

DELIVERABLE 5.5.2  
MODELS OF DEVELOPMENT AND  
EXPLOITATION OF BROADBAND  
INFRASTRUCTURES AND  
FORECAST OF BROADBAND  
SERVICES FOR THE PMI IN APULIA

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## INTRODUCTION

### THE PHASES OF A TERRITORIAL PLAN FOR BROADBAND

In Italy the main point in the subject of broadband shared at different levels of government, is the “universal” access to broadband network and services. For its attainment, is however necessary an effort aimed at involving regions, local authorities and all the operators active in furnishing telecommunication services, in order to:

- guarantee the sharing of the development actions of the society of information on the territory, between which the political infrastructure constitutes an important axis;
- search the maximum level of uniformity of the territorial actions, respecting the autonomy of the territories;
- avoid waste and overlapping broadband coverage in the territory.

**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 first element of the guidelines is the recommendation to follow **a logic line divided into phases**. A logic line is necessary to avoid those decisions that are taken without proper information and reflection on the variables that influence this complex problem.

The second recommendation is that **this line is as much as possible, formalized and institutionalized**, meaning with formal acts (deliberations, protocols, etc.) and ran by a special established structure, that ties together all the interested subjects, both internal at the Institution or external with the stakeholders, and that is responsible for writing the plan and its eventual realization.

The dynamics of the problem of the infrastructural digital divide, advice to carry out a repetitive and “circular” route. The plan in fact is not a document written only once and unchangeable, but is in itself a dynamic instrument that must be updated and maintained with the changes of various problem. The changed conditions of the market and the same carrying out of the plan, that must be carefully monitored, make necessary to update the plan, writing periodically a new version that takes into consideration all of the changes.

The phases are sequential, but the route is iterative, in the way that the results of a phase (i.e. the simulation of the effects of a specific model of intervention) can make necessary to go back to a previous phase to examine a known variable, to reflect further on the adopted model, and to simulate again the results with new variables.

**Figure 1: The six phases of the territorial plans for the cancelling of the infrastructural digital divide**



*Font: BROADBAND OBSERVATORY – Between (June, 2007)*

### THE PLANNING OF THE INTERVENTIONS

The planning phase is the phase where the Territorial Authority decides on what and where to intervene. The planning includes the following three phases (see figure 2):

1. definition of the objectives;
2. enquiry with the operators;
3. segmentation of the territory.

**Figure 2 The three phases of the planning of the intervention**



*Font: BROADBAND OBSERVATORY – Between (June, 2007)*

## DEFINITION OF THE OBJECTIVES

It is important to say that the guidelines refer first of all to the **general objective for cancelling the digital divide**, but the same methodology can be applied also to the other objectives inherent to broadband (i.e. the increase of the coverage of the connectivity of the advanced services or the infrastructure of the industrial districts), for which the coherence of the objective should be searched according to what is indicated here.

To define the objective of the interventions it means to define “how much broadband will be guaranteed to so much of the population and in what time frame”.

This means defining the following elements:

- i. the level of service (substantially the width of the band subject to the plan), i.e. the minimum speed to guarantee (the so called *entry level*);
- ii. the percentage of population to whom must be guaranteed the level of service;
- iii. the time frame in which to reach this result.

### *i. THE LEVEL OF SERVICE*

In defining the level of service, the Territorial Authority must decide if its plan goes to guarantee the entry level to everybody or if it wants to increase the coverage of the advanced services (a faster speed more than the entry level), even though it doesn't pretend that such a service is available to 100% of the population. In the first case (meaning in a plan for the cancellation of the digital divide), the Authority must decide if to point to the completion/increase of the coverage with the existing speeds (i.e. the base speed of ADSL the so called “lite”, that also in presence of a specific plan of the operator it wont be spread out to the 100% population, living outside a part of the territory) or to define for its territory some higher requisites of the services, imagining what can the services be and the speed required by them in the future. Until now the territorial plans have faced the digital divide without thinking of the level of service or implicitly considering the base speed, but giving the actual market conditions and the actual plans for the operators, such objective must be defined with more precision.

