establish some sort of universal service obligation. However, the magnitude of this task leads one to thinking that, similarly to telephone universalisation being achieved thanks to consecutively securing increasingly more ambitious objectives during the monopolistic stage, broadband deployment requires a scenario that also provides for a greater staggering of the actions.

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<sup>7</sup> This can be a very effective policy, since, according to the study by Hollifield and Donnermeyer (2003), employment by a company that was using specific information technologies is the strongest predictor of individual adoption; the effect is particularly strong among those with less formal education.

This relaxation implies destroying the homogeneity: the objectives set forth, the mechanisms and the deadline for its achievement as well as the participating actors can be disparate. This disparity covers, in the most extreme case, inaction. Thus, it is possible for the chance of every citizen to be conditioned by the interest their local or regional government shows for including general broadband deployment plans (or their promotion), resulting in an arbitrary design of the digital divide map within developed countries.

This situation should be corrected in the long term. The most probable scenario seems to be that once the geographic coverage stage is well underway (and the financial effort it entails has been faced), universal service will be extended to broadband infrastructures. It would thus take up anew the *corrective* role it has at present as regards the telephone service.

This modification should be used to deeply reform the current concept of universal service. The universal service definition must be separated from a portfolio of specific services to become the provision of sufficient connectivity to the users. This change would allow to move forward towards a true technological neutrality since it would separate the provision of universal services from specific technological solutions. This would be a perspective which would not be restricted to the basic telecommunication services, but focused on the global requirements of the users instead; it is the natural step from a sectorial matter (telecommunications regulation) to a social matter (public policies regarding the Information Society) (Ramos et al, 2004).

Regardless of the hypothesis on the evolution of universal service materialising or not, the boost to broadband is being carried out with what we could generally call “universalisation mechanisms”. The European Union, a true melting pot of cultures, lifestyles and political conceptions in itself, is maybe the best example of the plurality of actions that can be conceived to achieve this goal.

The direct interventions being promoted in the areas lacking any interest for operators can be sorted in a scale that adjusts the different intensity of public participation. This scale ends with the creation of a public operator that builds the network and provides the services. This decision resolves, completely and immediately, the problem, but would have a negative impact on competition in the long-term and would imply a financial risk for the public sector who also needs not only technical but also commercial expertise. As the role of the public sector is reduced (it builds the networks but does not offer the services or simply provides in some way the deployment of the infrastructure), the risks taken on and the market distortion are reduced, although, in turn, it needs a private agent to be involved in the project.

For their part, the demand aggregation models do not imply any financial risks although in the long term, they could represent a barrier for the entry of other operators or service

providers. In fact, the tenders offering an exclusive supply agreement for more than one specific percentage of the market should be meticulously designed to avoid being anti-competitive. In parallel with the actions for access are those concentrating on the adoption side. Apart from the measures that are specifically targeted to this end that have been described in section 4, it is also important that the regulators promote (or at least do not prevent) the release of innovative and attractive user services. Among these, the probable progress of VoIP could be of an undoubtable importance (GRETEL, 2004); VoIP can be the element attracting towards broadband the attention of a great deal of users that are not interested by the services provided in the current offers.

In any case, acting on the factors that can contribute to increasing the usage of services and applications seems to be a requirement for closing the digital divide. We cannot forget that the digital divide cannot be resolved by simply providing access to the infrastructures. Communications technology is not an end in itself, but a means of supplying quality content in the Information Society. Waving the “icon” of the Internet does not, per se, mobilize customers: it is its pertinence to people’s professional priorities or to their most fundamental needs that matters (Ricci, 2000).

## **6. ACKNOWLEDGEMENTS**

This paper would not have been possible without the support of the Chair on “Regulation and public policies of the Information Society” of the Colegio Oficial de Ingenieros de Telecomunicación (Spain) at the Universidad Politécnica de Madrid.

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