DELIVERABLE 5.4.1
DOCUMENTATION OF THE EXPERIENCES AND THE BEST PRACTICE IN ITALY AND APULIA REGION

Elaborated by

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INDEX

CHAPTER 1 – INTRODUCTION

1.1 REPORT OBJECTIVE

The innovation is one of the main drives of the economic growth because it allows the improvement in efficiency of the developing factors and permits the companies, on one side to satisfy the constant sophisticated demands and, on the other side, to compete with national and international competitors. Innovation can be analysed by observing the effects that it creates on the main economic subjects – companies and Public Administrations (from now on P.A.) – and on the territory, on the basis of determining factors such as the infrastructures, the financial resources and the state of the economic development of the society.

Information and Communication Technologies (from now on ICT) is a highly sensitive sector of the innovative competence to improving the relationship between public subjects, communities and companies. The *e-government,* i.e., offers the possibility to grant targeted and efficient services which can satisfy the companies and citizens exigencies and needs . *A dynamic habitat, competitive and in continuous evolution requires high capacity to elaborate ideas through the creativity and the capacity to perceive and anticipate new needs.* The financial politic oriented in this way has a double objective:

- to create the basis of realising new solutions funded on the innovation;
- to promote the implementation of such innovations, to modify in positive the *modus operandi* of the companies, of the P.A. and, more in general, of the administrative communities.

The Italian Government has recently issued the guidelines for the coverage and the development of broadband specifying that "*realizing realistically*" an adequate support to who develops and uses innovating systems and infrastructures "*requires interventions both of innovative finance in partnership with the private system and of fiscal leverage as quick as possible without the bureaucracy with additional resources from the different Administration, in a correct subsidiary support*". On these basis is possible to analyse th*e partnerships* between public and private to realise broadband technologic infrastructures, *wireless* and satellite, functional and innovative also, to obtain an adequate development not only technologically but also culturally – economic of the exiting local realities and those National ones.

It is now consolidated, both at national and international level, the conviction that having broadband infrastructures and telecommunication services is a pre-condition for the stating of the Society of the Information whose development is indicated by the European Commission, as the necessary step for the development of the member Countries.

The development of broadband in terms of high quality services imposes the adoption of a technological infrastructure. However, the infrastructure on the one side requires time for a progressive diffusion on the territory, and on the other side the economic logic brings to a random extension and however to define a ranking between the different cities and areas of the country, in such a way, it is inevitable that in time there is going to be a disparity between areas that already start to have broadband, and others that will have it in few years and finally areas to which the economic logic will deny this opportunity.

The entity of the gap, the so called *digital divide*, that can be created at territorial level and the search of possible solutions, requires continuous monitoring of the phenomenon on the whole national territory.

The objective of the present report is to present the experience in the subject of broadband in Italy with particular reference to Apulia Region and is so structured:

- in charter 2 it is analysed the diffusion of broadband on the national territory and the potential of development with the annexed criticisms.
- charter 3 contains an analysis of the realized experiences by Apulia Region in the matter of broadband
- charter 4 examines the determining development of broadband in Italy

CHAPTER 2 DOCUMENTATION OF THE ITALIAN EXPERIENCE

2.1 INTRODUCTION

The development of the Society of the Information is indicated by the European Community as a necessary step to favour the economic development of the member Countries. The availability of broadband services is considered the enabling condition for the achievement of the Society of Information and is, so, indicated as one of the priorities for European Commission policy. The European Commission, as a consequence, is actively encouraging the member Countries to adopt national plans for the spreading of broadband.

Even the European Parliament has approved the 19 June 2007 a Resolution on the development in matter of broadband (cfr.2006/2273 (INI)).

With the purpose to indicate with high accuracy the coverage of the related services, the European Parliament encourages the member Countries to elaborate a map of the broadband infrastructure.

It underlines the necessity to create a broadband infrastructure at a local community level, by applying the principle of the public-private partnership, taking in consideration the equity access. It reiterates the requirement of technologic neutrality combined with the need to avoid the fragmentation of the intervention, the duplication of the existing infrastructure and to take into consideration the technologic evaluation and users requirements. The public procurement contracts should be granted through procedures of open tender, transparent, competitive and not discriminatory.

The Community Institution asks the Commission to spread the best practices forwards respecting the rules in matters of Government help related to the financial support given to broadband projects and to permit the use of the Community resources also for strengthening and substitute broadband networks that don't ensure connections equipped with an adequate functional capacity. The use of Community funds should be permitted only in badly served areas and in cases where it is evident that there no other sources of investment in broadband infrastructure.

This charter analysed the level of coverage of broadband on the national territory with the annexed potentiality of development and the relative difficulties. In particular in paragraph 2 are presented the activities that, at national level, permitted broadband development in Italy; paragraph 3 illustrates the policy and actions to support broadband development; paragraph 4 analyses the demand of broadband services; paragraph 5 carries out an international confront on broadband development; paragraph 6 illustrates the emerging difficulties in the spreading out of broadband and the relative key hubs; paragraph 7 reports the final considerations.

2.2 THE PROMOTION AND THE DEVELOPMENT OF BROADBAND IN ITALY

In line with the European addresses, in 2006 the Italian Government has indicated as a legislation objective that of ensuring that, within 2011, all the population is able to access the broadband networks and services, defining this access as "universal service". To guarantee the achievement of this result, the 20 December 2006 was established with a decree of the Chairman of the Council of Ministers the Committee for broadband

coverage on the national territory. It is considered, in practise, that the strategic objective of the "universal" access to the network and broadband services can be reached through the involvement of the Regions, of the local authorities and of all the operators active in furnishing telecommunication services, with the intention to guarantee the sharing of the development actions of the information society on the territory, and also the infrastructural policy.

The Committee functions are the following:

a) to find, also through comparison and the agreement with the representatives of the local Authorities, of the users, and of the telecommunication operators, the priority interventions to reach the essential levels of the technological competence of the national territory, through broadband infrastructures, in particular in strategic sectors for the socio-economic development of the territories.

b) to monitor the availability of the qualified infrastructures and of the services used through the access to broadband networks on the national territory, the evolution of the demand of services from the users and the level of cooperation at local level to realise broadband infrastructure and offer of the services;

c) to coordinate and harmonize, also on the base of the individual priorities, the different projects of realization of the broadband infrastructure at national level and in each Region;

d) to promote and harmonize, the initiatives of the different public and private subjects operating on the territory in the ambit of the interventions for broadband coverage;

e) to date direction and ways to fulfil pilot projects carried out on specific areas especially individualized with the purpose to experiment broadband, applied to the distribution of public utility services.

The Committee makes use of a "Technical Group" that in the first half of 2007 has in some Regions listened to the principal operators of fixed networks, and to some important Corporation distributors of the public utility services. It has also established, on indication of the Ministers Committee, and in agreement with the Department of Youth, policies directed to its involvement in defining specific criteria to realize infrastructure and to create broadband services.

In order to find statistical data and to exchange information changes of the offer in the request of broadband network infrastructure, the Technical Group collaborates to the monitoring activities with the Observatory for Broadband development in Italy.

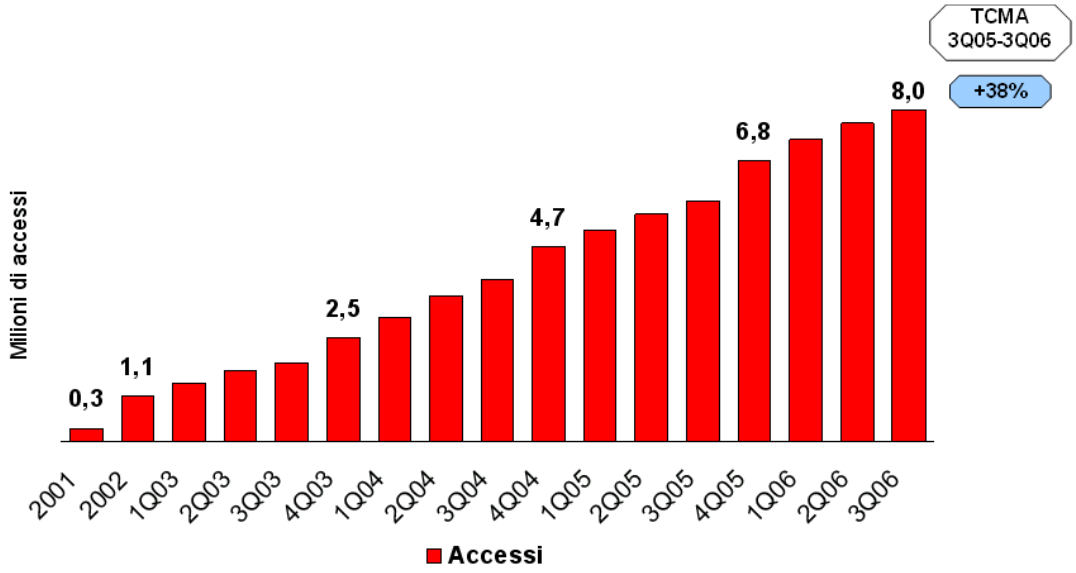
The Committee has issued the Guidelines for broadband Regional Plans. They have recently been approved by the Permanent Commission for Technological Innovations within the local Authorities and the Regions, and also by the Unified Conference.

2.2.1 THE SUCCESS OF BROADBAND IN ITALY

Broadband represents, in Italy a successful case for the speed of its coverage. The growth of broadband access has been the result of many factors that have interacted positively. On the one side, telecommunication operators and the Internet Service Provider have developed a more innovative and richer offer, not only in terms of services, but also new contents and price-list tables. On the other side, the increase of the ADSL coverage, has jumped from just over 40% of the population in 2001 to nearly 88% in September 2006, and has created a condition whereby the dynamics of market could wholly explicate its beneficial effects.

The following figure shows the development of broadband in Italy starting from the year 2001:

Figure 1: **Broadband access in Italy**



Font: Broadband Observatory – Between (2006)

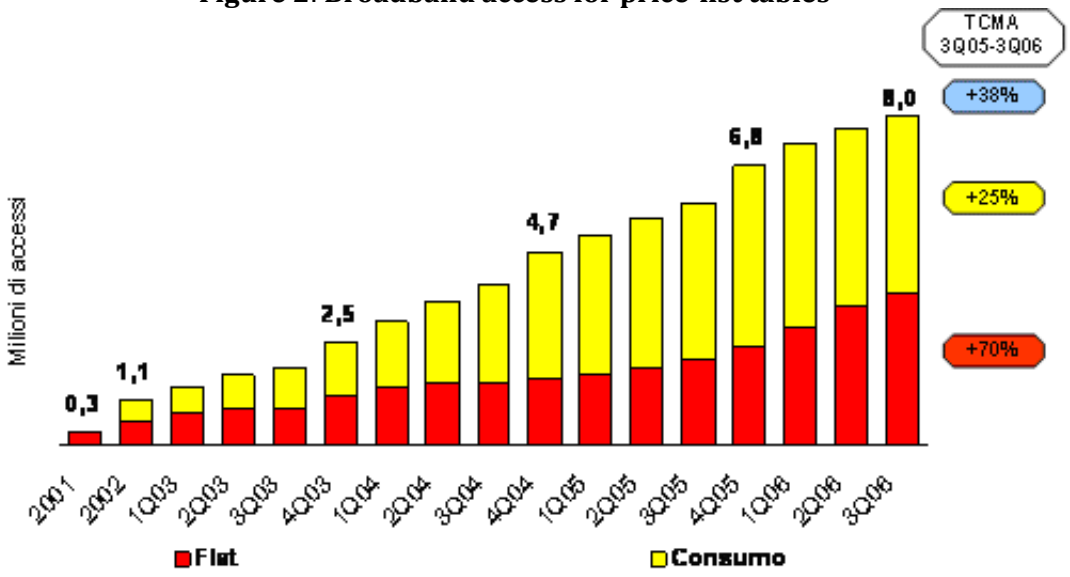
The accessibility have increased from 300.000 in 2001 to more than 8 million in September 2006. The growth in the third quarter of the year 2006 resulted to be 4%, compared to the previous quarter of the year caused by, as it is already happened in the previous years, an accentuated seasonal phenomenon due mainly to the residential component. In the latest year (Sept. '06 – Sept. '05), the mid quarter of year growth rate of the market has been higher than 8%. Considering the last three years instead (sept.'06 – sept.'03), the medium quarter of year growth of broadband market in Italy resulted close to 13%.

A further indicator of the exceptional development of broadband market in Italy is, moreover, represented by the increase of the related penetration, with the availability for 100 inhabitants increasing from the 0,5% of 2001 to just over 13% in September 2006.

The importance of the broadband market in the Italian economy, is confirmed by the volume of businesses that it has reached. The only component of access, in the year 2005, produced a turnover of 2 billions of euro. **It is still prevailing the consumer component.**

Even if the situation is in progressive evolution, the access to broadband in Italy is still predominately a consumer one, as illustrated in the following figure:

Figure 2: **Broadband access for price-list tables**



Font: *Broadband Observatory – Between (2006)*

In September 2006, the consumer access still represented more than half of the total (54%), anyway a significant decrease compared to the data at the end of 2005 (more than 60%). What had happened in the first nine months of 2006, it is confirmed that there was an acceleration of the migration process of users to flat price tariff.

However, the introduction of the consumer tariff has given an important contribute to the wide distribution of the users area, stimulating the "experimentation" of broadband from a part of the client segments, that otherwise would not have used these connections. The consumer model, however, characterizes the Italian market compared to what happens in the other European Countries, as it is also confirmed in the case of the mobile communication (according to U.E. data, in Italy by the end of 2005 the prepaid SIM were almost 85% against 35% in France and 50% in Germany).

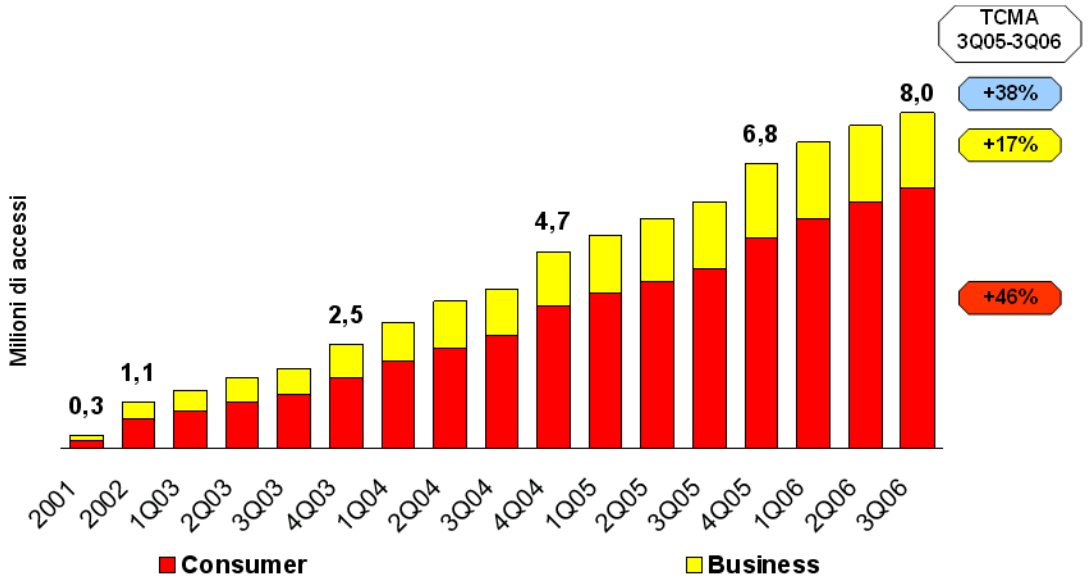
The distribution of the *always on* access must become one of the principle objectives to improve the definite affirmation of the model of economy on the network (the fruition of a wider range of multimedia services on the network).