It is advisable that the plans face the problem of the digital divide through a stratification of the objectives compared to the different generations of broadband, i.e. by pointing to the cancellation of the first generation digital divide in the shortest time possible and at the same time to reduce (even partially) the digital divide of second generation.

### *ii. INTERESTED POPULATION*

In the case of the cancellation of the digital divide, the people to whom must be guaranteed the entry level must obviously be, having an approach that see broadband “as universal service”, the closest possible to 100%. However, is not easy nor immediate to decline operatively this objective, and above all to make it compatible with the times and the resources at disposal.

The absolute 100% in a “network” project is an objective of an asymptotic fact, for which the first measure is to make it, progressive in time, identifying intermediate objectives (i.e. to increase the coverage of the 85%

to 95% in a determined time frame, and the remaining 5% in a later period). Also because, as we are going to see later, different territorial areas require different form of interventions and actuation times. It is for this reason that many territorial plans have been realized at later “stages”, by covering with later interventions more marginal areas of territory.

As some of the Territorial Authorities, that have issued invitations for the coverage already know, the obligation to achieve 100% of users can be technically complex, difficult to guarantee ex-ante, very expensive and it requires anyway a very long deployment times.

The absolute 100% can be a target particularly difficult to reach, especially if it thought to have a net coverage.

To put out “universal” but also realistic objectives, the territorial Authority can segment the territory in a very fine way, taking some priority (i.e. the areas with more density, the areas where there are companies, etc.), so to maximize the result in the first period of the intervention.

### *iii. TIME FRAME OF THE INTERVENTION*

In choosing the time frame there will intervene different elements, that are listed below:

- the politic-administrative horizon of the Authority, goes often with the arc of the legislature or the mandate of the administrators;
- the programming deadlines of the funds are referred to the period 2007-2013);
- the objectives of the programming interventions for the development of the society of information;
- the objectives of the programming interventions in other matters, as such the plans for the industrial or infrastructural support;
- the time frame for the operators plans;
- the development provision of the communication technologies (so to accelerate the spreading out on the territory).

We talk in general to choose some of these criteria and to individuate a time frame coherent and not surrealistic (not too short not too long).

It is necessary that the digital divide of first generation is closed in the shortest time possible, and it is anyway important that the objectives are fixed in times that are not too long. A time frame too long in fact would increase the risk that the changes of the market and technology would make it obsolete.

In defining the objectives it is very important the planning among the interested subjects of the territory, able to express the requirement of the demand, the problems arising by the digital divide and the potential impacts of its availability.

The three seen objectives are mutually interrelated. For example, a plan that points to give “lite” broadband to the entire population must have a really short time frame, otherwise it is not useful, while a plan for an ambitious entry level requires time to be realized (and also full maturity of the technology and the market). A plan that points to 100% of the population in the short time is to be based on the actual technologies, while the more advanced technologies in the same time will only reach a more limited number of centres. In short, there are to be chosen objectives coherent between them.

## INQUIRY WITH THE OPERATORS

A fundamental step of the planning is the opening talk with the operators present on the territory. Such talk must be formal, and it is useful, apart from acquiring, validating and certify data on digital divide, especially to acquire the plans and the logics of investments. The objective is that of identifying with the operators the areas where the required investments and the market conditions don't justify the autonomous intervention of the operators. The inquiry must lead further, to individuate the nature of the incentives and to estimate their values.

