



# TOMORROW'S NETWORKS TODAY



This brochure summarizes the results of a workshop on Tomorrow's Networks Today, held in Saint Vincent (Aosta), Italy from 7 to 8 October 2005. It was prepared by the Strategy and Policy Unit (SPU) on the basis of specially prepared case studies, input documents and contributions to the workshop. The enclosed CD-Rom contains the background materials and documents of the workshop as well as a wide range of background resources related to tomorrow's networks.

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# ITU Workshop on Tomorrow's Networks Today

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7-8 October 2005  
Saint Vincent  
Aosta Valley – Italy

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The Tomorrow's Networks Today project is managed by Cristina Bueti and Marco Obiso, with Dr. Tim Kelly, Head, Strategy and Policy Unit, having overall responsibility. Information on the Tomorrow's Networks Today project is available on the ITU website at [www.itu.int/tnt](http://www.itu.int/tnt).

The views expressed in this brochure and CD-Rom are those of the authors and do not necessarily reflect the opinions of the Italian Ministry of Communications, the Ugo Bordoni Foundation, ITU or its membership.

# Summary Report

## Introduction

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**1** In recent years, major advances in Information and Communication Technologies (ICTs), combined with the rapid growth of global networks such as the internet, have transformed businesses and markets. Learning and knowledge-sharing have empowered individuals and communities with new means of communication, and created significant wealth and economic growth in many countries. This revolution also means that there is no longer any need to be physically located near urban areas where most information and production is generated. Constraints of time and distance have been eliminated.

**2** The trend is towards the realization of a ubiquitous network society where people can access and exchange information freely, at any time, from anywhere, and from any appliance. This could be through personal broadband and mobile access, as well as more recent developments of intelligent home appliances and RFID tags, to access networks.

**3** To encourage the further development of Tomorrow's Networks, the Italian Ministry of Communications<sup>1</sup>, the Ugo Bordonni Foundation<sup>2</sup>, the Aosta Valley<sup>3</sup> and the ITU Strategy and Policy Unit<sup>4</sup> co-organized the workshop on "**Tomorrow's Networks Today**"<sup>5</sup>.

**4** The workshop was held in Saint-Vincent (Aosta) in Italy from 7 to 8 October 2005 and discussed specific measures to overcome potential challenges, investigating how such a new paradigm could be realized. One session was dedicated to Next Generation Networks (NGN) as a framework to harmonize the worldwide and Italian technical and functional basis needed to extend the use of integrated ICTs to as many users as possible.

**5** This report aims to highlight the most important issues and concerns raised during the presentations and open discussions. It intends also to provide a concise overview of the benefits and drawbacks of a possible migration towards tomorrow's networks.

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<sup>1</sup> <http://www.comunicazioni.it/en/index.php>

<sup>2</sup> <http://www.fub.it/>

<sup>3</sup> <http://www.regione.vda.it/>

<sup>4</sup> <http://www.itu.int/spu>

<sup>5</sup> <http://www.itu.int/tnt>



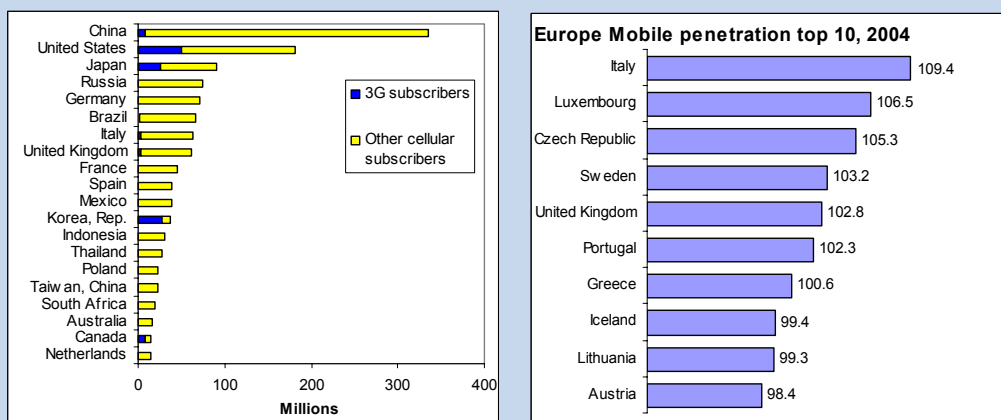


# Country Case Studies: Why Italy?

6 Ever since Antonio Meucci<sup>6</sup> filed a patent caveat (notice of intention to take out a patent) for a telephone device in December 1871, revolutionizing the daily lives of ordinary people, Italians have been amongst the most enthusiastic telephone users in the world.