With a 6,2 million consumer access, broadband market is already become a mass market.

The exceptional development the broadband market has known in the last few years, is due mainly to the fact that Italian families have accepted the possibility of faster Internet connections.

The following graph illustrates the composition, in the third quarter of 2006, the broadband market for client typology:

Figure3: Broadband Accesses for client typology



Font: *Broadband Observatory - Between (2006)*

In the first nine months of 2006, the consumer access has increased by 24%, substantially confirming the data growth taken in the same period of the previous year (+27%). The business access, instead, has shown a less strong growth, mainly because having reached, with some earlier year compared to the client consumer, an elevated rate of penetration on an acceptable base.

Concerning the speed of access, the connections are still for the majority at less than 2Mbps, but thanks to the quick development of the ASDL2+ coverage (with a nominal speed of around 20Mbps) there will soon be an increase of the services at disposal.

Certainly, the development of the band is clearly "supply driven", from the one side because of the extension of the coverage of the more advantaged technologies and on the other side, a strongly correlated aspect, because of the rising integration of the services in a mode of multiple play.

2.3 ACTIONS AND POLICIES TO SUPPORT BROADBAND

The objectives of the Italian Government, regarding broadband, are two:

- to develop broadband for the competitiveness of the companies and the Country system;
- to grant citizens the right to benefit by the network services independently from their financial state and uniformly on the territory.

Broadband as a developing motor means to give information and make communication the main productive factor in the economy of knowledge, in front of the global challenges.

Broadband as a universal service (intended as public service objective whose universality doesn't come from the nature of the services – public or private, but from a valuation of their relevance for the community) means to guarantee, within the legislature, that the citizens in all the territories have access to broadband connectivity services at a good price.

Such objective, as it is evident, should be kept during the years to come and have a

dynamic connotation, granting the evolution of the performance (band capacity) in function of the evolution of the services and contents.

2.3.1 LINE OF ACTIONS

To concert and to coordinate the territorial initiatives, to guarantee the availability of broadband.

The attainment of the strategic objective requires the involvement of the Regions, of the local Authorities and of all the operators active in furnishing telecommunication services to fulfil Territorial Plans. Such Plans must take the exact map of the available broadband on the territory, and to emphasize, through a direct negotiating with the operators, the areas of private intervention, where the market is active, and the areas where the public intervention is made necessary, through incentives or interventions directed to encourage the extension of the coverage (also with the intervention of Infratel). These guidelines are made to coordinate and give homogeneity at the whole intervention, to avoid duplication and long periods of time, to optimize the investment and to re-balance the territorial disparities.

To favour the new network technologies and the competition

The new development phase of broadband represents a moment of discontinuity, because the age of the copper pair is phasing out, so requiring new and large investment in the networks of new generation. Fundamental is the development of the new technologies of access to broadband, either terrestrial (such the VDSL at 50-100Mbps) or wireless. All the initiatives that increase the technological upgrading of the network and the development of the wireless technologies must be stimulated, starting from the removal of the ties in using civil infrastructures to lay the cables in fiber optic, needed for the developing of adequate capacity of the network access, either wired or wireless. Big attention deserves the coverage of wireless networks, first of all the WiMax, whose licenses will be given in the next months, that can give an essential contribution to complete the broadband coverage on the territory, together with the development of new addresses in mobility and roaming**.** The development of new technologies must be encouraged also with the aim to develop competition between the operators and to guarantee competitive prices for the users.

To create the conditions for the development of the services and digital contents

The effort for the country infrastructure must find verification in the adequate use of the network from all the users categories. Broadband and the ultra broadband allow network applications that permit all users to chat between themselves and contribute to realise the society of information, as foresighted by the European action plan of Lisbon. In this context are necessary policies of support both to the multimedia sector contents and to the interactive services, or policies for the development of services and public administrations content: from e-government to educational services, from infomobility to tele-medicine, that can create a fly-wheel effect for the growth of the demand and to prime a virtuous circle also for the service development of the private operators. In order that the access to the services through the network simplify in a substantial way the users life, it is a necessary condition to intervene on the re-organization of the processes, both in the private sectors and in the public administrations.

To stimulate the demand and educate the users.

The consistent gap in the level of education must be faced through the individuation of efficient and integrated policies that point to recover today those excluded parts of the population, with new technologies, a multi channel approach and adequate marketing strategies. The role of the information system and of the updating of training on the job

is fundamental and must be strengthened, but educational actions must be undertaken also for those subjects that are not in school or at work. For the small or medium companies there must be found a strategy aimed to the development of applicative and network services, also inside the production lines. Initiatives must be encouraged for the aggregation of the demand, starting from the public one and in particular in those areas of the digital divide.

To monitor the actuation of the intervention plans and the spreading of broadband

Particular attention must be given to monitoring the actuation of the territorial plans, of the broadband development on the territory and of the conditions in which the market develops (price dynamics, competition, technological evolution, etc.). Monitoring must furnish also a benchmark, so as to underline the efficiency and the effect of the single territories, to promote the best practice and to evaluate at later times the different models of intervention and their adaptation to the different territorial contexts. The monitoring of the Plans to fulfil and to develop broadband on the territory must be of use also to update the plans themselves in function of the evolution of the market and the technologies.

2.3.2 TERRITORIAL PLANS

The territorial plans for broadband represent the main instrument with which till today has been faced the problem of the digital divide in Italy

The Committee has noticed, during its activity of listening to the different subjects involved on the theme, a **series of positive elements** in these actions:

- sensibility at administrative and political level about the relevance of the problem;
- attention to the requirement of the different user categories (equality of access to the citizens, increase of the efficiency in the public administrations);
- constant research of innovative models and possible in the same time.

At the same time the Committee has detected some difficulties:

- an elevated grade of non homogeneity in the territorial intervention, not only in their operative declination, but also in the problem approach of the digital divide and its definition and representation;
- a scarce attention to the coverage duplicates and as a consequence the waste of resources;
- apart from some cases, the lack of systematic and complete plans, that almost never reach to define a solution for the totality of the population, but tend however to leave uncovered the most marginal territories;
- the scarce attention to the best practices and the tendency not put together the different experiences;
- the lack of consolidated and recognized models by all the territorial Authorities.

These, together with the request from many Region to have from the Committee indications and suggestions, are the reasons that has brought the Committee to issue these guidelines, that want to be a contribute to reach the broadband objective as a universal service, through a more efficient realization of the territorial Plans.

The importance of having guidelines is because the infrastructural *digital divide* is not a static problem, but it is a dynamic problem, that evolves in time with different logics.

The first objective that the Institution must do is that of covering first generation *digital divide,* so to guarantee everybody a service of basic connectivity (the so called *entry level*). The same methodology is also valid in case the Institution wants to prepare a plan for broadband in general, for example to raise the level of coverage of more advanced services or to infrastructure part of a territory, i.e. an industrial area.

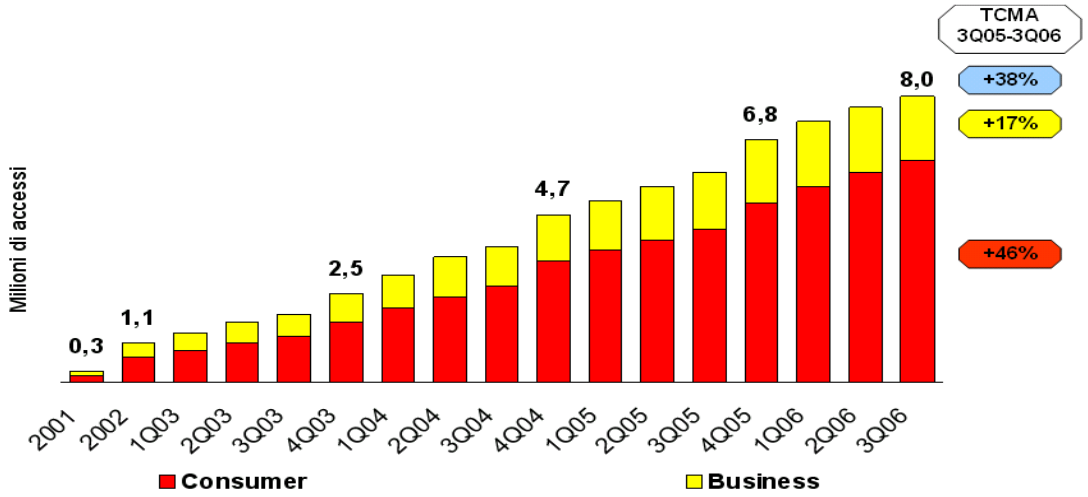
The definition of a unified platform of intervention to eliminate the digital divide permits to impose an action that maintains validity in time, because it permits, once there have been a change in the market (of the necessary band to have access to services, of technologies, of offers – i.e. new operators, tendency by new operators to change investment and so on), to create new actions without starting all over again.

2.3.2.1 REASONS FOR THE INFRASTRUCTURAL DIGITAL DIVIDE

The term "infrastructural digital divide" indicates a gap between those who live in areas where there are infrastructures and broadband services and those who live in remote areas, where such infrastructures and services are not available. Such a problem is closely tied to the difficulty of the telecommunication operators (and in the first place the ex-monopolistic operator) to guarantee the evolution of the phone connections towards the broadband infrastructures, that are available in a capillary way on the territory.

At national level, the ADSL coverage have reached 90% of the population, against 41% at the end of 2001. 10% of the Italian population (6 million citizens) that live in areas of the infrastructural *digital divide,* or in areas where broadband connections can be realized only through specific costly connections or satellite solutions and not with the technology that today is considered in reference to broadband, i.e. ADSL.

Figure 4: *Digital divide* of medium and long period



Font: *Broadband Observatory - Between (2006)*

To understand the possible time evolution of the phenomenon and the real complexity of the interventions necessary to the elimination of the infrastructural digital divide, it is fundamental to value the state of telecommunication infrastructures that serve the areas that are not yet reached by the ADSL coverage. In particular, the facilitating condition for the offer and the spreading out of the high speed services access is the connection in fiber optic from the phone centre to the transport network. More so the necessary

technical condition to furnish broadband services through the fixed network is the presence of specific instruments called DSLM in the phone centre. On the base of these two dimension of intervention (presence of DSLAM and fiber optic connection) it is possible to differentiate the territory not only for the lack of ADSL coverage, but also in relation to the costly complexity and of the necessary interventions to overcome it. So, the digital divide areas can be divided in two distinctive typologies:

a) areas serviced by the telephone centre without DSLAM and fiber optic connectivity (8% of the population); they are definite areas of "long period" digital divide, because they require additional costs, long and complex interventions, such as the cabling of the fiber optic infrastructure;

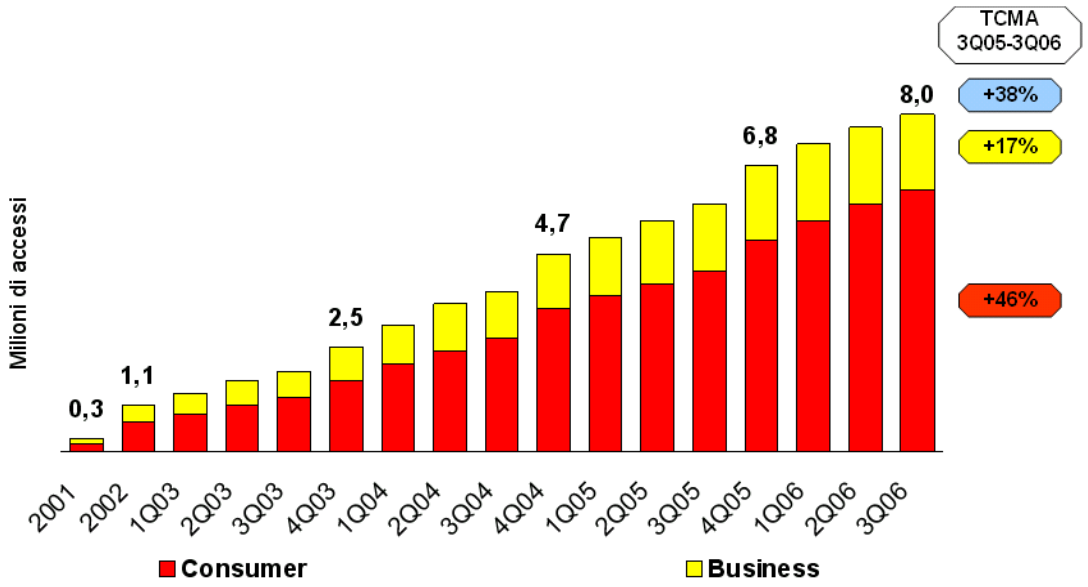
b) areas serviced by telephone central without DSLAM, but with optic fiber connections (2% of the population) are definite areas "of medium period" digital divide, because Telecom Italia has gradually, in the past years, equipped these telephone centre; they are also a small number of centres that even if they are connected with optic fiber are not capable to get income such as to have a return investment in DSLAM. Such areas continue anyway to be called medium period digital divide because they could be connected in short time and with less expense.

2.3.2.2 THE DYNAMIC OF THE COVERAGE AT NATIONAL LEVEL

In Italy the infrastructure access to broadband has had in the last period a significant development, both in qualitative and in quantitative terms. By the middle of 2007, ADSL coverage has reached 90% of the population, against 41% at the end of 2001.

The area in which the alternative operators have concentrated the infrastructural investments (mainly into unbundling the local loop) has already passed half of the population (52% at the end of June 2007), but it is also designated to grow little in time.

Figure 5: The dynamic of the coverage of the technology



Font: Broadband Observatory - Between (2006)

The main operators have, also, started the coverage of the second broadband generation. The availability of ASDL2+ technologies, that guarantees a significant raise of the connection services (up to 20Mbps in download, against the 4-6Mbps of ADSL that is considered the second broadband generation), even if in a speedy development, it is still limited to just over half of the Italian population (56% in the middle of 2007).

Only for half of the Italian population the competitive context of reference is characterized by the highest level of technological innovation and of product and, so, from the widest accessibility to the whole range of broadband services. So it there comes the possibility of new forms of digital divide, that makes even more urgent the resolution of the actual digital divide, but it requires also the setting of long period mechanisms.

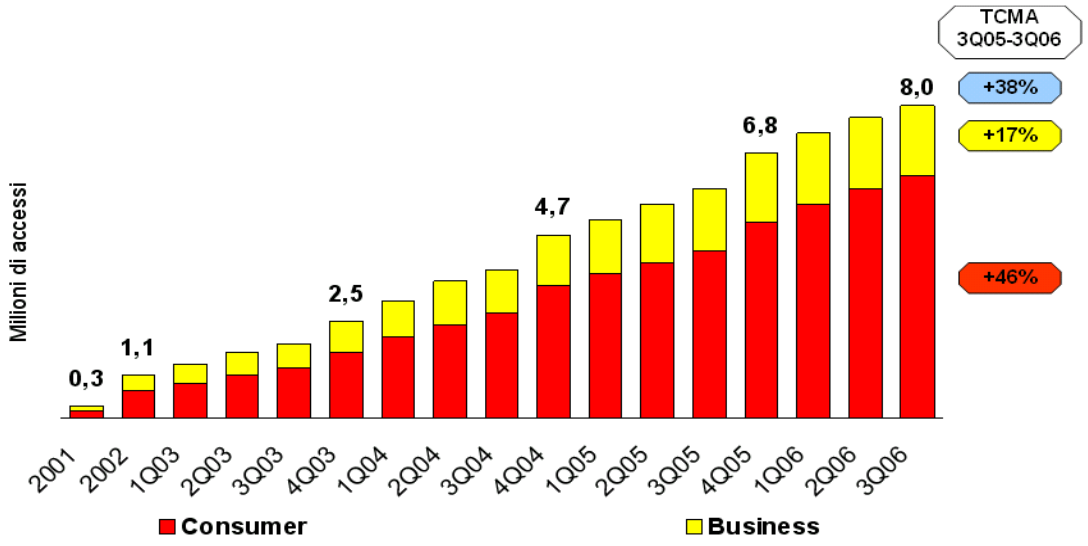
2.3.2.3 THE INFRASTRUCTURAL *DIGITAL DIVIDE* AT TERRITORIAL LEVEL

The infrastructural digital divide touches most of the regions, apart their economic potential.