In this phase is necessary:

- to individuate the operators present on the territory;
- open a formal confrontation with them; in the last few years, they have often been activated by the Territorial Authorities some “meetings” with the operators, where all the subjects shared the information. The efficiency of this form of relationship has been scarce almost everywhere because of the competition among the subjects, that they tended not to share most of the data, thought to be of strategic importance. As a consequence bilateral meetings are preferred between the Authority and the single operators (or their associations). This permits also the Authority to select the more interested subjects and to talk to them of the most relevant themes in a flexible way;
- to acquire by the operators a series of information
  - the data to measure the actual infrastructural digital gap (see the phase before), that,
  - also in the case in which the Authority has already elaborated some estimates, which must be anyway, validated in particular way by the main operators, meaning those that have the infrastructural asset on the territory;
  - the economical and technical ties to the development of coverage;
  - the development plans, with the same structure guide of the Measurement phase of the digital divide, in the most detailed way possible in the prospective normally used by the operators (usually three years), and in the same way for the following years; it should be researched coherently, with a negotiable approach, and the planning forecast of the Authority (for example the forecast funds expenditure), even if it must be taken into consideration the difficulty to obtain certain data by the operator, that generally are able only to give (or to “promise”) in the forecast of their plan;

- the logics of investment and increased coverage, so therefore to identify the nature of the leverage that can be used to stimulate the private interventions (financial incentives, structural investments, use of the public demand and so on).

## SEGMENTATION OF THE TERRITORY

The interaction with the operators must take to segment the territory, identifying three areas<sup>1</sup>:

- a. the area in which the operators will autonomously carry out, according to the market dynamics, the necessary investment for the delivery of broadband service (for the length of band defined as entry level and in the defined time scale) such area is called “market area”;
- b. the area where the operators are not willing to invest with the actual conditions, but could do it on the base of incentives, such area is called “incentive area”
- c. The area where the “market failure” is such that can only have public intervention (more or less complete), such area is called “ area of direct public intervention”.

The final output of the phase is the intervention plan, meaning the list of the Communities in the three areas, with the indication, for each one of them and with particular reference to those of the areas of the incentives and of direct public intervention, of the level of the service offered and of the alleged date of when the objective becomes available.

## PLANNING OF THE INTERVENTIONS

The planning phase regards essentially the choice of the form of interventions in the different areas, maximizing the interventions and allocating the resources.

On the base of the developed experiences on the Italian territories, it is possible, between all possible forms, to put in evidence some that have appeared good for the overcoming of the infrastructural digital divide in Italy.

Experiences of other nature have been surveyed by the Committee, but have resulted to adopt more or less, the objectives not directly tied to the overcoming of the digital divide (as the connection to the local public administration or the increase of competition in some areas or the supply of connectivity services at good prices for the PMI), and are then here described.

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<sup>1</sup> This segmentation recalls (even if it doesn't coincide with it) the distinction that the European Commission puts among “black” areas (characterized by at least two competitive platforms), “grey” areas (characterized by base broadband services), “white” areas (absence of broadband), distinction that refers to the measurement phase of the actual digital divide and doesn't take into consideration the future interventions of the operators.

It must be underlined that this overview is for its nature continuously evolving, because it is tied to the efficiency showed by the different models in different applied contexts. This is then the state of art up to date.

## PREVALENT MODELS

The models are presented in subsidiary order compared to the market.

### AGREEMENT BETWEEN THE ADMINISTRATORS AND THE OPERATORS FOR THE ACTUALIZATION OF THE RECIPROCAL COMMITMENTS IN TERMS OF INVESTMENTS ON BROADBAND

The model provides that the administrators and the operators present on the territory:

- share the common objective of the cancellation of the infrastructural digital divide;
- have their own broadband investment plans and share them; the administrators concerning the development of the multimedia contexts and the network services, the operators concerning the implementation of their TLC infrastructures for the overcoming of the digital divide;
- negotiate the contest of the respective plans, in order to ensure the coherence and reciprocal convenience;
- agree on the best ways and “management” of the agreement (creation of monitoring and checking infrastructures, monitoring actions, initiatives of communication, and so on).