Italy was chosen as an ideal case study and survey candidate, because it has one of the highest rates of mobile phone ownership in the world; the country currently ranks first in Europe in terms of mobile telephony penetration levels, second in total number of mobile subscribers worldwide and boasts one of the highest per capita short message service (SMS) usage rates in the world. In mid-2005, 19 per cent of Italy's 22.2 million households had broadband access, while 37 per cent of the country's over 4 million businesses had fast connections and 61 per cent of government was connected via broadband. Moreover, in Italy, digital terrestrial television, with its mould breaking, interactive and single-theme channels, will have replaced analogue television completely, in a few years time.

**Figure 1: Italy's ranking in worldwide and European mobile penetration**



Source: ITU Internet of Things, 2005

In recent years, the concept of “technological ubiquity” has been receiving increasing attention from both the public and the private sectors. With mobile phones and the internet already having a huge impact around the world, the next step of “always on” communications, with its world of networked and interconnected devices, will provide relevant content and information, whatever the location of the user.

<sup>6</sup> <http://news.bbc.co.uk/1/hi/world/europe/2956240.stm>

The convergence of broadband and ubiquitous networks with mobile services may well emerge as the key to providing the users with better communication capabilities.

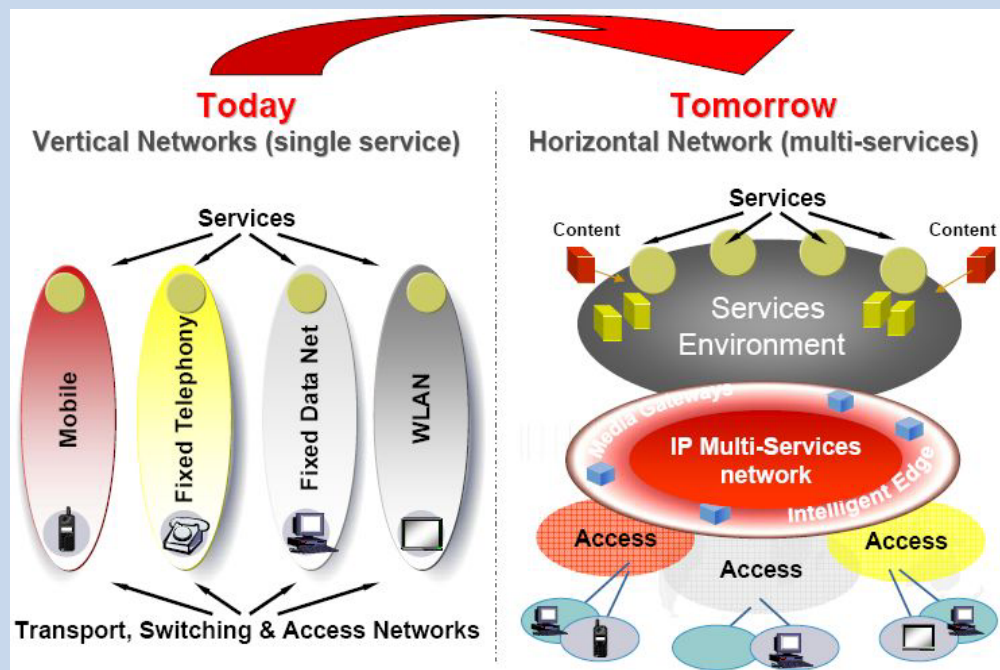
Two case studies of Italy were presented at the Workshop, aimed at identifying the possible trends in the Italian ICT sector, including regulation, technology, social and economic progress in order to shape the path towards the realization of Tomorrow's Networks.

7 The country case study entitled "**Ubiquitous Network Societies - The Case of the Italian Republic**" was presented by Cristina Bueti. It provides an introduction to the country, its geography and demographics, its political system and its economy. It gives an overview of Italy's ICT sector and describes the evolution of the Italian market towards an ubiquitous network society, including its past and current legislative and regulatory framework. It details the path taken by Italy to a ubiquitous network society, from broadband to mobile computing, digital TV, Wi-Fi, domotics (home automation), RFID and data protection. It describes the convergence process before concluding optimistically that a truly ubiquitous network society can be achieved, with the continued efforts of all the players involved.