ADSL coverage is strongly differentiated on the territory and, in spite of the high level of national coverage (90% of the population by the middle of 2007), there are still many regions in which the availability of broadband services are still less than the national media.

Between regions where the gap is strong we find regions from the south but also regions from the north – centre. Molise, Sardinia, Basilicata, Calabria and Valle d'Aosta that register low coverage levels, while Apulia, Liguria and Lombardy show higher levels. It is important to underline also that, specially in Lombardy, and also in Lazio and Campania, to a high level of coverage in terms of population correspond to a high number of villages not covered by ADSL.

Figure 6: ADSL regional coverage: communities and population



Font: *Broadband Observatory - Between (2006)*

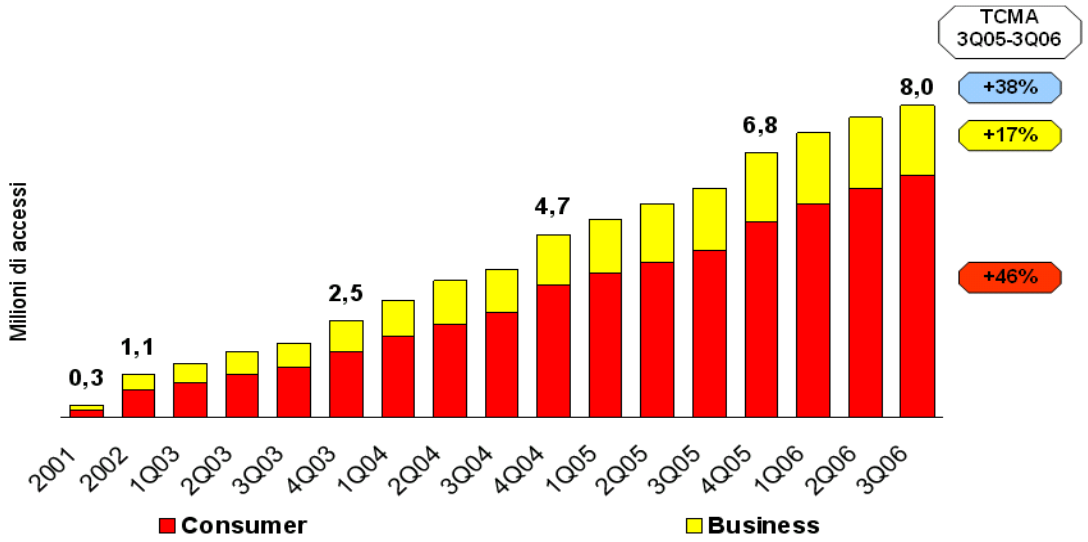
Also inside the same region the coverage level doesn't appear homogenous. The areas with a higher level of ADSL coverage, in fact, correspond to the metropolitan areas and to territorial areas that change easier to infrastructure (plains and areas with high density population).

The real entity of the digital divide problem can be perceived only by considering that Italy is characterized with the presence of many communities whose size is small or very small, situated in areas whose changes make it very expensive and technically complex the realization of infrastructure that guarantees the availability of the broadband services.

A further important aspect of the digital divide problem, is also, represented by the elevated number of communities not covered by ADSL. These are small communities, generally with less than 2.000 inhabitants and situated in areas horologic disadvantaged of our Country. In June 2007, the communities registered with a coverage of less than 5% of the population were just over 2.700. Such communities are located in all the Italian regions, even if the Lombardy and Piemonte sum up one third of the total.

The regions present a different incidence of the two types of digital divide (long and medium term digital divide). The digital divide of medium period is generally negligible in the North, i.e. Lombardy and Piemonte (where the problem is mainly due to the centres not connected in fiber), while it is relevant in many regions of Centre-South as in Sardinia and Basilicata, being even predominant in Calabria and Lazio.

Figure 7: The regional incidence of the *digital divide* of long period



Font: *Broadband Observatory - Between (2006)*

In June 2007, about 4,5 million citizens are in areas that pay for the digital divide problem of long period. In terms of percentage the population of the regions more stricken by the long period digital divide are Molise, Basilicata, Valle d'Aosta and Sardinia, in terms of the excluded citizens the biggest problem of incidence is referred to Piemonte, Veneto and Lombardy. These last ones, in the complex make more than a third of the total citizens in long period digital divide.

2.3.2.4 THE MARKET PROSPECTIVES IN THE NEXT FEW YEARS

For the short term (the next three years), the scenario elements to take into consideration are:

a) the Anti Digital Divide plan of Telecom Italia, which forecast to reach by the end of 2009, 99% of the telephone accesses with ADSL, adopting a solution based on

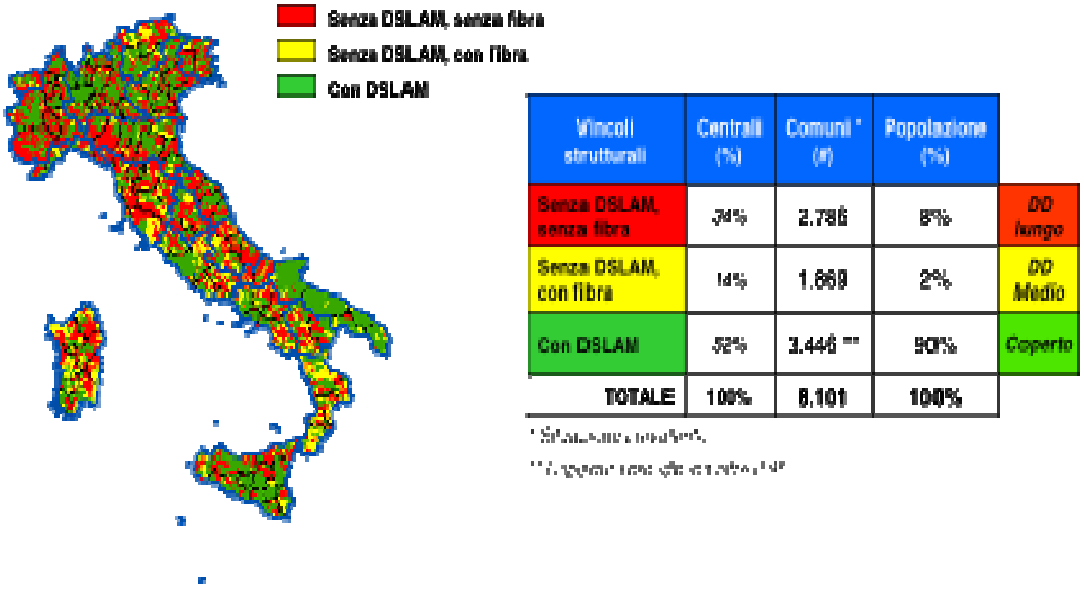
miniDSLAM that guarantees a speed base around 1Mbps;

b) the coverage prevision of the triple play offer (based on ADSL2+), that are going to remain two third of the population for the main operator and to just over half of the population for the alternative operators;

c) for the wireless technologies, the effective WiMAX role whose licences are going to be given within the year, and of which will be understood the real effectiveness of the technology and the market to cover the areas in digital divide.

For the long term (till 2015), it is expected (according to the plan presented by Telecom Italia to the financial community) the progressive completion of the triple play coverage and the gradual extension of the ultra broadband coverage (the third broadband generation, in VDSL2+ technology with a speed of over 50Mbps). This last generation is based on an intensive use of fiber optic in the access network.

Figure 8: Evolution of the coverage of broadband on the fixed network



Vincoli strutturali	Centrali (%)	Comuni * (#)	Popolazione (%)	
Senza DSLAM, senza fibra	34%	2.786	8%	DD lungo
Senza DSLAM, con fibra	14%	1.869	2%	DD Medio
Con DSLAM	52%	3.446 **	90%	Coperto
TOTALE	100%	8.101	100%	

Font: *Broadband Observatory - Between (2006)*

The Industrial Plan of Telecom Italia gives evidence of two distinctive development phases. The first, of a short period (till 2009), plans the extension of ADSL coverage to 99% of the population of the telephone access and the reaching of the triple play coverage services until two third of the total. Instead the second, is placed in a longer period prospective (over 2015) and plans the progressive completion of the triple play services coverage (100% of the telephone access). In this second phase, it is expected the gradual extension of the ultra broadband coverage until the reaching of 65% of the telephone access.

2.3.4 THE PUBLIC INITIATIVES FOR THE INFRASTRUCTURES

In the last few years there have been many public initiatives for the infrastructures both at local and central level. At central level the Infratel society has started in the southern regions a cabling action in accordance both with TLC operators and the Regions, the channels for the optic fiber. Besides it has been agreed by some of these regions interventions for the coverage extension in the marginal areas with wireless technologies.

Initiatives at local level to reduce the infrastructural digital divide are present in all the

regions. The right of the interventions is always up to the Region, even so, many Provinces are starting initiatives and some Mountain Communities are getting ready by themselves. The value of the interventions goes from a few million euros to over 100 in a couple of the regions. Also the interventions models are very different, they go from the more liberal approach and mostly oriented to incentive private operators, to the directors approach, that use the public local societies sometimes time created ad hoc and in some case more oriented to solve the problem of the local P.A. and not those of the private citizens and companies. We are talking of around 700 mln public finances planned by the Regions and local Authorities on broadband.

2.4 THE DEMAND OF BROADBAND SERVICES

2.4.1 FAMILIES

Always increasing are the multi-technological families, but the Italian home remains "entertainment driven".

A necessary passage point in using the new network services by the families is, without fail, the availability of instruments specific for their fruition.

The growing coverage of intelligent instruments (with electronic/information data contents) gives new opportunities for the affirmation of innovative services inside the domestic habitat (to think not only of the Internet, but also to the Video on Demand, to the remote interaction with domestic electronic systems).

The most commonly used product of the Italian families, in June 2006 remains the mobile, that it is present in over 80% of the cases (in many families there are 2 or more), while the use of PC is still limited to less than half of the Italian families (47%), even so there has been registered a growth of over 3 percent compared to June 2004.

In the last few years the technological innovation in the Italian families has been driven mostly in the diffusion of new ICT products and from the development of new electronic entertainment products. From the side of ICT instruments, the mobile UMTS and broadband have shown the highest rate of growth, overtaking the threshold of this niche Broadband, in particular, is a surprise for the speed of coverage diffusion (+ 20 percent compared to June 2004) and so, it confirms the favour in which the Italian families have accepted it. Regarding the consumer electronic, the apparatus that has known a bigger growth are the DVD videos terrestrial digital decoders, cameras, video and digital cameras, and more recently the MP3. In only two years, the UMTS mobiles and the DTT Decoders have reached a coverage of just half of that of PC.

Almost one third of Italian families risk remaining out of the network economy.

In Italy, a critical factor for the affirmation of the fruition of model of network innovative services remains tied to the level of the information data education of the Italian families, this results largely inferior compared to the main European Countries.

In the middle of 2006, in 60% of the Italian families there is at least one member capable of using a computer, but in three years the level of information data education is grown only of three percent and the presence of PC still doesn't reach half of the Italian families.

Even if the gap between the two mentioned indicators is going to reduced in time, because of the progressive generation change, it remains anyway the problem of the risks to exclude from the network economy a third of the Italian families. The full affirmation of a network economy service, requires to move the attention on the process of technology education and on finding alternative platforms to PC.

2.4.2 COMPANIES

It is universally recognized that the level of information data, and more in general, of endowment that has a significant impact on the companies performance, and in particular in terms of organisational and productive efficiency.

It is also evident as the acceleration of the diffusion process also towards the small companies (that represent the backbone of the productive Italian system), can effectively generate a multiple effect on the entire production system, raising significantly the performance and the international competition.

Very diffused the basic ICT endowment, while it remains still low the use of applicative or more advanced integration forms in network.

In the last few years the main changing factor for the Italian companies, especially the small ones, has not been so much the information data, but the adoption of technologies tied to IP protocol (from Internet access, to the realization Intranet network, to the creation of interdependent services in the ambit of Extranet).

The Internet and PC's are used from almost the totality (>90%) of the companies. Besides, more than 60% of the companies have local networks, web sites, broadband and company mobiles. The use of applicative or integration forms in a more advanced network, instead regards less than a third of the companies. Compared to 2005, the web site (+ 5 percent), the company mobile (+ 4 percent), LAN Network (+ 4 percent), have shown the most significant increments. In the last three years instead, broadband (+ 31 percent) and web site (+ 24 percent) have shown higher rates of growth, confirming the entry in the network economy, of the more active and dynamic part of the Italian production system. However, the general trend confirms a slowing down in the adoption of the base endowments, a symptom of reaching the step values of the diffusion process.

In the last year, the endowments that refer to the security ambit of the information data have shown rates of growth extremely high. Antivirus systems are now used from most all of the information data companies (>90%). Besides, more than three quarter of the companies update regularly the security systems, while more than 50% effects the backup, at least partially, of the companies data and protects its information data system with firewall systems. Finally, just over a quarter of the companies have met security problems (virus, smugglings, data stealing, etc.), not intercepted by the security systems present in the companies.

While it appears more evident that the basic information data has reached almost all companies, the smaller companies still show a certain difficulty in the integration process, with penetration rates of solution more innovative that tends to remain particularly low (in particular, for what it regards the evolution managerial software).

From the sector point of view instead, the endowment remains decidedly more set back for the retail trade companies, and more so for the traditional services (hotels and restaurants).

The territorial analysis evidence that the more elevated levels of ICT endowment find place in the northern regions, where there are concentrated the more dynamic

companies. While the centre Italy regions present only light differences compared to those of the North, remains instead significant the technologic gap that still characterize the southern companies.

It develops the use of the network for the basic functions, but the complex situations present a still marginal diffusion.

Although the Internet adoption rate tend to result very high, the true element of criticism stays in the more advanced ways of the use of IP technologies or, better, in the extension of the new network technologies to the whole managing process internally and externally. On the other side, the entry of the economy in the network from the Apulia productive system necessarily requires a cultural jump, that helps to introduce the network technologies in the whole of flux of the information, communication and transaction of the companies.

The use of on-line functions concentrates mainly in the interaction with the Public Administration and with the financial sector. Both go over 50%, but in the case of the P.A. the relationship is often limited to get forms and information. On the decidedly less spreading out levels there is the on-line use for the interaction process with the suppliers (e-Procurement), and the remote access of the employees to the companies information system, both accessed by less than a quarter of the companies. In particular, the mistrust that still blocks the "virtual" process of the relationship with the supplier is confirmed by the fact that, for three quarters of the companies that buy on-line, the buying weight on network doesn't exceed 5% of the total services and goods purchased. Besides, only half of the companies that use e-Procurement complete the whole on-line procedure, effecting the on-line payment.

The differences between the dimensional classes are relevant for the whole of the application taken into exam, with a partial exception for the simplest form of interaction with P.A. Micro (3-9 employees) and small (10-49 employees) companies present a analogue profile, while over this step the adoption of the different applications grows in a substantial linear way together with the dimension.

From a sectarian analysis, instead, it emerges as the chemical/pharmaceutical sector looks the only one able to interact on the network and it takes also, the best benefits by using the on-line services. The companies of the chemical/pharmaceutical sector in fact, show a higher rate of diffusion in the use of services and e-Banking, video communication and interaction with the P.A., (in particular, for the more complex activities such as the monitoring of the procedures and the on line payment).

The territorial analysis confirms the existence of a significant delay accumulated from the southern companies, gap that gets bigger with the growth of the complexity of the considered functions. Also North - Centre companies appears behind, but the gap is limited to the use of the only more complex functions. The North-West companies (where the biggest companies are still concentrated), instead, generally are updated in the use of on-line services.