In order to safeguard the competition, the agreement must be researched with all the operators present on the territory and willing to invest in the infrastructure of the digital divide areas.

This model is appropriate because it guarantees the maximum respect of the reciprocal roles from the operators (that take care of the network development) and of the public administrations (that take care of distributing the services on the network and to promote the development of the multimedia contents). It must not be forgotten that an increase of the quality and of the level of interactivity of the on line services and of their use from all the user categories, is the ideal condition to guarantee continuity of the investments of the private operators in the TLC infrastructures.

Further this model is the one that gives the maximal negotiable approach among the Authorities and the operators.

The legal tool to actuate this model is the Memorandum of Understanding.

### FINANCIAL HELP TO THE COMPANIES IN THE FAILURE AREAS

The model (commonly referred to as “Scottish” model) provides for the allocation of public funding to the operators, but that should be limited to the areas in where market failure may occur, so the market itself needs funds.

It is worked out through a procedure of public evidence, aiming to select one or more telecommunication operators that intend to co-invest on the territory to give connectivity services to citizens and companies. The action of the operator is then sustained through incentives.

The adoption of the model is conditioned by a range of factors, first of all by the precise definition and “certification “of the market failure. It has to be done in the inquiry phase (see before), that must evidence:

- a. areas where the revenues are not sufficient for the managing expenses;
- b. areas where a balance is not achieved between the total expenditure and the investments or it is reached only on a time scale not coherent with the operators politicises (considering three years for the return investment).

The intervention must have the following characteristics:

- compatibility of action in terms of necessity, because the implementation should be exclusively in relation to the presence of nucleus of residential people and economic activities in where the new services are sighted;
- compatibility of the action in terms of proportionality, because the public financing is exclusively limited to the necessary quota to reach the cost/revenue balance for each of the necessary infrastructural intervention;
- achievement with ways to ensure the non distortion of the market in a way contrary to the common interest; i.e. in presence of the sub regional local operators that can intervene in limited areas; the Region can take into consideration the opportunity to safeguard the competition through the segmentation of the territory in various “lots” of intervention.

The financing is subordinated to the actual occurrence, ex-post, the market failure during the period of validity of the incentive (3-5 years).

The administration must foresee the monitoring of the financial performance of the market action of the operators on the territory subject to the incentive through the adoption of separate accounts from the operator and its periodical checking by the administration, for a determined number of years.

In fact they are provided mechanisms of capital return at the end of the monitoring period in case the investment is better than what is expected, correlating so the financing to the revenues received from the selling of the services.

This model of intervention doesn't provide any asset of public property.

This model has been applied in Italy only in Tuscany and Sardinia.

#### REALIZATION OF PUBLIC INFRASTRUCTURES OF BACK HAUL AT DISPOSAL OF THE OPERATORS

The model provides that the local administration (directly or indirectly, through the intervention of an intermediate) realizes the passive infrastructure (cabling and fiber off) to connect collecting sites of access (central, base antennas, etc.) to the backbone of the operators, and lends the infrastructure (in IRU form) to one or more operators, that in this case complete the network with the installation of the equipment to activate the connectivity services.

It is not be to considered Government help so long as the conditions laid down by the ruling Altmark are respected (U.E. Court of Justice of 24 July 2003, case C280/00):

- obligations of public service clearly defined;

- parameters for the calculation of the compensation defined in a transparent and objective way;
- compensation not exceeding what is necessary to compensate (wholly or in part) public service obligations;
- choice of the private operator through the procedure of public contract that permits to select the operator able to give lower cost services.

The relative services are configured as compensation for a Service of General Economic Interest.

In this model the public sector intervenes at a lower level of the value chain, or better realize that part of intervention that usually represents the biggest barrier to the entry of the operators (about 70% of the costs are to be sustained to implement a new wired network and 40% for the wireless).