8 The country case study entitled "**Bridging the Gap: Taking Tomorrow's Networks into Today – The Case of the Italian Republic**" was presented by Marco Obiso. The paper intended to provide a concise overview of the benefits and drawbacks of the possible Italian migration towards Tomorrow's Networks. It described how Italy is well positioned to lead and shape the future development of not only technologies but also their impact on Italian life and work. With a view to achieving maximum impact in economic and social terms, effort should focus on the future generation of those technologies in which computers, interfaces and networks will be more integrated into the everyday environment and will render accessible, through easy and "natural" interactions, a multitude of services and applications.

This vision of "ubiquitous networks and next generation networks" seeks to place the user, the human being, at the center of the future development of the knowledge-based society.

**Figure 2: Vertical Network versus Horizontal Network**



Source: Vodafone

## Workshop on “Tomorrow’s Networks Today” – Introduction and Meeting Themes Summary

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**9** At the invitation of Tim Kelly, Head of the Strategy and Policy Unit of the International Telecommunication Union and Guido Salerno, Head of the Cabinet of the Italian Ministry of Communications, the ITU New Initiatives Workshop on Tomorrow’s Networks Today was held in Saint-Vincent (Aosta) in Italy from 7 to 8 October 2005. The event was organized in collaboration with the Italian Ministry of Communications, the Ugo Bordoni Foundation and the Aosta Valley.

**10** The one-and-a-half day meeting was structured to consider and debate five broad themes in promoting international and national dialogue among governments, the private sector and other stakeholders to promote the realization of tomorrow’s networks. These themes were:

- **International Visions of Ubiquitous Networks and Next Generation Networks** – This initial session aimed to provide background information on Ubiquitous Networking and Next Generation Networks concepts, from the international point of view. This high-level vision was used as a preparatory activity and baseline discussion for all of the other sessions of the workshop.
- **National Visions of Ubiquitous Networks and Next Generation Networks** – This session was dedicated to the Italian context, presenting the activities carried out by the main Italian telecommunication players. Different aspects of Ubiquitous Networks and Next Generation Networks were covered, according to the specific areas of interest and related solutions developed by the operators. The objective was to understand how the Italian telecommunication system is advancing in the process of network integration and convergence and how the players are reacting to the inputs provided by the standardization bodies and the international environment.
- **Creating The Enabling Environment** – Next Generation Networks imply a broad number of coordinated activities and study areas, from the network infrastructure to the end-user applications, from the policy and regulatory issues to the data protection and user privacy. This session intended to provide an overview, by international and national experts, of some of the main topics composing the NGN framework and to identify a possible enabling environment for the process of creating an Italian Next Generation Network. During the session, some important regulatory aspects were addressed and discussed, as well as the work done by the Italian Government regarding the creation of such an enabling environment.

- **The Italian Path Towards Ubiquitous Networks** – This was a brainstorming session to discuss possible future challenges and eventual follow-up actions to be taken by the various represented political parties to advance the Italian path towards ubiquitous networks.
- **The Path Towards Ubiquitous Networks: “Being Digital in the Aosta Valley”** – The Ugo Bordoni Foundation (FUB), in collaboration with the private sector and the local authorities of the Valle d’Aosta region, is implementing a project aimed at integrating the digital TV infrastructure with the already existing mobile and broadband networks, in order to provide value-added ICT services to all citizens. This session focused on the work, which is already underway, explaining the natural convergence to the ubiquitous paradigm, and described the steps that were taken to implement this project. The session also examined the roles of all the different stakeholders in the project.

Approximately 400 experts participated in the workshop, representing a range of regulatory and policy-making agencies, mobile operators, service providers, academic institutions, private firms, and others.

**11** The **event website**<sup>7</sup> provides links to the **final agenda**<sup>8</sup>, all **background papers**<sup>9</sup>, **presentations**<sup>10</sup>, **electronic contributions**<sup>11</sup>, this report<sup>7</sup> and **archived webcast**<sup>12</sup>. The **website** contains a wealth of related materials and in itself provides a valuable resource for the future.

