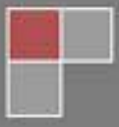
2012
2016

Ministry for Information Society and Telecommunications

STRATEGY FOR THE DEVELOPMENT OF INFORMATION SOCIETY 2012-2016

MONTENEGRO – DIGITAL SOCIETY

December 2011



MONTENEGRO

MINISTRY FOR INFORMATION SOCIETY AND TELECOMMUNICATIONS

STRATEGY FOR THE DEVELOPMENT
OF INFORMATION SOCIETY
2012-2016

MONTENEGRO – DIGITAL SOCIETY

Podgorica, December 2011

FOREWORD

Here is a crucial document which sets the guidelines for further development of information society in Montenegro – the "Strategy for the Development of Information Society 2012 - 2016 - Montenegro - Digital Society."

This Strategy provides a framework for the improvement of information society until 2016 with a clear vision: Montenegro - Digital Society! This vision is focused on everything - economy, civil sector, scientific research and educational institutions as well as public administration which is a generator of change in this area.

Our intention is to group key activities around the need to overcome all the obstacles identified in the analysis of the existing situation and to contribute with implementation of the goals of the Strategy to the recognition of our country in the region and beyond as a country that has used and will use even more intensely advantages of modern technology in the future.

In order to reach these goals we need users with knowledge and skills and as the Digital Agenda of the European Union calls them "digital pioneers" who can teach us many things. The fact that young population in Montenegro uses the Internet at the level of the EU average is our driving force, the foundation for the further development of information society.

The Strategy for the Development of Information Society for the following five year period has been prepared in circumstances that substantially differ from those in which the previous Strategy was prepared. First of all, I would like to mention here that Montenegro is ranked as the 44th country in the world for competitiveness in the area of ICT; then, electronic communications, postal services and radio spectrum are as of this year under the competence of the Ministry for Information Society and Telecommunications; the telecommunications sector in our country has seen consistent growth; percentage of population using computers and Internet has increased; companies are better equipped with modern technologies; therefore, environment that requires new and I would say more ambitious goals has been created.

All these facts have made us define several major goals in our Strategy: to make 200 services provided by public administration available to all citizens by 2016, to have better IT infrastructure, to reduce prices of the Internet, greater competition, greater investments, to have all schools equipped with computers and the Internet, teachers who use ICT tools in teaching process, modern medical services, etc.

To reach all the goals set in this Strategy a strong synergy of all stakeholders involved in the development of information society in Montenegro is needed: the Ministry for Information Society and Telecommunications, other government bodies, universities, ICT

sector, etc. Only through close cooperation, through intensive and open communication we can achieve our ultimate goal - Digital Montenegro.

MINISTER

Prof.dr Vujica Lazović

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INTRODUCTION

Activities aimed at proposing and implementation of policies in the field of Information Society, have been entrusted to the Ministry for Information Society as of 2009, that is, from January 2011 to the Ministry for Information Society and Telecommunications.

The obligation of making a new Strategy for the sector of electronic communications, rapid development of information and communication technologies, understanding the need and importance of the development of broadband infrastructure and access to high speed internet and active policy of accession to the EU have imposed the need to create a new Strategy for the Development of Information Society 2012 - 2016.

At the end of 2010 the European Commission adopted the Digital Agenda for Europe as one of the seven most important initiatives of the European Strategy by 2020, which was established to define a key role of ICT in socio-economic development of the country.

In this context, main goal of the Strategy for the Development of Information Society 2012 – 2016 is to plan activities aimed at the utmost use of social and economic potential of ICT, especially internet as an important instrument of economic and social activities.

Development of the document was preceded by the analysis of the situation in the field of information society where special emphasis was put on the situation in the sector of electronic communications. The aforementioned analysis with related annexes is given in the form of Annexes to the Strategy.

It terms of its structure, the Strategy is organized so to:

- Indicate the need for further and rapid development, bearing in mind Digital Agenda and the analysis of the present situation,

- Draw attention to real problems and obstacles to be overcome,

- Create the vision, goals and objectives to be reached and implemented,

- Adopt Strategy for their implementation by defining basic pillars of the development and programs for their implementation,

- Establish goals, objectives and action plans for each programme, and in the end

- Establish preconditions and mechanisms that will enable their implementation.

“Montenegro - digital state - a country that has recognized social and economic potential of ICT and broadband,” is the vision of the development of information society in the following five-year period. For the implementation of the vision five pillars of the development have been identified (ICT sustainability, ICT for community, ICT for public administration and ICT for economic development and the development of media and radio-broadcasting market), which are followed by ten programs with individual goals and objectives.

1 MONTENEGRO – DIGITAL SOCIETY

1.1 Digital Agenda for Europe

Digital Agenda for Europe is one of the seven leading initiatives whose goal is to define a key role of ICT in the implementation of the Strategy "Europe 2020." Purpose of the Digital Agenda is to present a way to increase social and economic potential of ICT, first of all the Internet as an important medium for all economic and social activities. More efficient use of digital technology will enable Europe to look at key challenges, which will contribute to a better quality of life.

ICT sector is directly responsible for 5% of GDP in Europe, with market value of 660 billion EUR a year, but it contributes far more to productivity growth (20% directly from the ICT sector and 30% from the investments in ICT). The reason for this situation lies in a high level of dynamism and innovation which are inherent to this sector and the role this sector has in changing the way in which other sectors operate.

Based on consultations with all interested parties and insight into the Declaration of Granada and the Resolution of the European Parliament, the Commission has identified seven major barriers:

- Fragmented digital markets;
- Lack of interoperability;
- Increased cyber crime and low confidence in networks;
- Lack of investments in networks;
- Lack of research and innovation;
- Lack of digital literacy and skills.