This kind of public intervention permit the increase of the competition/diversification in the highest levels of the chain value (networks, technologies, services and contents level), because the public “interference” stops at passive infrastructure level, leaving the operators the activation, the organization, the managing and customer services.

This model can be realized to increase the capillarity of the fiber optic network, that is indispensable in a projection of a medium to long period to support the increased evolution of the speed access. This concept is valid in any type of access technology, wired or wireless. Also this last technology of access, that today is often realized by the operators with the back haul in radio bridge, will necessitate a better back haul, and where possible in fiber optics.

The inquiry with the operators of the previous phase (planning) avoids the risk for the administration not to find operators willing to invest for the use of the network.

One of the conditions put by the adoption of the model is that the availability of the operators to lend the networks must be checked before, and underlined in an adequate feasibility study (almost a business plan).

In Italy this model has been adopted by Infratel to complete some ways of interest of more operators and to connect in fiber optic some Telecom Italy centrals. In some cases the intervention has been inserted in a systematic plan by the Region. Other Regions have built a public backbone (with the objective to connect the Local Public Administration with fiber optic access at a very high speed) to put at later stage at disposal of the alternative operators. Where this has already happened, the impacts in terms of increase of broadband coverage is not yet seen.

## REALIZATION OF A PUBLIC INFRASTRUCTURE OF ACCESS AND TRUST MANAGEMENT TO AN OPERATOR

The model provides that the Authority realises the infrastructure of the network access, and eventually also of the back haul, and trust the management of an operator through a public tender.

Such a model is typically adapted to be applied in the most marginal areas, those called “direct public intervention”, where the operators present on the territory with their own network access don't think it is economically convenient any kind of investment on their own network or there are technical ties that make it almost impossible or very expensive to give a broadband service on the traditional network (copper pair). Only in this case the network access becomes an admissible model.

Also this model is not considered Government help so long as are observed the conditions laid down by the ruling Altmark cited before:

- obligations of public service clearly defined;
- parameters for the calculation of the compensation defined in a transparent and objective way;
- compensation not exceeding what is necessary to compensate (wholly or in part) public service obligations;
- choice of the private operator through the procedure of public contract that permits to select the operator able to give lower cost services.

In this model, the public sector intervenes only at a higher level of the chain value compared to the model previously described by the realization of the public back haul.

The inquiry with the operators of the previous phase (planning) must include also the research of the operators that want to give the service, taking the effort to manage the network and doing maintenance regularly.

It is absolutely necessary to avoid the realization of networks unless the managing model has been individuated and the inquiry with the operators has been done, and ended with the individuation of the subjects really interested in managing the network and to allocate the service to the final users. And, coherently with the objective of cancelling the digital divide, the effort must interest all users, and not only the most (relatively) wealthy clients, such as P.A. and companies.

It is also inadvisable that the public administration, also through a proper society, manages the service directly.

This model is also to be considered usable only after having verified the non feasibility of the other models and only in the areas where the market failure is at maximum.

## COMPARISON BETWEEN MODELS

Some comparisons between models are now shown. As we are going to see, the different models present advantages and disadvantages, and also a different condition of applications.

Every model is then chosen according to the territorial characteristics, to the market in that territory and the whole strategy of the territory development of the Authority,

keeping in strong consideration the criteria of a sub subsidiary compared to the territory.

Compared to the decisional variables, as it can be noticed in figure 3, on two parameters all the models appear unique: the Segment of the demand to which goes ultimately the intervention is the user in its complex (and not only some segments of users, i.e. only the local P.A.), and the Area of intervention is exclusively that of digital divide, coherently with the adopted approach.

This guarantees also the satisfaction of some conditions put by the European Commission to approve the interventions, where necessary.