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<sup>7</sup> <http://www.itu.int/tnt>

<sup>8</sup> <http://www.itu.int/osg/spu/tnt/agenda.html>

<sup>9</sup> <http://www.itu.int/osg/spu/tnt/material.html>

<sup>10</sup> <http://www.itu.int/osg/spu/tnt/presentations.html>

<sup>11</sup> <http://www.itu.int/osg/spu/tnt/material.html>

<sup>12</sup> <http://www.itu.int/osg/spu/tnt/webcast.html>

## Meeting Opening and Welcome

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**12** **Mr. Caveri**, President of the Aosta Valley, welcomed the participants to the workshop. He really appreciated the decision of the ITU and the Italian Ministry of Communications to hold the event in the Aosta Valley, since the geomorphology of its territory is a test bed for the implementation and usage of emerging technologies, particularly wireless. In line with the experiments carried out by the Ugo Bordoni Foundation on WI-MAX and Digital Terrestrial TV, the Aosta Valley can become a first Italian business case on service and network convergence, to bridge the digital divide and enable the citizens to use private and public utility services in a ubiquitous manner, i.e. anywhere, anytime, and with any device.

**13** On behalf of the Secretary-General and membership of the International Telecommunication Union, **Dr. Tim Kelly**, ITU, welcomed the participants to the workshop. The initiative was born out of an ITU New Initiatives Workshop on Ubiquitous Networks Societies<sup>13</sup>, which was held in April 2005 in Geneva when a case study of the development of Ubiquitous Networks Societies in Italy was presented. That event was futuristic and visionary and it presented a view of a society in which information and communication technologies were as ubiquitous as the air.

**Dr. Kelly** said that the challenge was to make this vision of a Ubiquitous Network Society a practical and realistic one and that to achieve this, we can build on what has already been successfully achieved in today's networks.

He highlighted the fact that each country, and each individual region, starts from a different point and may follow a different trajectory, even if the overall direction is the same. The key elements in the mix are:

- the relative levels of diffusion of the main bearer networks for fixed-line telecommunications, mobile communications and broadcasting;
- the number of players and their relative market shares;
- the regulatory environment and the policy environment, including the role of local and regional authorities;

In the Aosta Valley, there is a combination of those elements which is probably unique and which will certainly prove to be an excellent laboratory for the creation of "Tomorrow's Networks Today."

**14** **Mr. Guido Salerno**, Head of the Cabinet of the Italian Ministry of Communication and General Manager of the Ugo Bordoni Foundation opened the meeting welcoming the participants, as well as those joining the meeting via

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<sup>13</sup> <http://www.itu.int/osg/spu/ni/ubiquitous/>

cyberspace, as it was being audiocast live over the internet and archived for future reference. In his remarks, he said that, despite the initial delay in Italy's entry to the second generation mobile network (GSM) market in 1994, after the liberalization of the Italian market, Italy has proved to be able to realign itself with the other countries in the field of telecommunications. He recalled, in particular, that Italy is the leader in Europe in third generation mobile (3G). He explained the reasons behind the planning of this workshop, which aimed to gather international and national views towards the realization of Tomorrow's Networks.

## International Visions of Ubiquitous Networks and Next Generation Networks

**15** This session began with a keynote speech by **Mr. Chab-sub Lee**, Korea Telecom. In his speech, Mr. Lee presented an overview of the Next Generation Networks (NGN), and some key features of NGN and its overall architecture. He provided an overview of work done so far and gave details on future direction and some of the business drivers for NGN. He described the work of the Focus Group (FG) which was established in June 2004, and gave the ITU definition of NGN. The FG/NGN was created to address the emerging needs for global standards for NGN. He emphasized the role of ITU-T which is seeking to engage all interested parties in work towards the development of worldwide standards for NGN. In his closing remarks, he outlined that NGN will see consumers benefit from innovative new services, greater control and personalization, ease of migration between services as well as offering continuity for existing services.

**16** **Dr. Tim Kelly**, ITU, pointed out that the today's networks are about connecting people. Tomorrow's networks will connect not only people but also "things" (meaning devices) in an integrated manner. He introduced the 2005 ITU Internet Report, entitled "The Internet of Things<sup>14</sup>", that extends concepts of Ubiquitous Computing, Ubiquitous Communications and Next Generation Networks (NGN) with the new dimension of 'anything' communications, whereby users will communicate using different kinds of devices, over different network infrastructures. This approach, also addressed by ITU's work on NGN, paves the way for the implementation of Tomorrow's Networks, whereby market drivers such as mobile communications and broadband will develop into fully converged networks and new integrated ICT services and applications will be introduced.