The Italian companies use the network to become known, but are still very few those that use it to sell their products.

If the organisational characteristic of the Italian companies are analyzed, it becomes clear that the entry of the economy in the network from the Apulia productive system, very seldom will go through the creation of internal network (i.e. between sites of the

same company or between societies of the same group) but it will require necessarily a cultural gap that is going to introduce network technologies in the whole of the informative, communicative and transitive flux.

However, the use of the Internet from the Italian companies appears even today to be tied to a generic research of information and of visibility on the network, instead of exploiting the availability of a new "intangible" commercial channel (telecommunication networks), which could consent to widen the territorial market of reference, creating new developing opportunities.

Two third of the companies have a web site, getting in the condition to activate a new commercial channel. The sites of the Italian companies stay though mainly informative, essentially destined to qualify the company to the potential user. Nearly all the companies with a website, in fact furnish information on their company, while only two thirds use the network to present the catalogue of their products. Less than a fifth of the companies with a website allow to buy products on line, confirming that the network potential for new sale channel are all to be explored. Considering the few companies that have activated the e-Commerce, it is a strong conviction that the network is not yet seen as a possibility for increasing the income. Only a little more than 10% of the companies do e-Commerce, in fact the incidence of the income from selling on-line assumes significant values (>25%).

For the informative component, according to the high diffusion reached, it is given a substantial homogeneity compared to the company dimension. The variable dimension induces differences much more relevant in the offer of the services with contents highly interactive, in particular way, those of the transitive type. Only the 6% of the micro companies (3-9 employees), in fact permit the payment on-line, against the 19% of the big one (over 250 employees).

The most innovative sectors from the point of view of the offer of on-line services result to be the financial and the tourists service, that before the others have understood the potential of the network as a place of privileged interaction with the client.

The offer of the more advanced on-line function reflects the territorial distribution of the main companies, confirming the strong ties with the dimensional variable. Compared to the national medium data, however, it is evident a significant propensity to offer trans-active services on the network from the North East companies.

Given the level already reached by the broadband coverage, the real challenge is not the growth of the number of subjects with broadband connection, but the start of a new phase of development based on increasing permeability and integration of the information data process.

In this optic, two are the main development directives that come out from the analysis:

- From one way, there is a push to a progressive improvement of the rendered level of the connectivity, with objectives which are mainly tied to the recover of efficiency on functions of the communication type:
- From the other, it grows the knowledge of the opportunity, both in terms of efficiency and efficacy, that can derive from a major integration of the company processes through the use of new solutions.

From the integration of these two lines can be delineated four profiles of growth, which summarize the different developing way that the Italian companies are following.

The avanguard of the broadband companies is made from a nucleus of just over 100.000 companies (Innovative), that search either a progressive improvement of the connection services, and a more articulate functional integration through the advanced information data process. At the opposite side there is the biggest group, 228.000 companies (Traditional), which show a strong rigidity to change and to introduce the innovating processes, that could modify a consolidated organizational model. The remaining two quadrants are characterized from one side, for the prevailing orientation towards the applicative integration (Integrated) or towards the rendered aspects of network connection (Connected).

The innovative companies are characterized for the complexity of the company organization and of the operational process. It talks then of big companies, belonging to the most innovative productive sectors and mostly integrated with the other components of the value chain (think of the banks and the insurance companies, in which the information technology interaction with the internal and external subjects to the company reaches a level of major complexity). Its belonging to a groups of companies, to an organized structure territorially spread out (multi-sited) and in a ambit of the activity extended also to foreign markets (export) characterizes the innovative company of excellence. The complexity that characterizes the organizational model of the innovative companies is translated in an vanguard technological endowment (in particular, the Internet and websites) and in an intensive use of network for the working out of the complex companies function (eCommerce, post sale services, video communication). To confirm the familiarity of the innovative companies with the more advanced network services, in the end, are elevated to a higher percentage for the use of VoIP services and the management of the main outsourcing application of the companies.

Instead in strong contrast, the traditional companies present a profile still strictly dependent from a traditional organization model, in which the network integration is not yet seen as a driver for getting better efficiency from the company management. The traditional companies are, in fact, of small dimension and belong to more traditional sectors of the Italian productive system. We speaks then, of companies which are not part of a group, in which both the territorial division and the extension of the activity seldom go over the local ambit. The traditional companies have a basic technological endowment and do not use the network to interact with the companies interlocutors. For the traditional companies the innovation is a changing factor, seen with little confidence and the impact of the new technologies on the company management is still not considered such to justify the investment adequate for the productive model.

The coverage reached by the broadband can consent to start a new phase of information data for the Italian companies, based on a more divided process and a bigger interaction with the ecosystem that surrounds the companies (suppliers, partners, clients).

From the companies point of view prevails the interest for the least “invasive” functionality on the companies process and more oriented to solve the specific problems (e-Banking, back-up, integration of the different form of communication).

On an intermediate level of interest are positioned forms of interaction with the external environment like those towards the P.A. or those more strategic tied to the intersection of the network commercial processes (buying/selling).

The interest for the use of network application continues to rouse the interest from a relatively small number of companies, demonstrations of the difficulty to change the consolidated pattern of the IT technology fruition. Solutions such as of video communication or the remote access are instead considered interesting in specific contest (where the displacement can be difficult or where there are numerous employees with mobility needs).

It is noted there is a crescent interest for the VoIP solutions, both in the ambit of integration phone-data process on the internal network (for the multi sited companies), and also for phone-bundled Internet.

At the same time, the growing interest in IT Centrex solutions is met with a growing pressure from the side of the offer and of the perception of a relatively simple solution to implement the potential positive effects on the cost of technologies ownership.

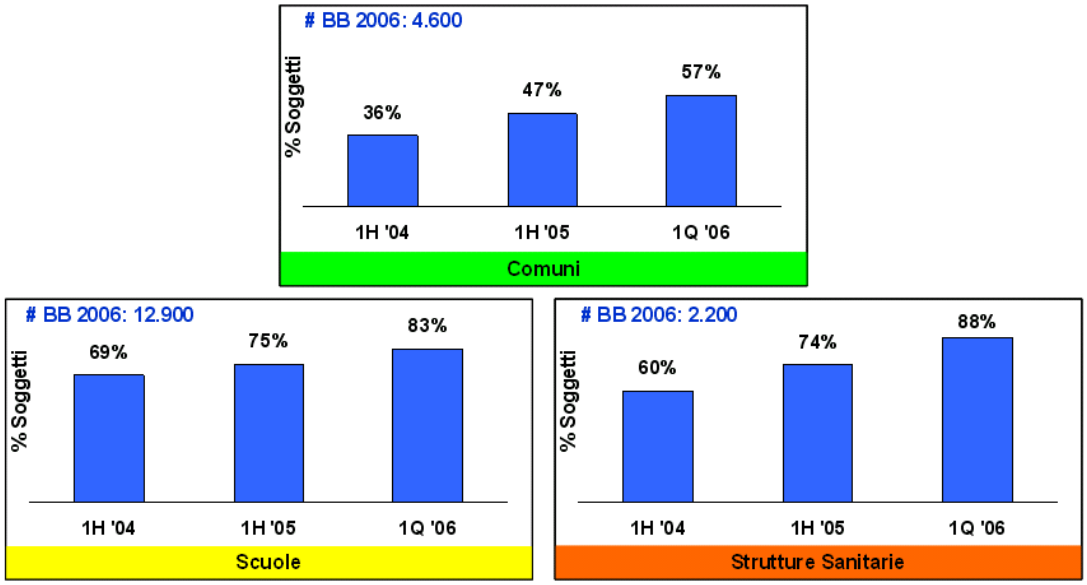
2.4.3 PUBLIC ADMINISTRATION

Broadband is largely spread in P.A., but it remains the problem of the digital divide in the small communities.

At the end of march 2006, the access to the Central P.A. have passed the quota of 20.000, for a configured band that has reached 60 Gbps, with an increase of over 30% compared to the end of 2005. By the end of 2007, with the arrival of SPC (Public System Connectivity), it is expected that such a value goes over 100 Gbps. Regarding the characteristic of the single access, 68% of the cases is about connections inferior to 2Mbps, 30% of connections between 2 and 10Mbps and less than 2% with a speed over 10Mbps.

Instead concerning the local P.A., the biggest increments regard the medical health structures, that in 88% of the cases have today broadband connections, with a 14 percent growth compared to the last survey.

Figure 9: Broadband development in P.A.



Font: *Broadband Observatory - Between (2006)*

Schools have fast connections in 83% of the cases, compared to the 75% that resulted in the middle of 2005. The communities are much behind , whose percentage of broadband connections is equal to 57%. Notice however, that in this case it started from very a low rate of penetration (36% in the middle of 2004) and therefore, the registered progress is considered to very significant.

2.4.3.1 BROADBAND IN THE COMMUNITIES

It is noticed a constant increment of the broadband connections in the last 3 years, in fact, almost 1,600 communities have migrated from a low speed connection to broadband, reaching the quota of 4,600 in the second half of 2006.

The delay persist of the small communities in adopting innovative technologies.

Actually, almost all of the Italian communities have an Internet connection and basic technological endowments such as a PC, local network and the essential tools for security (antivirus). It is registered, instead, that certain delay in adopting more advanced technologies (only 31% of Intranet) and 40% of the employees that don't have e-mail.

Besides, it emerges, a relevant territorial non homogeneity compared to the penetration of the technological endowments. Also considering the only basic endowments, in fact, are evident the disadvantage of the small communities. Such data must necessarily be read in a critical way, if it is considered that the communities with less than 2,000 inhabitants are about more than 3,600 and so it represents less than the half of the total.

The majority of the communities have computerized the basic functions, but the advanced applications are used only in those larger communities.

Some applicative areas register elevated adoption rates, independently from the geographic location or from the size of the community. It considers in particular, the basic applications of the computer protocol (79%) and the information data of the registered office (86%), whose use is pushed up by the actual norms and by the actuation of regional and national projects.

Different dynamics are highlighted out regarding the adoption of more advanced services, such as Certified Electronic E-Mail, the use of the digital signature and the evolution of the information data protocol from the minimum nucleus to management and document workflow. These applications (in particular Certified Electronic E-Mail) have known a big increase in the last few months, with the push of the introduction of the Digital Administration Code. A different argument is represented by the Electronic Identity Card, whose coverage is favourite by the national policies that identify which community should experiment with its introduction.

The offer of the on-line services for citizens is still limited to the basic functions.

In march 2006 more than 60% of communities had a proper web site and resulted relatively diffused the offer of on-line services characterized with a basic level of interactivity, or rather of those that help the citizen to get information of various types or to load down modules (necessary for example to produce self-declarations, fill in requests, subscriptions, etc.) much less results the use of more complex services, with superior levels of interactivity, services with which one can start a procedure on-line, to control its advancement and, very seldom, to conclude it remotely. A significant increase of the offer of such functions is expected towards the end of 2006 and the first half of 2007, thanks to the effect of the full entry of the first phase of e-Government projects.

2.4.3.2 BROADBAND IN SCHOOLS

83% of the schools have broadband, but the delay are increasing for the smaller and low grade institutes.

The new technologies can strongly improve the techniques and the way to benefit the services in the education field. Broadband for example, makes possible the network usage of the educational training, in a complete interactive and multimedia way (e-Learning). Some applications, in fact, such as the usage of audio-video the quality of television or even live interaction with the teacher, are possible only with access broadband technologies. To these must be added more network services, such as, for example, the choice and the personalized education (routes, credits and areas of study) or the connection in a virtual environment dedicated to training and learning.

On march 2006, 83% of the school had a broadband connection. The wide coverage of broadband in the schools has been favourite by the purchase of faster connections made in the last year by the MIUR (now called Minister of Public Instruction).

The adoption of broadband in the school is positively correlated to the number of students and the grade of the Institute, while there doesn't occur significant differences under the territorial profile. In particular, the levels of minor coverage occur in small school (less than 150 students) and of a minor grade (elementary).

The computerization of school increases, but the new technologies still have a secondary role in the teaching activity.

An indispensable element, to favour the transition towards an educational model, that takes complete advantage of the new ICT technologies, seems to be the achievement of the widest level of coverage of the technological endowments.

Almost all schools have the basic ICT instruments, such as a PC, Internet connection, local network, anti virus (this last one fast increasing in the last two years). Broadening, however the analysis of the each school there has been noticed a decrease of the endowment level, particularly relevant in the case of the broadband connections. In fact, if in general 83% of the schools have broadband connections, only 62% of the sites have got it. The decrease of the penetration rate is due to the fact that the secondary sites are

generally situated in small villages located in or inaccessible areas or areas with few inhabitants, and so, often not covered by the ADSL.

Almost all schools with a web site (67% of the total) offer basic on line services, meaning those with a prevalent information data and general character. The percentage decreases under 90% when considering schools that make available on line training offers (POF). **Schools experiment with the new information technology services, but the use of the network is not general.**

The availability of the new information data instruments and the use of information technology services on the network is slowly changing job organization and the relationship with purveyors and users inside the school system.

Even if in a significant increase in the last biennium, are still scarce the services that allow a more complex interaction with the interested communities for the schools (families, students, teachers). Only a third of the schools offer communication services with the teachers, while only just more than a fifth furnish tools for collaboration between students and teachers. Even less, however, results the percentage of schools that allows to make more complex on-line operations, such as enrolments (10%) and payments (2%). In significant growth is, finally, the percentage of school that have a proper website and partly reserved access, this has gone in two years from 14% to 34%. However, this is a function still reserved mostly to the internal organization of the school. In fact, while the teachers are entitled to access in 77% of the cases, the access for the students and the parents the percentage remains around 20%. Schools, then, are still little interested in using innovative technologies to get external groups of users more involved in the organization of the school life.

School that use broadband connections result to be more willing to introduce in their organization on-line services, especially regarding more complex functions. With the exception of on line basic services, (information and POF), in the other cases the percentage of school with broadband that offer on line services result systematically superior to school with narrowband. Moreover as confirmed bythe driver role for the offer of information technology services network, the higher percentage of school that offer on line services are the Institutes that have adopted broadband from more than three years.

2.4.3.3 BROADBAND IN THE MEDICAL HEALTH STRUCTURES

Broadband is present in almost all the health structures.

The network connection between the numerous and different medical subjects (ASL, hospitals, nursing homes, research centres, etc.) has become a more urgent objective. The administrative coordination between the structures and the integration of the clinical data of the patient, that are traditionally dispersed in the archives of the various structures, makes it easier the searching in case of emergency, for further investigation or clinical verification, permitting a more rational use of the medical resources and a more efficient containment of the health expenses.

Broadband is now present in the majority of the health structures and its growing importance is confirmed by the raise of the penetration rate, increased in the last nine months by 14 percent (from 74% in mid 2005 to 88% of march 2006).

The coverage of on line services with a low content of interactivity (medical and general information, modules) is now significant, with percentages that go over 70% for ASL and Hospitals. Minor percentages are relieved for the nursing homes, that pay a major presence of structure of reduced dimension, in which the penetration of ICT technology is inferior.

Much more limited, instead, is the on line services offer at high level of interactivity. In particular, in only 18% of the medical structure is possible to book the specialist services by e-mail (value that goes up to 25%, if considered only the ASL). As noted also in the use of information technology services, it is observed a positive correlation between the offer of the on line services and the seniority of the broadband adoption. The leadership of the on line offer, in fact is been relieved in structures that have started to broadband for at least three years.