**Figure 3 Position of the models compared to the decision variables**

VARIABILI	MODELLI			
	1	2	3	4
	Accordo Ente-Operatori per investimenti rete vs. servizi	Contributi in market failure	Backhaul pubblico per operatori	Infrastruttura pubblica di accesso e gestione da operatore
Sussidiarietà rispetto al mercato	Alta	Alta	Media	Bassa
Oggetto dell'intervento pubblico	Domanda	Offerta	Offerta	Offerta
Segmento della domanda	Tutta l'utenza	Tutta l'utenza	Tutta l'utenza	Tutta l'utenza
Livello dell'infrastruttura	N.A.	Prevalentemente accesso	Backbone/MAW	Accesso (e a volte backhaul)
Tecnologia risultante	Neutro (ma fino ad ora applicato all'ADSL)	Neutro (ma di fatto prevalentemente ADSL)	Fibra ottica	Generalmente wireless
Area di intervento	Solo digital divide	Solo digital divide	Solo digital divide	Solo digital divide
Proprietà degli asset finanziati	Privata	Privata	Pubblica	Pubblica
Mercato di riferimento della proprietà pubblica	N.A.	N.A.	Wholesale	Wholesale
Gestione degli asset	Privata	Privata	Pubblica per cavo/dotto e fibra spenta, privata per fibra accesa ed apparati	Privata
Probabile redditività della gestione	In linea con il mercato (o poco sotto)	In linea con il mercato	Margine negativo (quasi ovunque)	Margine positivo, ma non in linea con il mercato

*Font: Guidelines for the Territorial plans on broadband, 2007*

Figure 4: Conditions of application

CONDIZIONI DI APPLICAZIONE	MODELLI			
	1	2	3	4
	Accordo Ente-Operatori per investimenti rete vs. servizi	Contributi in market failure	Backhaul pubblico per operatori	Infrastruttura pubblica di accesso e gestione da operatore
Tipologia di aree di incentivazione	Area grigia	Area grigia	Area grigia e bianca	Area bianca
Gravità del digital divide (medio /lungo periodo)	Generalmente indifferente	Tecnicamente neutra, di alto scatto al dig.div. medio periodo (per il lungo periodo contributo eccessivamente elevato)	Digital divide di lungo periodo (mancanza di tratte in fibra ottica sul territorio)	Digital divide di lungo e medio periodo contemporaneamente
Livello della competizione attuale	Ha senso applicato per chiudere il digital divide in una porzione assai ampia del territorio, per cui gli interlocutori sono solo gli operatori più grandi, in grado di ricavare benefici tangibili dall'aumento di uso dei servizi	Permette una scelta relativamente ampia di interlocutori e di soluzioni tecniche. In assenza di competizione, le alternative sono assai limitate (o 'alto solo ADSL)	Si applica nelle zone dove gli investimenti richiesti sono elevati, e quindi può generare o una più veloce chiusura del digital divide in tali aree, o un aumento di competizione nell'accesso.	Si applica nelle aree dove la competizione è molto bassa o inesistente