**17** **Ms. Laura Pontiggia**, Information Society and Media Directorate-General, Lisbon Strategy and eEurope, European Commission, focused her presentation on policy and regulation aspects of Next Generation Networks, in order to address some of the issues that the European Commission is currently facing, within the context of e-2010, which is the operational framework that the EC has set up to foster the digitalization of the European countries. Ms. Pontiggia said that the same policy objectives should be applied to NGNs, in order to ensure that competition be strengthened, the incentive to invest be maintained for both new entrants and incumbents and that consumers interests continue to be protected. She concluded that the debate on defining the future regulatory framework is still open.



# National Visions of Ubiquitous Networks and Next Generation Networks

**18** **Mr. Marco Obiso**, IT Service Management Coordinator, ITU, focused his presentation on the Italian ICT sector, analyzing possible enabling technologies that could facilitate the transition towards Tomorrow's Networks. He said that Italy has reached the critical mass, in terms of technologies and ICT services currently available on the market, that would enable them to begin integrating the different infrastructures in a converged manner. Some business cases have been presented, such as Fixed Mobile Convergence and Triple Play, as well as the IP Multimedia Subsystem and IPv6. He pointed out that, in order to create a favorable environment for the creation and growth of Tomorrow's Networks, collaboration and coordination between governments and international organizations, as well as with research and development entities, is very important. The interesting and promising experimentation that is underway in the Aosta Valley has benefited from such collaboration.

**19** **Mr. Massimo Coronaro** from Telecom Italia explained that convergence is a complex process which involves technical aspects, business aspects and customer service aspects. Fixed access will evolve in terms of coverage and bandwidth introducing new xDSL technologies like ADSL2+ and VDSL2, while the radio access will evolve towards the broadband with HSDPA solutions. The metro and regional network will be based on Ethernet and WDM optical transport solutions while the backbone network is already based on IP and optical cross connect systems. The service and control platforms for fixed and wireless access are based on the IMS/NGN model and will converge towards common ITU-T standards based on the specifications produced in different standardization bodies such as ETSI TISPAN, ATIS, 3GPP and IETF.

**20** **Mr. Guido Roda**, Network Service Engineering Director, Fastweb, noticed that there are some fundamental enabling technologies such as the usage of IP protocol and the Triple Play services, necessary to realize the Next Generation Networks paradigm. In particular, the focus on IP Multimedia Subsystem (IMS) offers new business opportunities, also due to the evolution of devices, which through enhanced processing capabilities, sophisticated graphical interfaces and lower selling prices, are now fully compliant with the eventual fruition of multimedia services. The implementation of NGN also with IMS could allow the initiation of a virtuous circle to enable the service convergence and facilitate the path towards Tomorrow's Networks.

**21** **Mr. Ermanno Berruto**, Network Architecture and Traffic Director, Wind, presented the current status of the mobile technologies and their possible evolution, within the framework of Next Generation Networks and the Ubiquitous Services, as the mobile networks will play a big role in the evolution towards Tomorrow's Networks. He showed the standardization process, carried out by 3GPP (Third

Generation Partnership Project), aimed at integrating new operational models such as IMS and Triple Play to have synergies between the mobile and fixed world. He also introduced the HSDPA (High-Speed Downlink Packet Access) as a technological gateway to enable high-speed access on mobile networks, a fundamental element in improving the performances of data exchange and access to the ICT services.

**22** **Mr. Emilio Marchionna** from “3”, the Italian company belonging to H3G, summarized the experience of launching a new technology (UMTS) highlighting the following areas:

- Focalization
- Time to Market
- Customers Premises availability
- Quality

These four elements are fundamental to the correct and proper deployment of new technologies and related services. As Greenfield operator H3G has invested a lot in the creation of new sites to allow a better network coverage, another base element in the process of allowing access by the end-users to the services that are made available.

**23** **Mr. Didier Lebrat**, Chief Technology Officer, Vodafone Italy, focused his presentation on the customers, as one of the most important drivers in the implementation of technologies and services-in particular, in order to reach the total convergence of ICT infrastructures, customers expect services to be always available. Another important driver is business, where fair competition and therefore cost reduction could facilitate the increased presence on the market of operators and providers with new services, extending the opportunities to the customers. Concerning the technology drivers, he mentioned that Vodafone is re-aligning his network to the emerging technologies (e.g. IMS, All IP), allowing the company to provide services such as video on sharing, push-to-talk and peer-to-peer gaming, ensuring at the same time the quality of the service and reliability.