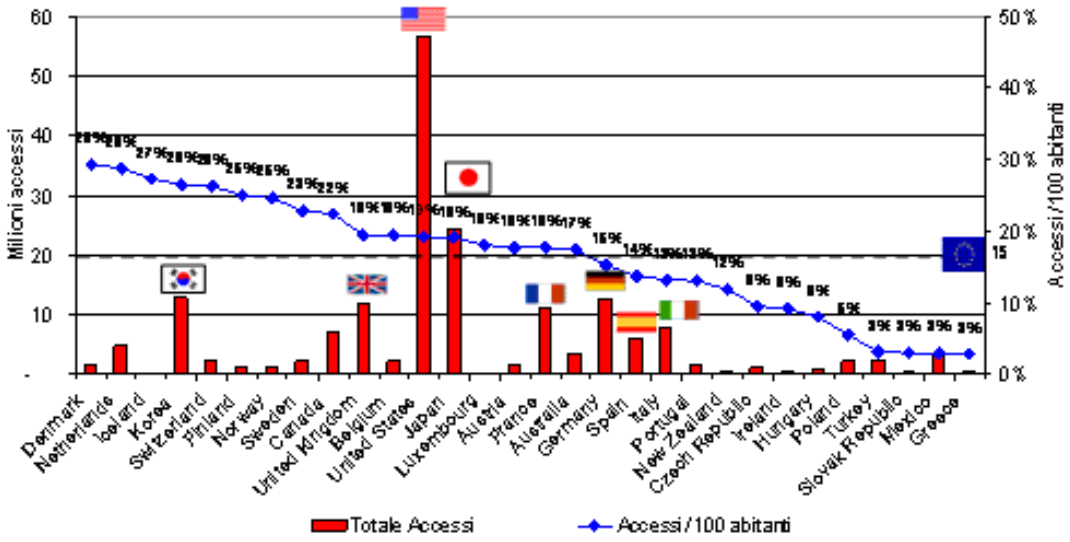
Still partial, finally, the integration of external structures in the information technology medical network. Only 33% of Internet sites, in fact, have private access zones. In such cases, the authorized subjects are mainly doctors, while remain outside the other personnel of the health (chemists, general doctors, clinics), and the patients. The medical structures, so don't seem to have perceived the importance of using the information data applications, to interact with the other subject of the medical system.

2.5 INTERNATIONAL COMPARISON

The coverage of broadband in Italy is inferior to UE media, but if the potential users are to be considered, Italy is in the first place ranking.

The following figure puts in evidence the development of broadband in the main industrialized Countries, at the end of the second quarter of 2006:

Figure 10: **Broadband access in the world**



Font: Between on OECD Elaboration data (2Q 2006)

Italy is the seventh Country in the world for the number of broadband access. In the UE, Italy results to be in the fourth place immediately after Germany, UK and France. However, despite Italy in terms of total accesses is just behind the three guide Countries, if we look at the penetration rate, Italy is in the middle, with penetration rates for each 100 habitants similar to those of Spain and inferior to the European media at 15 (13,2% against 16,5%).

The difference in terms of penetration rate is usually used to support the thesis according to which the development of broadband in Italy follows a slower rhythm, compared to the one relieved in the other UE countries. However, to correctly put Italy in the European context is necessary to point out a few things. The adoption of the

broadband process, in fact, depends from a series of structural factors and of the market, that cannot be fully seized by taking in consideration only the penetration rate on the people.

First of all, according to the last compared international data (UE), the broadband coverage in Italy was at the beginning of 2005 equal to 83%, against 89% of the UE15 media and values equal to 97% in the UK and 91% for France and Germany, that it must be remembered, have an extensive net cabling of satellite TV, which is absent in Italy. The wider gap was referred to the rural areas. Moreover, apart from the level of the infrastructures, the differential spoken above doesn't take into consideration of the two fundamental structural variables that are to be considered in the international confrontation:

- Telephone density: the number of telephone accesses for 100 inhabitants is equal to 38 for Italy, against 47 of France, 43 of Germany and 56 of the UK (ECTA, 1Q 2006);
- Information technology learning: according to the Eurostat data (2005) 56% of the Italian population (16+ years) have never used a PC, against 34% of the media UE25 and values that are inferiors to 20% for Germany and UK.

In other terms, if the development of the broadband market is reported on the "accessible" base (population that has used a PC) it is found that Italy is first placed in the European ranking, together with the apparently unreachable Scandinavian Countries (the relation of broadband access for 100 PC users is equal to 30 for Italy against 23 of the media UE15). At the same time, the incidence of broadband access on the total of the domestic Internet access has already reached in Italy values of respect (>70%).

The indicated factors are an expression of a really macroscopic phenomenon, that cannot be neglected in an international comparison. Although more element can be added to further deepen the analysis, in this context we need to add just some prospective consideration. In fact, despite the broadband development market in Italy is not as slow as it is usually said in international context, the problem of the structural limit to the process of the adoption broadband represents however a crucial knot to loosen. The challenge for the future becomes the capacity of the Country System to overcome such limits, reaching the widest coverage of broadband service.

2.6 EMERGED CRITICISMS AND KEY HUBS IN BROADBAND DEVELOPMENT

The opening of a new development phase requires that should be discussed the structural constrains that could slow the pervasiveness of broadband.

Even if the coverage of broadband services has reached at the end of September 88% of the population (and soon will be over 90%) it approaches the step of the infrastructural digital divide of long period, that is to say the coverage step behind which it is hardly conceivable an intervention according to strict market logic, especially if the objective is that to guarantee the same "information technology" citizen right (meaning with the same performances and facilitated services) to the entire population.

A problem that may be even more delicate is the chronic delay of the information technology of the Italian, that see in our Country almost 45% of the educated person, against values equal to more than 70% of the media UE15 (*font: Eurostat*).

The always wider availability to advanced broadband services requires a further development of the competition and the continuation of the process to reduce prices

already in force, and of quick passage to the consumer charging mode (that remains an important "invitation to the test") to those *flat* prices, that guarantee the definite entry in network eco-system (*always on* connections).

2.6.1 FAMILIES

The process of the development of broadband is following a trajectory based on the availability and, especially, on the capacity to use the information data tools to the Internet access and the use of on-line services.

To the 2010 horizon, even wanting to hypothesize a complete saturation of the base access of information technology of the families, it wouldn't go over a broadband penetration rate of two third of the total. So for about 7,5 million of Italian families, there is the concrete risks of the rising of new and more form of social exclusion. It must be considered, in fact, that especially the families excluded by the information data trajectory have the more disadvantaged economic, cultural and demographic conditions.

The development of new on line services will continue to be tied to the entertainment sphere.

The availability of a wider range of on line services represent a fundamental driver for the development of broadband. On the other side, only by having a broadband connection it could be experimented the real benefit of the new model of consumer implicit in the network economy. The development of on line services and broadband coverage, it is represented by two leverages that, even staying conceptually distinct, can act in synergy for the attainment of the same objective.

With the aim to understand the determinants of broadband diffusion in the Italian families it is important to understand the theme relative to the evolution prospective of network activity. Till now the more used functions by broadband families have been mainly those of entertainment and communication.

In June 2006, the broadband families confirm to be strongly interested into using more extensively the functions tied up to the entertainment (Video on demand and audio/video download). To the mentioned functions, it is added a strong interest for the development of the on line activity connected to transactions and relations with Public Administration. In the near future, so the overcoming of the families diffidence towards on line transactions and the enlargement of services offered on line by the Public Administration would be flying ahead in the adoption process of broadband by the Italian families.

To overcome the actual limit of the coverage process of broadband in the Italian families it is necessary to put into being a whole of interventions that, apart to favour the increase of the rate of the information technology, stimulate also the diffusion of new on line services usable through the alternative platforms, such as mobiles and TV, characterized by a more intuitive use. In the actual context of the development of broadband market, it can be identified some key hubs on which is necessary to concentrate the attention:

- **INFORMATION AND CULTURALIZATION**. The progressive involvement of always wider parts of the population and the communication of the real benefit brought to every day life by the new technologies are critical factors to favour the diffusion and the intensive use of always more innovative services;
- **TRUST**. The overcoming of the diffidence towards the on line transactions

requires system intervention, that guarantee the reliability of all the components of the chain value (from production to distribution) and not only of the single on line transaction.

- **NEW GENERATION**. The innovative for excellence in the families are the children and it is on them that need to be done leverage to spread innovative technology in the Italian houses and to favour the active participation of the families in the digital economy.
- **PLATFORMS**. The use of alternative platforms to PC, that are characterized by facility of use and are part of the every day life of the Italian families, represent the key factor for the definite affirmation of the digital culture. The development of broadband technologies becomes, so, an opportunity to realize the integration of the "intelligent" apparatus inside the domestic habitat. The passage to digital television represent, in such optic an occasion to seize to trigger a modernizing completing process of the house, that goes through the electric appliances prince in all the household.
- **CONTENTS.** The request of speed connectivity of access creates the bases for a quick diffusion of the connectivity broadband services, but the further evolution of the ICT family endowment cannot be irrespective by the availability of a wider number of contents and services, that take full advantage of the broadband potential. On this theme appears necessary the creation of synergies always more efficient between network operators and producers/assemblers of contents, keeping also the maximum attention to safeguard the simplicity of use.

2.6.2 COMPANIES

To overcome the actual limits of the process of broadband diffusion in the Italian companies it is necessary to integrate the ICT technologies and broadband services in companies process. The development of the competition of the production system, still characterized from the weight of the traditional sectors of "made in Italy" (agri-food, textile, clothing, mechanics, etc.) and by the fragmentation of the subjects (with the prevailing of micro and small companies), it requires a whole of interventions finalized to increase the network integration in all its components of the chain of value, helping the diffusion of a full awareness of the real advantages, in terms of efficiency and productivity, inherent the new model of digital managerial company. It can be identify, so, some key thematic on which occur to concentrate the attention:

- **INFORMATION AND DIGITAL CULTURE.** The limited knowledge of broadband, its application and the role that can have to determine the companies competitive success, imposes an effort "system" to remove the barriers to the adoption which depend on the rare understanding of the potential inherent the digital innovation;
- **SMALL AND MICRO COMPANIES.** It is important to favour the participation of the smaller companies at the new production model, favouring the diffusion of the ICT innovations also in contexts characterized by the more traditional production systems, but that can easily get in the network systems.
- **APPLICATIONS.** The further development of the companies ICT endowment cannot be irrespective of a always wider number of solutions, applications and services, that take advantage of the broadband potential. On this subject is necessary the creation of synergies between network operators and the purveyors of applicative solutions innovative for the companies. The offer is then, called to give an answer to the growing request of flexibility and personalization, that marks the Italian companies request;

- **NETWORK SYSTEMS. I**n a economic context relatively pulverized as the Italian one, it necessarily needs to point on network integration mechanisms that go over the company size. Through the diffusion of innovative instrument/applications (advanced communication systems, electronic business platforms) it can implicitly trigger virtuous processes of integration also in sectors less open to the new model of digital interaction.

2.6.3 PUBLIC ADMINISTRATION

The further developments of the process of adopting broadband in the Local P.A. appear directly dependent on the accessibility conditions to broadband systems. The broadband adoption then, will be the fulcrum on which develop a more complete model of information technology interaction with citizens and companies.

An efficient and transparent administration represent a competition and innovation factor for the entire Country System. Further, the network integration represents an indispensable condition to guarantee the widest user access of the Public Administration services. In particular, the implementation of the Public Connectivity System (SPC) represents a key moment for the structural modernization of the P.A. and as a consequence, of the relationship between administrations, citizens and companies. It can be identify, some key themes on which needs to concentrate the attention.

- **INTEROPERABILITY AND APPLICATIVE COOPERATION.** To incentive the diffusion of network interaction with the P.A. it is necessary to integrate the different administrations in a common information data platform, that can act as interface in the relationships between citizens and companies. To such end it will be indispensable to support and incentive the widest forms of inter-application cooperation between public administrations, further valuing the acquired experiences with the affirmation of the integration model of the SPC;
- **SECURITY.** To favour the use of the information technology communications services that guarantee the security and the traceability of the information flux, so to incentive citizens and companies to recur to network to interact with the Public Administration. The next step in the direction of a Public Administration really on line, in fact, cannot be irrespective for the affirmation of a model of information technology integration in which the conduct of the entire network procedure is part of the every day relations with the citizens and the companies.
- **SERVICES.** The delivery of the digital services from the Public Administration represent a factor able to promote the adoption of the ICT innovation of the Country System. Through the development of innovative applications and the offer of network services the Public Administration represent the main supplier of digital contents, the only real one in grade to trigger a vicious circle, in which the availability of services can be of stimulus to the experiment of the new production and consumer models.

2.7 CONCLUSIONS

Broadband is not only the simplest way to connect to Internet: broadband changes the way of using network, connections become more immediate, big quantities of data can be transmitted almost instantaneously and it changes also the way with which Internet presents itself going from the slowness and often the scarce use of the actual sites, to a fast and coloured system where interacts imagines, videos, animations and sound.

But the realization of all this is difficult. Broadband is contextually invested by a plurality of politic addresses, urban planning, the research or the fiscal politic, that

emanate instances that go from local administration to the international organizations, from public to private.

And more, the promotion of broadband access is closely connected to the availability of adequate components, that permit to avoid falling in a vicious circle where the operators don't invest in infrastructures until there exists appealing contents that encourage the users to use new technologies and where the production of innovative and appealing contents stops to wait the creation of more adequate infrastructures.

Meanwhile the governments of all the world have however understood that diffused access to broadband internet is essential for the economic development of their Countries and inside the European Parliament the debate is particularly rich.

In Italy broadband accesses have passed the 8 million at the end of September 2006, compared to the few hundreds of thousands of only five years ago. 27% of the Italian families, 69% of companies with 3 or more employees (40% on the total of the companies) and 75% of the public administrations have today broadband connections (*font: Broadband Observatory – Between*).

The market generated by broadband is estimate in 2,6 billions of euros for the 2006 and it represents one of the more dynamic component of telecommunication sector.

In the European scenario, the Italian performance is similar to those of the other main countries in matter of annual growth, but it remains a low level of penetration in access term for 100 habitants (14 against the media EU15 of 17), due mainly to relevant structural differences: absence of cable TV, minor endowment of telephonic lines and also, the strong difference in information technology.

Despite the exponential growth in the last few years it is clear how today we are getting in a new development phase, much more complex of the initial one, were the attention will be put always less on the connection and much more on the performances and the enabled services in a "multiple play" logic and of integration between application.

CHAPTER 3 - DOCUMENTATIONE OF THE EXPERIENCES IN APULIA REGION

3.1 INTRODUCTION

Apulia in 2006 already is, according to the Between Report, one of the Italian regions that has the highest levels of ADSL coverage, it has more than 90% of the population (Between Report, 2006 and 2007). The diffusion of broadband in the Apulia community reaches 70%, against 61% of North – Centre.

The operator that has the highest competitive advantage in the Region Apulia is Telecom that has positioned in Bari one of the eight data centres in Italy: two thousand servers for storage and data processing that Telecom intend to make as a computer platform for the companies. In this way the Apulia companies don't have to bear excessive costs for creating their own infrastructures but can rely on Telecom server, that offer services *on demand.* The immediate results will be to cut down the costs, the use of more advanced technologies and specific software. And also to reduce the paper waste and save the environment.

In concrete, the first proposal of Telecom is MyCommunity, that put the employees always in touch and everywhere with the colleagues and permits to work also with a palm held computer. It is possible to consult digital archives, to train people through the Internet, to use programs from the company website (www.pmi.telecomitalia.it).

For the Public Administrations there is the virtual Cicerone, a touristy service on the mobile. The objective is to create a direct line between the public administration and the paying citizens, fill in forms, require documents all by mouse.

However it is important to underline that in Apulia there are areas where broadband doesn't exist. This makes necessary the intervention of public members in order to contain the digital divide in the Region.

In the present charter, there are going to be illustrated the experiences and the main projects made by the Apulia Region in matter of broadband with particular reference to Public Administration.