Font: Guidelines for the Territorial plans on broadband, 2007

Figure 5: Advantages and disadvantages

ASPETTI-CHIAVE	MODELLI			
	1	2	3	4
	Accordo Ente-Operatori per investimenti rete vs. servizi	Contributi in market failure	Backhaul pubblico per operatori	Infrastruttura pubblica di accesso e gestione da operatore
Continuità rispetto allo stato attuale del mercato	Alta, perché si rivolge prevalentemente agli operatori tradizionali	Tecnicamente neutra, però consente agli operatori tradizionali di presentare una proposta	Alta, perché si rivolge anche agli operatori tradizionali	Bassa, perché è un mercato sostanzialmente nuovo con nuovi interlocutori
Sostenibilità nel lungo periodo rispetto all'aumento di banda	Media (dipende dal successo dei servizi nel far aumentare l'utilizzo della rete agli utenti)	Dipende dalla soluzione scelta, ma in genere si applica almeno al full broadband	Molto alta (rende più capillare la rete in fibra ottica)	Bassa (scarsa scalabilità delle tecnologie)
Consolidamento del modello di gestione	Alto (la gestione rimane all'operatore)	Dipende dalla soluzione scelta (generalmente alto per wired, basso per wireless)	Alto (l'affitto della fibra ottica con IRU è una modalità consolidata)	Basso (è il punto debole del modello)
Semplicità del processo di selezione/scelta	Media (alta la relativa novità del modello, manca un riscontro sugli impatti dei servizi selezionati sulla domanda)	Bassa (ma destinata ad aumentare sfruttando l'esperienza degli Enti che l'hanno adottato)	Alta (l'identificazione delle tratte viene fatta con gli operatori e ciò garantisce l'ottimizzazione)	Alta per gli aspetti tecnici, medio-bassa per la definizione del modello di gestione
Semplicità del processo di attuazione	Alta	Bassa (necessità di monitoraggio complesso)	Media (per permessi scavi)	Alta
Tempi di realizzazione	Brevi (ma dipende dai tempi di deployment negli operatori)	Medio-lunghi per notifica a CE	Lunghi (causa scavi)	Medio-brevi (lampi di deployment delle infrastrutture wireless generalmente brevi)
Costi di realizzazione	Medi	Medio-bassi	Elevati	Bassi

Font: Guidelines for the Territorial plans on broadband, 2007

## BROADBAND SERVICES AND COMPANIES IN APULIA

It is universally recognized that the level of information data, and more in general, of ICT endowment 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 ICT 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.

The Apulia entrepreneur context, as that of the South and that of the whole of Italy, is characterized by the massive presence of companies with less than 10 employees: 96% for Apulia - and similar values that are around 96% for the Apulia provinces, from 95,1% of Bari to 96,8% of Foggia - 96,4% for the South and 94,9% of the whole Country.

The companies employees, however, are concentrated only for 59,4% in the companies with less than 10 employees, while only about 10% is absorbed by the companies with of 200 to 1000 employees. The Apulia entrepreneur context, is also made by the presence of local productive system at higher level of specialization spread on the whole regional territory both in the light textile and in productive activities with added value.

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).

In conformity to what has happened in the rest of the Country, in Apulia 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 points percentage) and web site (+ 24 points percentage) 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 ICT base endowments, a symptom of reaching the step values of the diffusion process.

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 ICT 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 ICT endowment remains decidedly more set back for the retail trade companies, and more so for traditional services (hotels and restaurants).

It is however very deep the technological gap that characterizes the Apulia companies with those of the North-Centre of the Country.

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

If they are analysed the organisational characteristic of the Italian companies, 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.

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 that do e Commerce, in fact the income from selling incidence on-line assumes significant values.

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.

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 projection, there are two 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 an objective which is mainly tied to the recovery of efficiency on functions of the communication types;

- 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 ICT solutions.

From the integration of these two lines can be delineated four profiles of growth, which summarize the different developing ways that the Apulia 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 organization 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 data interaction with the internal and external subjects of 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 a in 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 (e Commerce, 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 the more traditional sectors of the Italian productive system. We speak 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 ICT 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 sided 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.

The public intervention should favour the PMI for the access to the information data services with the objective to promote access to the TIC, their adoption and their efficient use by the PMI, and encouraging also computers education and associated projects by collaborating in the quest to do away with the digital divide.

The interventions should provide funds for the PMI, the association of categories, consortium and cooperatives, mixed society, financing interventions will increase the access to information data services, with particular attention to the use of broadband in the exchange among companies and between them and the Public Administration.

Particular attention must be given to the necessities of the very small companies, of the artisans, and of the medium and small companies of the sector of tourism, by favouring the services and infrastructure that permits an associated use in the ambit of the industrial districts and of the local tourist systems, the provision to outsourcing both to the internal managerial functions of the productive activities through the tertiary of some production phase, the capacity to start collaboration relationship with the industrial clients, the suppliers, the economic system of reference and other partners.