**24** The session was chaired by **Marco Carugi**, Senior Advisor, Nortel, and focused on creating an enabling environment for tomorrow's networks. This involves not only creating the right technical conditions, but also putting in place and enabling a regulatory framework with clear provisions in areas such as privacy, data protection and cybersecurity.

**25** The session was opened by **Ms. Jane Butler**, Head of Corporate Business Development for EMEA at Cisco Systems. Her presentation looked at the evolution of IP networks. She argued that the transition from today's IPv4 based networks to tomorrow's IPv6 based network will be essential if the network is to be able to accommodate the huge anticipated increase in the number of people and objects that will be connected to the network. She reported on a number of IPv6 projects around the globe in which Cisco is participating.

**26** **Prof. Alan Marshall**, Queen's University Belfast, reported on the issue of providing guaranteed quality of service (QoS) in wireless networks. He also presented some recent research on the transmission of motion and feeling over the Internet, allowing, for instance a virtual handshake. Both QoS and so-called "haptic" systems are needed for future generations of multi-player games, which are among the most demanding future applications.

**27** **Mr. Ricardo Passerini**, Senior Telecommunication Engineer in the Telecommunication Development Bureau (ITU) looked at the possible contribution of NGN to bridging the digital divide. Although the long-standing gap between developed and developing countries is being reduced for mobile services, with more than two billion users worldwide including more than 300 million in China alone, the gap remains in other more advanced technologies. Although Asia has made huge strides in deployment of broadband, other regions, such as Africa and Latin America are lagging behind. He argued that the vision of the NGN should be adapted to ensure that the digital divide is not inadvertently widened.

**28** **Dr. Anthony Rutkowski**, Vice-president for Regulatory Affairs, Verisign Inc., focused his presentation on the need to build into tomorrow's networks, critical infrastructure protection capabilities. He argued, in particular, that security should be given the highest priority. Examples of the types of capabilities that future networks should continue to support include emergency calls (911), legal interception, caller line identification etc. He argued that these types of requirements will tend to favor traditional public telecommunication operators, that own and operate infrastructure, rather than non-facilities-based carriers.

**29** **Mr. Yutaka Miyake**, Senior Research Engineer, KDDI R&D labs, reported on Japan's experience with 3G. Japan was the first nation worldwide to introduce 3G networks with CDMA 1x initially taking off rapidly while WCDMA-based systems have recently started to catch up. The transition from 2G to 3G is progressing in a predictable and smooth pace as users replace their handsets. It is estimated that the

transition will be more or less complete by 2007. KDDI's main focus is now on what it calls "Ultra 3G", which will introduce higher speeds and new concepts – like nomadicity – as well as allowing the mobile handset to substitute for a range of existing functions, from newspaper, to music player, to wallet to keyholder.

**30** **Mr. Giovanni Santella** from the Italian Authority for Communication observed that the replacement of old generation networks with NGNs creates some challenges for regulation Authorities. In fact, some of the NGN attributes (e.g. Always-On, Nomadic, Open IP-enabled Public Network Infrastructure for Communications, Commerce and Content delivery), the rapid introduction of new technologies and cybercrime, generates some difficulties when trying to address common regulatory requirements such as national security and critical infrastructure protection, Legal System Requirements and Consumer Requirements. Competition and innovation of broadband access technologies is enabled by the Italian Authority with specific activities, for example by defining traffic handover interfaces, of the incumbent access network, accessible to competitors and according to specific rules as well as facilitating the transition to an NGN competitive environment through the adoption of certain measures such as:

- market analysis of the wholesale broadband access services
- identify SMP operators and define remedies
- introduction of more flexible broadband interconnection interfaces (bitstream access) to be offered by the incumbent (SMP) operator to the competitors
- support of an efficient spectrum management of the copper network to maximize the use and the diffusion of xDSL technologies
- define clear rules for VoIP providers
- foster the transition to an open IP interconnection between operators.