3.2 BROADBAND IN APULIA: EXAMPLES OF SUCCESS

3.2.1 THE EXPENDITURE FOR THE ECONOMIC INFRASTRUCTURES IN APULIA

Before examining the experiences and the main projects realized in Apulia in matter of broadband, it is opportune to linger on the public Apulia expenditure for the economic infrastructures in which telephone and information technology expenses register a delay compared to what happens in the other areas of the Country.

According to a reconstruction based on territorial Public Expenditure in the period between 1996 and 2005 the investments in the region of the enlarged public sector for the economic infrastructures have been in media equal to 1,5 percent of the PIL, a inferior level both at media national data (2,0 percent) than at that southern (2,6 percent).

The investments in cabling, electric and communication lines, mainly financed by the authorities of the enlarged Public Sector, represent the main component of the expense in economic infrastructures (50,2 per cent in the decennium media). The transport infrastructures, whose main financing comes from the Public Administration, absorbs, in media 42% of the total expenses. The composition between these two types of infrastructures has tended in the second half of the period of reference to equilibrate in favour of the transport infrastructures, mainly for effect of the contribution increased by the authorities of the enlarged public Sector.

Figure 10: Public expenditure for the economic infrastructures.
(annual medium values)

VOCI	Settore pubblico allargato					
			Di cui			
			Pubblica amministrazione		Altri enti	
	1996-2000	2001-2005	1996-2000	2001-2005	1996-2000	2001-2005
Milioni di euro (prezzi costanti 95)	809	846	343	397	466	449
Composizione percentuale:						
infrastrutture di trasporto	*38,9*	*44,4*	*72,1*	*61,7*	*14,4*	*29,1*
condotte, linee elettriche e di comunic.	*55,5*	*46,1*	*14,8*	*18,8*	*85,5*	*70,2*
altre opere del Genio civile (1)	*5,6*	*9,5*	*13,1*	*19,5*	*0,1*	*0,7*

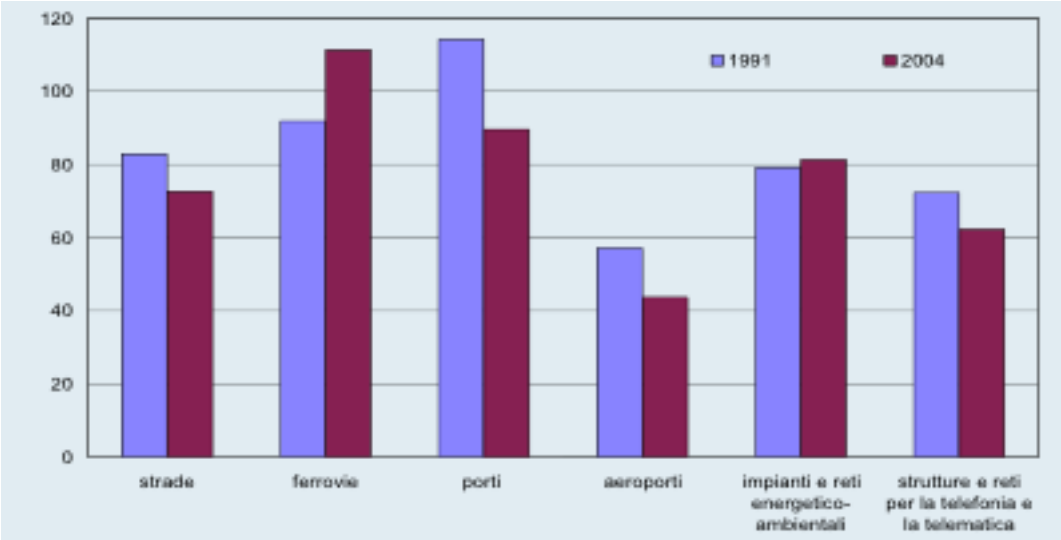
Font :Bank of Italy (2008) elaboration data of the Minister of the Economic Development(Department of developing policies), data base territorial Public Expenditure, and of the Svimez

(1) The voice includes, between the other expenses the waste disposal and other hygienic-medical works.

However, according to the indicators elaborated by the Tagliacarte Institute, at the beginning of the 90's Apulia was characterized by a general infrastructures delay with the exception of the harbours and the related catchments areas. At 14 years distance, the delay has grown for routes, airports, telephonic and information technology structures and lines.

Figure 10: Physical indicators of some infrastructures endowments

(index; Italy=100)



Font: Istituto Tagliacarne

3.2.2 -BROADBAND EXPERIENCES IN APULIA

Between the positive experiences in the matter of broadband in Apulia is to mention the Unitarian Network of Apulia Region (RUPAR) that is an extension of the national network, to which is interconnected, that has the job to serve with capillarity the Public Local Administration (PAL) of the Apulia Region and the other subjects working inside the public services or correlated to them by specific functions (i.e. city hall, services centre etc.).

RUPAR has been realized inside the measure 6.3 of POR 2000-2006 of the Apulia Region, under the supervision of the secretary of the Regional Board and has, as a purpose the interconnection between the different Administrations with an infrastructure of service that guarantees full efficiency, confidentiality and reliability and it constitutes a decisive factor for the innovation of regional Public Administration in terms of:

- Public Administration efficiency;
- reduction of organization costs for the services;
- better qualities of the services for the citizens and the companies.

Apulia RUPAR realizes the information technology connection Apulia Local Administrations and through the National Network (RN), it permits them to connect to other Italian Public Administrations.

The decision to realize Apulia RUPAR gets into the strategy of the Region about the development and the diffusion of the society of information. Information technology network has in fact notably, in the society of information, a role similar for importance, to those traditional infrastructures of physical transport: motorways, railways, bridges, airports, etc.

The intention of Apulia Region is that to promote the society of information starting by modernizing the public sector, taking on the objective to change this sector in a propellant element of the development.

Apulia RUPAR serves 350 Institutions between which, 5 Provincial Administrations, 12 Corporate Health (ASL), 5 Areas of Industrial Development (ASI), the Regional Agency for the Job, 6 Consortia Remediation, the Regional Agency for the Protection of the Habitat (ARPA) and 2 Bodies Parks, the Basilicata and Apulia Zoo Prophylactic Institute, the Apulia Airport Society (SEAP), the Apulia Regional Medical Agency (ARES), the Regional Agency for the Mobility (AREM), the Regional Agency for Tourism (ARET), the Regional Agency for Innovation and Technology (ARTI), Fin Puglia, 2 Hospitals, 5 IRCSS, 5 Council Houses, 9 Offices of the PIT, 3 Regional Fairs**,** the Service Centres.

The users directly served are about 20,000 between administrators and employees of the connected authorities.

Apulia RUPAR services are made of a multiplicity of suppliers that work in competition between them ("Open" form), and it is articulate, from the architectural point of view, in five main knots, located in the capital of province.

The networks of the single Administrations are connected by the chosen supplier, at the knot its province. The design coordination and control features are made by the Technical Centre of Apulia RUPAR, function that has been given by Apulia Region to Tecnopolis Society CSATA.

The services furnished by Apulia RUPAR are:

- Transport service
- Services of basic interoperability:
  - e-mail
  - World Wide Web access
  - File transfer
  - Virtual terminal
  - News access
- Services used by the users in a direct way or put at disposition by the same infrastructure for managing and support:
  - Domain names (DNS)
  - Directory
  - Official time network
  - Management systems and networks
  - Security (Firewall/Proxy
- Services for digital signature
- Support services
- Services of applicative cooperation
  - The interchange system between land register and communities for the integrated management of the territorial and land register information

- The regional medical system, for the integrated management of the clinic-medical data and the integration of the Health Registry and that of the community.
- The Observatory of the local finance, that integrates the PAL expenses data with the information relatives to the territorial development connected with the expenditure.

3.2.2.1 APULIA RUPAR: INTERVENTIONS REALIZED IN THE MACROAREAS OF THE INFRASTRUCTURE AND SERVICES

INFRASTRUCTURE

SPC RUPAR2 – PUBLIC SYSTEM OF CONNECTIVITY

Strengthening of the communication infrastructure of Apulia Region for the e-Government services, extending the Rupar support functions to the P.A. to support the citizens interaction with the information technology services given the P.A.

BROADBAND

The project foresees, on all the Apulia territorial areas without broadband, the realization, the strengthening and the rationalization of the specialized infrastructures on which lay technology and broadband services. These infrastructures are going to be at disposal of the sector operators (TLC services suppliers) that use them to offer broadband services to the final users: companies, public administration, citizens. The TLC operators could service an always bigger quantity of users with always more advanced services without having to face the enormous infrastructure necessary investments , but instead paying a rent for the use of the infrastructures.

The project permits to overcome the barriers for broadband coverage services made by the high costs of the infrastructure realization (entry step) and from the consequent prolonged time to achieve an adequate ROI.

This problem is still more felt for the areas of the territory were the scarce industrialization and/or the scarce human density forecast a sale of minor volumes of services and so the realization of minor revenues that can pay the investments.

Broadband project is characterized as complementary to the Actions scheduled by the central government in the ambit of the broadband infrastructure program in the South, managed by Infratel SpA, a society established by Sviluppo Italia and the Minister of the Communications for the realization of the Program.

RUPAR WIRELESS ENLARGEMENT OF THE REGIONAL COMPONENT OF BROADBAND SPC

The project is in synergy with Apulia RUPAR, Broadband project and RUPAR2/SPC project. It wants to extend the services at the moment destined to the RUPAR fixed users, also to qualified mobile users identifying as expected benefit, to furnish broadband services (data transmission, imagines and real time voice) through wireless infrastructure to mobile operators and emergencies vehicles that otherwise could be excluded. In this way the relationship between citizen and public services could surely be reinforced and improved in terms of quality and efficiency and could also guarantee an homogeneity of management of the emergency services both medical (118 services) and of the civil protection.

NSISR – NEW INTEGRATION REGIONAL MEDICAL SYSTEM

The project is finalized from one side to strengthen and improve the network connection between the authorities of the Medical Regional Service (SSR), on the other side to rationalize and optimize the processes of management and provision of benefits, minimizing the bureaucratic – administrative impact and giving the maximum institutional interoperability finalized to information technology the life cycle of the health prescriptions/performances.

RMMG – MEDICAL NETWORK OF THE GENERAL MEDICINE

The finality of the project is that to actuate, in line with the directives of the National Health Plan (PSN), and with the regional politics concerning Health, the strengthening of the territorial services and of the primary assistance.

Such process must be realized by the doctors (general medicine doctors, free paediatrics, specialists, doctors of continuity care and Medical Guard), that work in groups, the possibility to grant a new kind of health assistance with particular care to the H24, involving them in the appropriate use of the available resources and to reaching the objectives of a high quality services.

UNIFIED ACCESS SYSTEM OF HEALTH SERVICES FOR THE CITIZEN

Apulia Region is from a long time involved in improving the medical services, of efficiency of the medical prescriptions delivery and to improve the process of health assistance.

The objective of this intervention is the, finalized to design and realization a single regional system of access to the health services structured as a tree based on the citizens membership ASL.

SIT – EXTENSION OF THE INTEGRATED INFORMATION SERVICES FOR THE TERRITORY MANAGEMENT

The project PR5 “Extension of the integrated information services for the territory management (SIT)” of the “Program for the development of broadband services in the South Regions” represent an important step towards the achievement of the more general objective of Apulia Region, that is made by the realization of a Regional Territory Information System that supports through the up to date knowledge of the managed territory, the institutional activities of the different regional departments that do planning, management, promotion and protection of the territory, and the authorities that work on the territory with specific roles avoiding duplication of instruments and functions and the risk to generate a fragmented information patrimony and with not shared techniques and organizational rules. To identify thematic as priority (planning, trim and soil conservation, civil protection, road system and infrastructure network, protection of the habitat resources, enhancement and promotion of the environment, natural and landscape resources, decentralization of the land register functions) and instrument references (sharing methods and common protocol, interchange and applicative cooperation, interoperability and reuse) are justly been identify by the project as indispensable instruments to reach such objective.

ICAR INFRASTRUCTURE FOR THE APPLICATIVE COOPERATION BETWEEN REGIONS

The Project is inserted in a inter regional cooperative frame of parallel project interventions, integrated and coordinated between them, that see the Region involved in the definition and realization of the system for the Interoperability and Applicative

Cooperation between Regions to support the application finalized to the development of the e-Government at regional level.

REALIZATION OF A BROADBAND NETWORK IN THE AREA PIT 2 OF THE REGION

The present plan of intervention, in coherence with the "Broadband project", foresee the connections of the main cities of the area allowing the approach of some ASI sited in the area PIT2, especially the three cities of the sixth province (Barletta, Andria e Trani) that are going to be connected with the centres of the local P.A. Realizing a network similar to MAN networks, foreseen in the actual 5 capital centres of the province.

APULIA TGOV TERRESTRIAL DIGITAL

The actual project will provide the experiment in the laboratory and on the fields of a Digital Television system at regional level that could take to a significant citizens champion of the region, some e-Government services realized or to be realized form part of the project partners. The objective of the Project is to create the necessary experiences for a next capillary diffusion of the T-Government, through the experiment of simple services and with low interactivity valuating the technical adactability and the citizens answer. It provides also to select the e-government services already given via web so that to provide to their conversion in Terrestrial Digital Television, to facilitate the less expert citizens and the less capable, form the point of view of information data, (Digital Divide).

The selected services are simple services, with high frequency use, mainly ofinformation character and low interactivity. The experiment proposed by the authority will be realized in partnership with the suppliers of ICT services and with the broadcaster.

SERVICES

CAPSDA – PUBLIC ACCESS CENTRES TO ADVANCED DIGITAL SERVICES

It is expected to put at disposal on the territory centres and points of public access with broadband connections giving at the same time access instruments to the Public Administration and opportunities of complementary services fruition to the added value (e-learning, teleconference…) to support the information data information.

CAT TERRITORIAL CENTRE FOR THE AGGREGATION OF THE BUYING PROCESS OF THE APULIA LOCAL AUTHORITIES

It has the objective to make evolve the actual buying mode of the Region Administrations involved towards innovative mode that foresee a consistent recourse to the use of a the information data technology (e-procurement).

CST TERRITORIAL SERVICES CENTRES FOR THE E-GOV IN THE MEDIUM AND SMALL COMMUNITIES

The project has the objective to guarantee the widest territorial coverage for the diffusion of the innovative services, so to eliminate the digital divide between the small local realities and the rest of the institutions and to realize an efficient system for the diffusion and the reuse of the e-government.

OSDI OBSERVATORY OF THE INFORMATION SOCIETY

This project answers to the primary exigency to have a up to date and timely frame of the quick development dynamics of the Information Society on regional scale: Monitoring and evaluation of the projects of the regional plan and Observatory the Information Society.

PILOT PROJECT “PROCUREUR OF THE REPUBBLIC OF LECCE”

It is expected the realization of an integrated system for the automation/information of the Procurer of the Republic of Lecce referred to the internal and institutional processes, to the interactions with the other P.A. (e-government) and with the citizens and the companies (e-government).

IRESUD APULIA DIGITAL JUSTICE

The main objective of the intervention is the integration between territorial PAL and PAC for what concerns the integration of e-government services and the interconnection of the data base so to create the assumptions for cooperation between different systems.

The other specific objective of the project is the realization of the System (Digital Justice) able to be extended to other Court Offices present on the regional and extra regional territory in synergy with what it is being achieved in the Pilot Project of the Procurer of the Republic of Lecce.

To reach this result the project reserves particular attention to the re engineering of the institutional projects of the involved Offices.

DDTA DIGITAL DIVIDE OF THE TEXTILE AND CLOTHING PRODUCTION CHAIN

The project proposes to define and to implement a mode to sustain the diffusion mechanism of digital integration and technological innovation in the ambit of the textile and clothing sector of the southern area.