**31** **Mr. Cosimo Comella**, Head of Technology Department, Italian Data Protection Authority, explained the privacy and confidentiality implications of the Ubiquitous services. He mentioned RFID as a symbolic case, where the symbiosis human-machine could concretely improve the quality of life, although it can also breach individual rights. For this reason the Italian Protection authority, in collaboration with other European Authorities is working towards a general framework for data protection to deal with issues such as:

- Personal dignity and integrity
- Possible impact on freedom of movement
- Processing of personal data without data subject's knowledge
- Increased risks if the devices are integrated within network infrastructures
- Enhanced safeguards for employment context (e.g. under skin implants)

The issuance of the following directives show to what extent Italy, and Europe, in general, have advanced in creating and harmonizing a possible legal framework to deal with customers' privacy and protection:

- Directive EC/46/1995, on the protection of individuals regarding personal data processing and movement
- Directive EC/58/2002, regarding privacy and electronic communication
- Article 29 Data Protection Working Party
  - Working document on data protection issues related to RFID technology
  - January 19, 2005 (WP 105, 10107/05/EN)

**32** **Mr. Francesco Trosi**, Frequency Management and Planning General Director of the Italian Ministry of Communication, presented the Italian bodies involved in spectrum management, stressing, in particular, the duties of the Ministry of Communications whose main task is to develop and adopt technical implementing measures aimed at ensuring harmonized conditions for the availability and efficient use of radio spectrum. In this respect, he described the role of the Ministry with reference to the management and handling of National Allocation Tables and the related activities at national and international level. His presentation also took a closer look at the emerging applications on the radio communication field, paying special attention to WI-FI, DVB-T and WiMAX. He focused on the Italian situation that is very specific for the new regulatory framework in the WI-FI case, for the earlier data fixed for the transition to all digital transmission in the DVB-T case and for the trials currently in course in WiMAX.

## The Italian Path Towards Ubiquitous Networks

**33** **Mr. Aurelio Margerettaz**, Finance and Innovation Councillor of the Aosta Valley opened the brainstorming session addressing the strong commitment of the Aosta Valley towards ICT innovation, as well as describing the project “Being digital in the Aosta Valley” aimed to facilitate the digitalization of public administration, and fostering the information society principle.

He expressed his appreciation for such an event, which offered the opportunity to have discussions with the public, the local Italian administrations as well as the scientific community and the ICT sector players, in order to produce important strategic indications aimed to emphasize the importance of the investment on ICT development in general, and ubiquitous services, in particular.

**34** **Mr. Augusto Rollandin**, Member of the Italian Senate indicated some interesting elements of discussion to be covered during the brainstorming session, pointing out that a Ubiquitous Network Society could not happen without a massive penetration of ICT infrastructures all over the territory, aimed at reducing the digital divide. Some of the discussion points were the following:

- which ICT technologies are most appropriate to the reality of the Aosta valley?
- which strategies or policies at regional and national levels would have to be adopted to reduce the digital divide, (for example, through a capillary diffusion of broadband access and better radio coverage?), in order to enable the future network and service convergence?
- which services such e-government, e-learning, e-health could be implemented and how?

**35** The final session of the workshop, chaired by **Dr Tim Kelly**, Head, Strategy and Policy Unit, focused on the project “Being Digital in the Aosta Valley” as well as related initiatives on digital terrestrial television and on WiMAX. The project, he said, was an important regional trial for the adoption of new technologies, including the early planned switch-off of the analogue TV frequencies.

**36** In opening the session, **Ms. Cristina Bueti**, a Policy Analyst with ITU, presented a case study of the development of a ubiquitous network society in Italy. She focused on the development of innovative applications, in areas like domotics (home automation), identity cards, broadband, IPTV and T-Government (i.e., use of interactive television for governmental applications). She also discussed the decree on Wi-Fi, which was enacted a few days before on 4 October, which marks a further liberalization of this market.

**37** **Mr. Dario Di Zenobio**, a Senior Engineer with the Ugo Bordoni Foundation, presented the “Being Digital in the Aosta Valley” project. It calls for a coordinated investment plan, using open reference models, and is little short of revolutionary in its implications for this region, which has suffered historically from the dual challenges of remoteness from the main centers of population in Italy and a difficult geomorphologic terrain, which means that the transmission of terrestrial signals is difficult. If the experiment proves successful, the results could surely be exported and could represent an Italian best practice with the following important outcomes:

- Concrete implementation of Ubiquitous and Next Generation Networks-like services;
- Concrete attempt to investigate the ICT service convergence concept, integrating two of the most innovative communication technologies in Italy (DTT and WIMAX);
- Concrete attempt towards bridging the Italian digital divide, providing all users identified during the project scope, with a set of ICT services belonging to specific areas of interest, ensuring the QoS and the required service level. Some of these areas of interest, such as medical services, food safety, secured daily life, finance for small- and medium-sized enterprises, education, employment, work and e-government, if properly promoted, will bridge the digital divide and facilitate people’s life.

Three different areas have been selected for the project:

- In the Grand Combin valley, a DVB-T model is used for switchover to digital terrestrial TV, complemented by WiMAX;
- In Valdigne, experiments include DVB-H, supplemented by GPRS, EDGE and 3G;
- In Ayas/Evançon, wireless IPTV applications will be tested, based on WiMAX/HiperLAN/WiFi links.

**Figure 3: The three trial areas**

Source: Being Digital In Valle D' Aosta, Dario di Zenobio, Ugo Bordoni Foundation, October 2005  
[http://www.itu.int/osg/spu/tnt/Documents/DIZENOBIO\\_TNT\\_04.pdf](http://www.itu.int/osg/spu/tnt/Documents/DIZENOBIO_TNT_04.pdf)

**38** **Mr. Michele Morganti**, Senior VP of Technology Innovation with Siemens, presented on “WiMAX: applications scenario and evolution”. He highlighted both the strengths of WiMAX (such as being cost-effective to deploy and providing wide coverage – with a radius of up to 50km) as well as its weaknesses (such as not being able to pass through walls in the 3.5 GHz band or supporting only limited mobility). Overall, WiMAX represents a promising technology in order to help bridge the digital divide which represents a considerable problem even in a country like Italy, where some 5.7 million people live outside the range of today’s fibre/DSL networks, and therefore have no access to broadband.

**39** **Mr. Andrea Ambrogetti**, the chairman of DGTVi, an Italian association for the advancement of digital television, presented “A Year of Digital Terrestrial Television: Balance and Prospects”. Italy currently stands second only to the UK in Europe in terms of penetration of multi-channel satellite/pay TV with around 15 per cent of households subscribing. Around 70 per cent of Italy is also covered by DTT signal and by 2006; eight multiplexes will be in operation. Italy is unusual within Europe in having set a very aggressive date for the switchover to digital (end of 2006) as well as providing a consumer subsidy (worth €90) for the purchase of interactive set-top boxes (STBs). By the end of September 2005, 2.9 million Italian households had acquired STBs of which 96 per cent were interactive. Sardinia and the Aosta Valley are the two regions in which digital switchover is expected to occur first, with dates of 1/1/06 for 70 per cent penetration and 1/8/06 for 100 per cent penetration of STBs.



**40**        **Mr. Thomas Wachter**, Head of Digital Broadcast Technology with T-Systems Media and Broadcast spoke on “The German re-launch of DAB: DMB – Interactive Multimedia Radio and Mobile TV”. A key date in the re-launch is the FIFA World Cup 2006, when it is planned to have a TV highlights service to mobiles available in the 12 cities where matches will be held.

**41**        The meeting was closed by **H.E. Mario Landolfi**, Italian Minister of Communications, who invited the audience to consider the overall goal of reducing the digital divide within Italy. This has been the main aim underlying recent policy announcements, such as the 6-month period of WiMAX experimentation, the WiFi decree and the switchover to digital television. It is important to look beyond the technology towards the broader goals of building an inclusive and interactive information society for all citizens.

**42** Information and Communication Technology is a critical and important component of peoples' lifestyles and is a fundamental enabler of the global economy. In recent years, the development of telecommunication systems and the rapid growth of the internet has led to a framework in which people can access and exchange information freely, at any time, from anywhere, and from any appliance.

For this vision to become a reality, network technologies, content, and user accessibility must be developed in an integrated fashion. The result of this converged approach could be the realization of Tomorrow's Networks which will encompass the creation of a telecommunication infrastructure aimed at ensuring the ubiquitous access to ICT services, while at the same time maintaining quality of services along with the necessary privacy and security capabilities, as well as seamless mobility.

Tomorrow's Networks will have a deep impact on the lifestyle of millions of people and businesses around the world. Users will be offered telecommunication services that transparently use the different network infrastructures; this paradigm shift will bring a wave of innovation, sharing the knowledge available and creating new businesses that will drive cultural changes and growth of economies during the next century.

A significant outcome of the Workshop was an agreement between the ITU Strategy and Policy Unit and the Ugo Bordoni Foundation on future collaboration in the development of the concept of Tomorrow's Networks.

The synergy fostered by the expertise and resources of ITU/SPU and the Ugo Bordoni Foundation is expected to contribute to the fulfillment of the WSIS goal of contributing to building ICT networks and developing services that are available anywhere and anytime, to anyone and on any device.





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