SAX ADVANCED SYSTEM FOR THE SOCIAL CONNECTIVITY

The objective of the following project is to strengthen the existing interventions to reach disabled people, living in Apulia Region, to the information technology and so to reduce the risk of social exclusion. Besides by giving incentives to buy Personal Computers and assistance technology, designed to easier the access to information data system and the diffusion of CNS it wants to facilitate their access to e-government services given by the Public Administrations.

ICT SERVICES FOR THE STUDENTS OF APULIA UNIVERSITIES

The objectives of this project are born from the need of Apulia Universities not to lose ground in the ambit of technology innovation of the services offered to the people (to students in particular), compared to the other Italian Universities, but instead to become a reference point in the offer of the information data services. This action will permit to establish a more advantaged relationship between the University and the external world, so putting in the centre the services recipients. The Apulia Universities will be characterized as centres of excellence of service and also for the enhancement of the patrimony of the knowledge existing in it.

PROJECT “DIGITAL FOOD INDUSTRY”

The present project is inside the interventions for the development of the food industry in Apulia. In fact, the regional Institution has provided inside Apulia POR 2000-2006 a series of measures to support to the system in question having as referent Feoga. Besides, always in the ambit of the same program the innovative mode of the integrated project is activated in favour of the local system of development that see the presence of the food industry sector on the territory and consequently point on it to individuate and articulate the relative strength idea. In particular, three are the Pit of reference: Pit 1 Tavoliere “Development and innovation of the rural economy and food industry through the production integration and diversification”, PIT 4 Murgia Area “Consolidation of the

local system based on rural economy and the production of upholstered furniture, through the chain integration and the diffusion of innovative processes of market/product to the direction of the higher segments of the offer" PIT 8 Ionic Salento Area "Development and innovation of rural and agricultural economy through the production integration and diversification". The project wants to favour the creation and the diffusion of innovative services based on the information and communication technologies and the constitution of virtual networks between companies and the food industry production in Apulia.

TO RENEW THE COMPETITIVE ADVANTAGE OF BARI CAR COMPONENTS

It proposes to promote new competitive strategies of Bari companies in the car components sector, developing technological solutions of process for the supply chain and innovation of product based on ICT and to standard the relation and cooperation process between companies (suppliers and buyers). The idea is based on the realization of a system of horizontal and vertical integration between external companies leader present on the territory (Bosch, Getrag, Magneti Marelli, etc.) and the system of local sub supply, helping this last one to better qualify the offer and to increase its presence on the national and international market. To this end it means to activate, by creating the needed instruments, a greater integration between the PMI and the University and to develop in the PMI the managerial knowledge and the culture of the technological innovation.

INNOVATION OF THE PRODUCT AND THE PROCESS OF THE SHOE SECTOR THROUGH ICT

The project gives resources to design development and actions addressed to encourage the emerging of the territory of excellence in the single realities through the enhancement of areas with strong potential thanks to the use of the new information technologies and communication. More precisely the idea of excellence constitutes the goal of a series of interventions finalized to integrate and qualify projects already active on the territory. The idea of excellence "Innovation of the Product and the Process of the Shoe Sector through ICT" proposes to promote new competitive strategies on the international markets of the Salento companies in the shoe sector, developing technological solutions of process for the chain concentrated on ICT. The object is to contribute, with this intervention, to overall competitive and selected re – rank on the international markets of the PMI of the shoe sector in Casarano area.

REINFORCEMENT OF THE CRC PROJECT IN APULIA REGION

The present intervention wants to reinforce and amply the activities of program and design support made by CRC Apulia, with reference to the following macro areas.

3.3 CONCLUSIONS

In the national scenario the region Apulia stands out for its advanced position in design and implementation of the connectivity system also on the light of what has come out on the last inquest, made by the World Economic Forum and by Insead on the "degree of willingness to network" of 122 countries, in which Italy is placed 38.

However, even if reduced, nowadays there is in Apulia a delay on ICT themes, for which the development of the Society of Information still presents problems. It is necessary to make a big programming effort to address the available resources in a virtuous way and to obtain as a result not an innovative service in front of a simple "expense", but the realization of that process of growth that, and through research and innovation, bring in the administrations, the companies, the professionals and the citizens towards the Society of Information and Knowledge.

In these, the interventions put in act by the Apulia Regional Administration on the subject of broadband are essentially due to the Regional Operative Program (POR Apulia 200 – 2006), to the Agreements Program Framework (APQ), on the e-government and the Information Society and, in CIPE ambit, of the Funds for the Underdeveloped Areas (FAS) interventions. From the year 2000 till today the investments allotted to such interventions have exceeded 600 million euros.

Following the activation of the mentioned programs, the action for the development of the Society of Information in general and of the e-government in particular, has known, in Apulia, in the last 3 years a significant change in addressing such funds towards the benefit for Public Administrations. It has in fact gone from a logical situation of"raining", typical of the first phase of the e-Government – in which the Central Government through CIPA has financed a plethora of projects directly and indistinctly presented by all Local Authorities – to a second phase in which the used instrument has been that of the APQ for the Society of Information (SdI) that rely, for the coordination and managing of the interventions, of the Centro Regionale di Competenza- CRC – (structure planned between CNIPA – Regions). This second model, on the other hand is perfectly adherent to the existing constitutional order based on the decentralized administration towards the Regions, has permitted the Regions of the Objective 1 (southern) to the harmonizing of the innovation actions supported by the Central Government with those of proper programming based on European Funds.

The Regional Administration, aware that of the enormous opportunity offered by the information and communication technology will accompany, however serious threats expressed and accentuated by the *digital divide* between developed areas and poor areas with consequential risk, of these poor areas, to be further reduced to a passive rule of mere consumption and condemned to a definite exclusion from the global economy, has proceeded to start a series of systematic actions that could reduce to the minimum the occurrence of the indicated distortions providing, therefore, to the enhancement of the local authorities and to the cooperation between the fundamental protagonists of the Society of Information.

In particular the interventions realized by the Apulia Region can be divided in the macro areas of the infrastructures and services as it has been explained in paragraph 3.2.2.1.

Therefore, Apulia shows a strong interest to the development of the broadband, and with the full implementation and availability of the services finalized to sustain the promotion in a inclusive and exposing way of the Society of Information and to ensure maximum accessibility and use of technologies, in particular in Societies and Citizens, including the social categories with a higher rate of exclusion (old people and disabled) it can be said that in the near future in Apulia will occur a significant expansion to the use of technologies that will bring the desiderate reduction of the "digital divide".

The Apulia Region is however continuing to invest in this direction with an adequate support in POR 2007 – 2013.

It can be said that with the activated projects has been reached in local P. A. a good level of infrastructural endowment. Much has been done in training the employees in the use of the instruments and the new technologies, now it is necessary to sensitize the employees, making them feel part of the developing process of the territory as expected in the new regional program.

It is on this last point that it is necessary to impress an efficient regional strategy with the aim to overcome the scarce sensibility for innovation in the Public Administrations, displaying the economical and social advantages, and also those linked to the administration efficiency.

The demonstration that, before a public investments, can be obtained a reduction of management costs and a better quality of services, give and take, it can be a strong factor to change motivation.

It is advisable therefore to encourage, in the public institutions, the awareness of its role of leverage for the total development of the territory, the perception of the importance to base the proper choices on citizen satisfaction, seen as the central subject of the political and administrative action.

Such an objective presumes an evolution of the political culture in order to bring and qualify the government functions towards the capacity to know and to interpret the necessities and the territorial potential and also the capacity to translate them in objectives and strategies.

CHAPTER 4 - DETERMINANTS OF THE BROADBAND DEVELOPMENT IN ITALY

4.1 INTRODUCTION

The first strategic initiatives for the diffusion of broadband in Europe go back to Action Plan e- Europe 2005 adopted by the Commission in 2002.

To stimulate the debate, the European Commission has organized a Broadband Day in 2003 to present the national plans of broadband promotion and downstream this meeting has started some plan of action to stimulate the diffusion of the new technologies. Always in 2003 the Commission has printed a Communication in which has put in evidence the advantages of broadband in the ambit of the economy of the knowledge generated by the regulatory framework of the electronic communications.

After this meeting, in the European Consul Conclusions of spring 2003, the Country members have decided to institute national strategies in the matter of broadband. The Country members have published the proper national plans correlated by the objectives and timetables for implementation, the result of their examination has been made known by the European Commission in a Communication in 2004.

In 2005 the Commission has presented a new Action Plan i2010 whose first object is to create a unique European space of the information that offers communications in broadband at reliable and affordable costs, quality contents diversified and digital services.

The problems coming by the risks of exclusion of the digital divide have been examined in a later communication of 2006, in which the Commission has taken the priority effort to monitor the progresses in this specific sector.

The Italian situation regarding this thematic of the digital divide is widely examined in paragraph 2.3.2

In the present charter is to be made an analysis of the determinants of the development of broadband in Italy with reference to the main actors present on the national territory (families, companies, public administrations).

The charter is structured as follows: *in primis* is illustrated the legal framework of reference after the exam of the determinants for broadband development with particular reference to Italian PMI system, and in the end to analyze the evolving scenarios of broadband technologies in Italy

4.2 THE REFERENT LEGAL FRAMEWORK

With the decree legislative n. 259/03 of 1st august 2003, embodying the "Code of the electronic communications" (to follow "the Code") it was implemented in the Italian judiciary regulation the European framework in the matter of networks and electronic communication services.

In particular it results to be transposed:

- The directive 2002/21/CE of the European Parliament and the Consul that institute a common framework for the network and the electronic communication services
- The directive 2002/20/CE of the European Parliament and the Consul related

the authorizations for the network and the electronic communication services (authorization directive)

- The directive 2002/19/CE of the European Parliament and the Consul related the access to network electronic communication and to the related resources, and the intervention connection of the same (access directive)
- The directive 2002/22/CE of the European Parliament and the Consul related the universal service and to the users rights in matter of network and electronic communication services (universal electronic directive)

Three acts complete the European framework regulation:

- the recommendation on the relevant markets and services in the ambit of the new framework regulation of the electronic communication about the measures ex ante according to what disposed by the directive 2002/21/CE, adopted 11 February 2003;
- the guidelines of the Commission for the market analysis and the valuation of the significant market power under new legal communitarian framework of the network and electronic communication services, adopted by the Commission 9 July 2002 (guidelines)
- the recommendation relative to notifications, to terms and consultations of which the art. 7 of the directive 2002/21/CE of the European Parliament and the Consul, adopted 30 July 2003.

The recommendation has identified the 18 relevant markets of the products and the services in the electronic communication for which is necessary, with the aim to remove monopolistic and oligopolistic situations, the imposition by the National Authorities of the Regulation (ANR) of regalement obligations ex ante. Such disposition must be integrated with what as expected from the arts. 18 and art. 12, comma 4 of the Code to the norm of which the Italian ANR and the AGCOM, "taking in maximum consideration the Recommendations related to relevant markets of the products and the services in the electronic communication, […] and the guidelines, define the relevant market in conformity to the principle of the right to competition and on the base of the characteristics and the structure of the national market of the electronic communications".

The arts. 17, 18 e 19 of the Code have taken the arts. 14, 15 e 16 of the norm directive by which the Italian ANR must refer in the analysis activity of the markets relevant the guidelines of the European Commission. The ANR is specifically attributed the power/duty to develop a market analysis to verify the grade of development of the competition and the eventual presence of companies that enjoy "individually or together with the other, […] of a position equal to a dominant position, and so of economic strength such to permit to behave in strong measure independently of the competition, clients and consumers (art. 17, comma 2° of the Code).

The recommendation and the guidelines must be, according to the arts. 18 and 19 of the Code taken in great consideration by the ANR in the definition of the analysis of the relevant markets. In the outcome of the markets analysis made, the ANR must adopt against the dominant operators the regalement obligations that stays in force up to the analysis of the following market.

To end the arts. 11 e 12 of the Code, that accept the arts. 6 and 7 of the frame work directive, with the authorities deliberations n. 335/03/CONS and n. 453/03/CONS discipline in the details the procedure for the development of the market analysis.

In line with the European addresses, the 20 December 2006 in Italy, has been instituted with a decree of the President of the Consul of the Ministers the Committee for the diffusion of broadband on the national territory (http://www.comitatobandalarga.it), made by the precedent Ministers of the Communications Paolo Gentiloni, of the Regional Affairs and Local Autonomy, Linda Lanzillotta, of the Reforms and the Innovations in the Public Administrations, Luigi Nicolais and by a Technical Group, chaired by an expert, nominated Minister of the Communications, together with the other two Ministers.

Between the functions of the Committee: "the coordination, the harmonization and the monitoring of the initiatives already done and of those finalized to the spreading out of broadband; to identify the priority interventions that reach the essential levels of enabling technology on the national territory, through a comparison with the representatives of the local Administrations, of the users and operators in the telecommunications sector; the definition of directions and formalities to pilot projects to be realized in areas specifically identified for experimentation of broadband applied to the delivery of services of public sector.

In synergy with the Executive Committee for Broadband worked the Broadband Observatory http://www.osservatoriobandalarga.it, born from the initiative of the strategic consul and technology society active in the Between sector, is promoted apart by the two Ministers, by others actors of the public and private sector, in grade to actively contribute to the broadband development on the territory.

Between the common initiatives, the recent editorial Guidelines for **the regional Plans for broadband** approved by the Permanent Committee for the Technological Innovation in the Local Government and in the Regions, and the Unified Conference of the 20 September 2007, that as already illustrated in paragraph 2.3.2, proposes to offer to the regions a methodological support uniformly and shared to face a phenomenon that is in continuous evolution and that presents complex technical aspects.

Towards the end of 2003 the Italian Government, in line with the European action plans on the spreading out of broadband and to reduced *digital divide*, had intervened on national regulation framework with the "Agreement of the Program" and with the Law n.80 of 14 may 2005 regulating in this way the activities for the reinforcement of public infrastructures for broadband in all the underdeveloped areas in the Country, establishing that such interventions must be realized in the next 20 years.

With these documents, with the general Authorization of the Minister of Telecommunication (according to the art. 25, comma 4, of the Legislative Decree n.259 of 1st august 2003 – Code of Electronic Communication) and with the Convention of 22 December 2003, the Society of the Infrastructure and Telecommunication of Italy S.p.A. (Infratel) of the Group Sviluppo Italia is legitimate to construct and to offer telecommunication network infrastructures to the operators and the sector providers and to the Public Administration with priority for the South on the base of the "Program for the development of broadband in Southern Italy". It is in fact decreed for the public Institutions the obligation "not to furnish networks or services of electronic communication accessible to the public, if not through controlled or connected societies.

Here under are reported all the legislative and administration acts that supervise and support the "Program for the development of broadband in the underdeveloped areas of the Country:

- **DPEF 2003-2006**, that in the defining innovation as one of the main factors of the economic growth, underlines the urgent necessity to overcome the delays

that Italy registers in such ambit between the others, the adoption of an action plan for the diffusion of broadband;

- **DPEF 2004-2007**, paragraph V, letter a), that has bound the Government to "Sustain the development and to modernize the infrastructure endowment of the Country in the communication sector, in consideration of their essential role for the competition and innovation of the productive system and, in this ambit, to promote the realization of the infrastructures for broadband access.
- **DPEF 2005-2008**, that has said that "for what regards the industrial politic it is urgent to define a program of interventions for the development of the innovative sector such as broadband", and that "the Govern intends to improve the strategy tended to make more incisive the politics for the South", with particular regard to the realization of the infrastructure also in the telecommunication sector;
- **Memorandum for the coverage of broadband** in the South signed the 12 march 2003 between the Minister of the Communication, the Minister of Finance and Economy/Department for the development and cohesion politics, the Minister for the Innovation and the Technology and the Development Italy S.p.A.", that binds the mentioned Ministers to promote the realization of the "program for broadband development in the South", integrant part of the same Memorandum, through the individuation of specific resources to value, in particular, on the national communitarian funds destined to the development of under developed areas;
- **Art. 6, comma 1**, of the Legislative Decree 1 august 2003, n. 259 – Code of the Electronic Communication, which provides that "the State, the Regions and the Local Authorities, or their association, cannot supply networks or electronic communication services available to the public, if not through controlled or connected societies.
- **Convention of 22 December 2003** signed between the Minister of the Communications and Sviluppo Italia S.p.A. with which the Minister has given to the last one the actuation of the "Program for broadband development in the South" and in which, to such end Sviluppo Italia binds it self to actuate the interventions expected by the program trough a controlled society, with a public deed by the notary Giuliani di Roma dated 23.12.2003 - Rep. n. 38739 and called Infrastructure and Telecommunications for Italy S.p.A. ("Infratel");
- **General Authorization of the Minister of the Communications,** according to the art. 25, comma 4, of the D. Lgs. 1st august 2003, n. 259 - Code of the Electronic Communications that legitimate Infratel from 22 December 2004 to the building and to the offer of the infrastructure of network telecommunication to the operators and provider of the sector and to Public Administration.
- **Law 14 may 2005, n. 80**, that with the art. 7, disposes that the interventions for the realization of the broadband infrastructure of the Program approved by resolution CIPE 13 November 2003, n. 83 can be realized in all the under used areas of the Country and actuated by the Minister of the Communications through Society of the Infrastructure and Telecommunication of Italy S.p.A. (Infratel) of the Group Sviluppo Italia.

- **Program Accord** (on disciplinary reporting) of the regulation of the activities to realize the potential of the Public infrastructure network for broadband in all the under used areas of the Country, signed between the Minister of the

Communications and Infratel dated 22 December 2005, in updating and integration of the Convention of the 22 December 2003, often cited (see art. 2, comma 6). The Program Accord integrates and adequate the convention 22 December 2003, regulating in particular the following profiles: *the government and the management of the infrastructure realized and integrated in execution of the First and the Second implementing intervention; the further and necessary interventions to make in prosecution of the Program for the reduction and in prospective, for the abatement of the digital gap present in the Country; the modalities of interventions on the territory, to implement directly or also through public controlled or connected societies or through other constitutes aggregation of companies (society of aim, consortium, project financing formulas); the length of the accord for the execution of the Program, fixed in 20 years, in correlation to the economic- technical life of the realized and integrated infrastructures;

- **Agreement with the Regions**, from the original model of inter institutional cooperation applied extensively to the Society, that have permitted to start Territorial Technological Projects for the areas object of the strongly incisive interventions, based on joint planning with the Regions, and have integrated the total financial availability of the Program for 85 million euros more compared to the financial endowment given by the Central Administration;
- **Preliminary strategic company document,** in which it is confirmed the importance of the Program as essential instrument for the economic development, the creation of technological habitat that permits the use of the digital technology at maximum levels. The development of the market of convergence between information data, telecommunication, consumer electronic and media and the access to on-line services.

4.3 DETERMINANTS FOR THE BROADBAND DEVELOPMENT IN ITALY WITH PARTICULAR REFERENCE TO PMI SYSTEM

The benefit coming for the realization of an advanced infrastructure of access are manifold. *In primis* is stimulated the offer of added value services capable to generate an increased benefit for the private consumers, for the companies productivity and for the public administrations.

As a consequence, it will raise the sustained demand from part of such subjects that will economically justify the development of such services and of the below infrastructure.

In that regard, it must underline that if the request for services that require a broadband access would not materialize, the private and social benefit generated by the broadband infrastructure would stay under the today estimated values. Such scenario appears, if not probable, at least possible, as the network UMTS experience teaches.

It is useful to adopt a prospective “demand pull” and to ask under which conditions could emerge a demand sustained by broadband services that justify, in term of collective benefit, the investment in broadband development and the project active role of the public powers in this sector.

The question assumes levels of particular importance with particular reference to the companies system.

In Italy, as well known, the productive system is generally made from medium and small companies (PMI). Which are the bounds that limit the demand for broadband applications form the national PMI, and so the derivate demand for fast connectivity?

What can be done to remove such bounds? and which role can the State play? In trying to give an answer to these questions, it must be underlined once more that broadband access is an enabling activity; it can have important positive effects on the productivity of the companies only if it accompanied to the massive use of specific applicative such as video conference, remote control or the application of customer relationship management that requires a fast connectivity. However, to use in a proper way such applicative the PMI must re engineering the process, the organization and the company strategy; if the PMI don't have the competences to do it, the increase of the potential productivity associated to the broadband technology stays on paper.

It results a lack of "organizational" capital, or the eventual incapacity of the management to modify the organizational assets of the company in the best way possible to exploit the new communication technologies, and the scarcity of qualified human capital both inside the company and in the territory were it operates are important factors for slowing the diffusion of such applicative.

An empirical micro analytic analysis (see the bibliography for more details) made by Colombo-Grilli-Verga (2008) on a stratified sample and representative of the PMI companies made of 904 companies, is gone to investigate both the determinants of the adoption from such companies of the fast connectivity, and the disabled factors for the use of broadband applicative. In the observation period (1998-2005) the penetration of broadband technology is significantly increased. For what concern broadband access (or a *wired* connection with speed higher or equal to 256 kbs in *upstream*) the rate of diffusion that stayed around 4.8% in 1999 is grown up to 66.5% in 2005, for what regard the number of broadband applicative adopted by the companies that have previously adopted broadband access, it is gone from a media of 0.3 applicative for company in 1999 to 5.8 applicative in 2005.

Going to analyse the determinants of the speed adopted from the PMI, the results offer a clear support to the arguments above exposed. From a way, the main determinants of the adoption of broadband are due to the company dimensions and to other characteristic that approximate the " need to communicate" (the eventual belonging to an industrial group and the configuration as multi implant company). Scarce relevance appear to exercise other *firm-specific* characteristics or the local factors, apart (of course) the conditions of the infrastructural network in the interested area. On the other side, the esteem of the different econometrics models suggests that between the main factors of the limited use of broadband applicative from the companies that have adopted broadband access are numbered: a) the deficit of human capital, given both from the lack of qualified competences inside the company (approximate in this case by a low productivity) and of the difficulty to find young staff and of high level of education in the territory where the company is located; and b) a *"organizational" capital gap,* given the difficulty of the more mature PMI, often characterized by a more plastered organizational structure and from companies *routines* more consolidated, to change organization and strategy to fully exploit the productivity potential of broadband applicative.

It descends that an efficient industrial politic of support to the diffusion of broadband in Italy cannot neglect the weak factors of the PMI that limit the demand of broadband applications, and as consequence limit also the potential increase to productivity generated by the availability of fast connection. In this perspective, the public institutions have a fundamental role, even if more complex and less apparent of the support directed to the realization of broadband technologies. In particular, measures " of system" that aim to (re)qualify the workforce and the support to employ staff of elevated human capital from the PMI are indispensable so that such companies can

make of broadband technology a factor of success.

4.4 EVOLUTIVE SCENARIOS OF THE BROADBAND TECHNOLOGIES

The importance of broadband as a factor of economic development and of social cohesion requires the elimination of the digital divide in an optic of "future proof"

The 13th UE Commission Report on Telecommunications (March 2008) and the "Guidelines for the regional Plans for broadband" published by the Executive Committee for Broadband in September 2007, displays the state of art of the spreading out of broadband on the Italian territory compared to national and community plans and programs.

In front of a European average of 20%, in Italy the coverage has grown in the last year by 17%, there remains in fact many regions where the availability of broadband services are less than the national average.

In the middle of 2007, the ADSL coverage has reached 90% of the population, against 41% at the end of 2001. 10% of the Italian population (6 million citizens) that live in areas of the infrastructural *digital divide,* or in areas where broadband connections can be realized only through specific costly connections or satellite solutions and not with the technology that today is considered in reference to broadband, i.e. ADSL.

Between regions where the gap is strong we find regions from the south but also regions from the north – centre. Molise, Sardinia, Basilicata, Calabria and Valle d'Aosta that register low coverage levels, while Apulia, Liguria and Lombardy show higher levels. It is important to underline also that, specially in Lombardy, also in Lazio and Campania, to a high level of coverage in terms of population correspond to a high number of villages not covered by ADSL. The areas with a higher level of ADSL coverage, in fact, correspond to metropolitan areas and to territorial areas that change easier to infrastructure (plains and areas with high density population).

Only in the last few months the Minister of Communication has signed the Agreement Program for upgrading the broadband infrastructures and to bring down the digital gap with the regions of Emilia-Romagna, Lazio, Liguria Marche, Sardinia, Campania, Calabria, on the base of what has already happened in Veneto and Tuscany.

It mustn't, however, be neglected the risk that, with the evolution of broadband networks (and their crescent need of band), there are going to be created new forms of infrastructural gap, between the areas where the technological evolution of the network permits to enable all services and those where such services can be granted only partially.

In a context of a growing sensibility for the problem of the digital divide there emerge, three key hubs, that will require a strong concentration between the different members interested in the cancellation of the infrastructure digital divide:

- First of all, the use of the public resources impose an attentive evaluation of the possible models of intervention and in particular, the role that can have the public sector both on the wholesale market (active and passive infrastructure) and on the retail market (for the residential client, business and institutions);
- Besides, the development of new wireless technologies permits to hypothesize different solutions to solve the problem, but it occurs to give the maximum

attention to the effective performance levels guaranteed from such technologies and to the different habilitating conditions (not least the presence of a regulatory framework coherent in matter of frequencies and authorizations);

- At last, and may be more important, the objective of the cancellation of the infrastructure digital divide requires to introduce a dynamic dimension strictly tied to the access to a always wider range of interactive multimedia services. In other terms, the development of the habilitating infrastructures must be "future proof", meaning it must take into consideration the probable evolution of the service and not stopping simply to Internet connectivity.

4.4.1 CANCELLING THE DIGITAL DIVIDE: THE ROLE OF THE WIRELESS TECHNOLOGIES

In the last few years, the wireless technologies have been object of particular attention, also for the low investments and reduced time of network installation. To such interest has followed an intense design activity, public and private, tended to the realization of networks access based on such technologies, especially to answer to the exigency to connect to broadband the areas not yet served by the xDSL services. Such networks are, in the most part of the cases, still in the phase of realization or experimentation and so, they cannot valuate the effective operational capacity and managing guaranteed from such infrastructure in conditions of "normal" use (meaning, with a wide number of users potentially connected and on a temporal significant arc).

It is worthwhile, however, to empathize as the wired solutions offer guarantees of performance and reliability that, at actual state of the technology, it results still superior to those offered by the wireless solutions. Concerning the performances, in fact, the availability of band in the wireless network is more limited and so, the effective operational capacity of such infrastructure decrease strongly to the increasing of the number of the connected users. As reliability, radio communication is subject to more interference and disturbances of the wired one and so the performances reduce strongly when the weather conditions get bad. Further more, in the case of technologies that operates on public band, the availability and the performance can get worse rapidly for the coming of events out of the control of the network management, as for example the interference caused by the other equipments operating on the same frequencies.

Compared to the costs of implementation, instead, it must be evidenced that in valuating the operational costs of the wireless network is opportune to include not only the costs relatives to the network implementation, but also those related to their operational management, to the realization and managing of the functioning of the authorization and authenticity of the users, to the administration activities and of billing, of customer assistance, quality control etc. Such components of the costs, can get to represent a preponderant part on the whole costs and to result determinant in the choice of the technology solution more suitable.

The investment is certainly, one of the most significant parameters in the comparison between homogenous technical solutions. In the presence of very different technological solutions, as in the case of the wired and wireless infrastructures, it assumes, however, importance the period of useful life of the equipments, the incidence of the managing costs and the differences in the levels of payable services. The consideration of such parameters, especially if effectuated in a optic of medium long period, can modify the conditions of the economic sustainability of the investments, making preferable those solutions that, even if they have higher investments, minimize anyway the complex costs in the relevant time horizon.

In consideration of the actual stage of maturity of the lately commercialized

technologies (Wi-Fi and HIPERLAN), the wireless technologies can have a distinctive and potentially complementary role compared to that done by the wired solutions. For the low costs of implementation, the technologies commercially available find today their ideal employment when there is to provide coverage to the confined areas (i.e. a square or a place) and to offer services to a limited number of roaming users. The performance and reliability limits make, however, convenient the recourse to wireless solutions in the case it doesn't exit any economically sustainable way to realize the services with wired infrastructure (i.e. where the number of potential users is so reduced not to justify, even in the long period, the investment in wired infrastructures).

The technologic frame of reference could change with the introduction on the market of solutions based on WiMAX technology. This technology in fact is, in line of principle, in grade to furnish broadband accesses to an elevated number of users. However, WiMAX is a technology relatively new and actually the use is limited to fixed terminations, even if it is scheduled, for the end of 2006 the appearance of the first equipment in grade to support the mobile variant. The experimentation, made in Italy by the Foundation Ugo Bordoni between 2005 and 2006, is put in evidence that the technology behaviour in OLOS and NLOS conditions to the definite frequencies (3.5 GHz) is acceptable only on relatively short distances (some kilometres in OLOS and hundred of metres in NLOS).

The European regulatory is oriented towards the award of WiMAX fixed systems of the frequencies licensed at 3,5 GHz. In Italy, such frequencies are at the moment used by the Minister of Defence. Bearing in mind that actually is being studied a further phase of experimentation, it can reasonable suppose that the times of award to the frequencies for public use are still very far (it appears unlikely the commercial launch before 2008).

Considering the times, the costs of the implementation and the likely modalities of the frequencies allocation (pecuniary concessions), as the difficulties emerged during the experimentations in conditions of not perfect visibility, it can be imagined that, at least until the reaching of a better technology maturity, the use of WiMAX could better answer to the exigency to connect selectively the peripheral locations of the "business" customer, instead to cover extensively the rural areas to offer services to the residential users.

For what it regards the mobile variables even if they have not yet been defined the operative frequencies, there is consent on the fact that technology requires the use of band with less frequency (2,5 GHz), actually not available. The use of such diffused technology so, it will require the intervention of regulatory authorities that define the standard of living with the authorized systems on close frequencies. Given the necessity to assign the frequencies and the limited availability of these last ones, it is probable that such technologies will be used by the authorized operators.

4.5 CONCLUSIONS

Broadband is now an inalienable right for every citizen. The participation to the society of information, also in his basic aspects, is however a inescapable principle and a form of right that permits each person to take advantage of the global network; this principle determines that, from the Public Administration, there is an ampler and deeper attention on the dynamics and the development of broadband, considered the essential requisite for the access to network by all citizens.

In this sense according to an exception that, before being juridical, must be definite under the "politic" profile, broadband is a universal service, or better a technology that today, for the collective progress must be available in a certain measure, and in time, to

everybody with no exclusions.

So the question is “in what measure?” and “for how long?” it is no easy today to define of how much band is needed to speak of “broadband”. Indeed, probably the only quantitative approach (kilobit, megabit…) is not enough. In other words, broadband doesn’t mean only to ensure a certain capacity of band to everybody, but, more concretely, to define that “package” of services to make available on line and, after to establish what is the necessary band that can be used everywhere.

The problem, however, is not to have 640kb or a megabit of a passer-by band, but to have access to a service of e-banking, of e-government, of telemedicine…and to have the necessary passer-by band for that specific purpose.

All this introduce the question of the time or, better, the definition of a new type of universal service, that cannot think to remain steady, but it is subject to a continuous progress of the services and of the technologies and so, it is a universal service of dynamic character. It is also necessary that, together with the definition of broadband from the point of view of the used services, it is added also that relative to the time planning for the development of the infrastructures.

In this way, also, it composes the idea of a universal service based not only exclusively on technology and band width, but also on the services and their time evolution.

CHAPTER 5 - BYBLIOGRAPHY

5.1 BYBLIOGRAPHY

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