Individually or in combination, these barriers seriously undermine the efforts to use ICT, and it is clear why a comprehensive and unified response at the European level is needed. This is also indicated by the fact that 30% of Europeans have never used the Internet!

In recent years Internet access in Europe was mainly based on first-generation broadband technologies, which cannot be a satisfactory having in mind dynamics of the development of technologies and services based on the Internet and increasing number of users of these services. Thus, what would be more than desirable to implement in Europe is a rapid development of the next-generation access networks, that is, in other words, a significant improvement and facilitated access to the Internet for the users in Europe.

One of the indicators of the network development (in this case the entire European network) is the representation of the so-called FTTH (Fibre to the Home) technology. Basically, this technology means that users can access global network from their homes using fibre optic links, which are much more advanced and more stable compared to the

existing links and most importantly, provide significantly higher speed Internet access. When it comes to high-speed networks based on optical fibre cables, penetration in Europe is only 1%, while in Japan it is 12%, and in South Korea 15%; 40% of the amount spent in total in the USA is spent in the EU for the ICT research and development.

Main goal of the Digital Agenda is to make Europe closer in the next decade to the level of development of Internet access set by the above-mentioned countries and to provide sustainable economic and social benefit from a single digital market based on fast and ultra fast Internet and interoperable applications. This can be achieved only by segmenting the overall goal to several multiple periodic tasks:

- Availability of broadband access

- Basic approach ⇒ 100% of the EU population by 2013

- Quick access (30 Mbit/s or more) ⇒ 100% of the EU population by 2020

- Ultrafast access (100 Mbit/s or more) ⇒ 50% of the EU households by 2020

- A unique digital market;

- Digital inclusion: increased use of the Internet to 75% of the EU population by 2015

- Public services;

- Research and development: increased spending for ICT to EUR 11 billion;

- Economy with reduced carbon emission.

Task of the European Commission in this process is to secure stable legal framework that will stimulate investments in an open and competitive fast Internet infrastructure and related services, to create a single market for online contents and increase its support to the business part of the ICT sector. The EU member states are tasked to develop operational strategies for the fast Internet development and secure public funding and encourage development and use of modern online services.

National plans and strategies vary from member to member, and the following general trends can be noticed:

- Plans and strategies relate to the period of three to five years for basic broadband access, and seven or more years for fast and ultrafast broadband access;

- Goals are set in relation to the coverage of certain percentage of population i.e. households with broadband access of specific or minimum speed;

- Goals are different for basic broadband access and fast, that is, ultrafast broadband access;

- Plans and strategies promote, for the purpose of achieving these goals, introduction of new generation networks, using technology of optical fibre based on FTTx standard in fixed

communications network, and the allocation and use of available radio-frequency spectrum for the development of mobile communications networks;

- Funds needed to implement the established goals are provided.

Availability of fast and ultra fast broadband access in national strategies of the European Union member states mostly refer to coverage of 100% of the population with access speeds of 20 Mbit/s to 100 Mbit/s in the period by the end of 2015.

1.2 ICT for Knowledge-Based Society

As a source of long-term economic growth since the time of industrial revolution, knowledge arises as a new "growth driver." Under the influence of the development of ICT and the development of qualitatively different social relations, a multiplicative effect of the application of new knowledge accelerates transformation of modern societies. Contemporary economic flows are based more on the use of new ideas, information and acquiring new knowledge and skills, rather than on material resources. Knowledge-based production seems to be "intangible," "easier" and "more moveable," making it more competitive in the global goods and services market (service economy).

For a small country such as Montenegro in order to increase competitiveness of society it is necessary to put more emphasis on the development of inclusive society focused on citizens, knowledge-based economy and more efficient public administration. Participation of citizens in a knowledge-based society implies access to the Internet and ICT-based services.

Public administration is tasked to assist in the creation of conditions for greater participation of citizens through ICT, which will improve and increase efficiency and effectiveness of operations of all government bodies and services and will facilitate access to them. Also, it will contribute to the improvement of social welfare and quality of life, facilitating communication and networking, which will all affect the efficiency and productivity in all spheres of social life.

1.3 Strategic Importance of ICT to Montenegro

The Government of Montenegro and the Ministry for Information Society and Telecommunications recognize ICT as a sector of crucial importance for the country's economic development, social welfare and competitive position of the country in the region and Europe in the same way as they recognize the importance of ICT for the implementation of other national development priorities:

- ***Economic development***: actively contributes to the development of GDP, directly facilitating the development of other economic sectors by attracting foreign direct investments (FDI) and by creating new jobs and new pathways for sustainable development;

- ***Social development***: by ensuring safety, security, stability and equal opportunities for everyone, actively encourages all citizens of Montenegro to participate and contribute to the development of digital society.

- ***Human development***: improvement of citizens' skills and knowledge through training and educational services with creation of high value jobs and increasing skills and productivity of employees in all economic sectors.

The ICT development:

- Contributes to the strengthening of national competitiveness at the European level;

- Introduces creativity and encourages entrepreneurship, enabling new business models while adding value directly to economy;

- Creates attractive employment opportunities by developing base of talents and skilled labor;

- Increases productivity and efficiency in all businesses via the automated processes, enables easier access and dissemination of information;

- Provides social equality by providing greater accessibility to the rural population and social cases;

- Improves access to education and enables lifelong learning for all citizens;

- Facilitates healthcare services through more accurate and prepared information for patients;

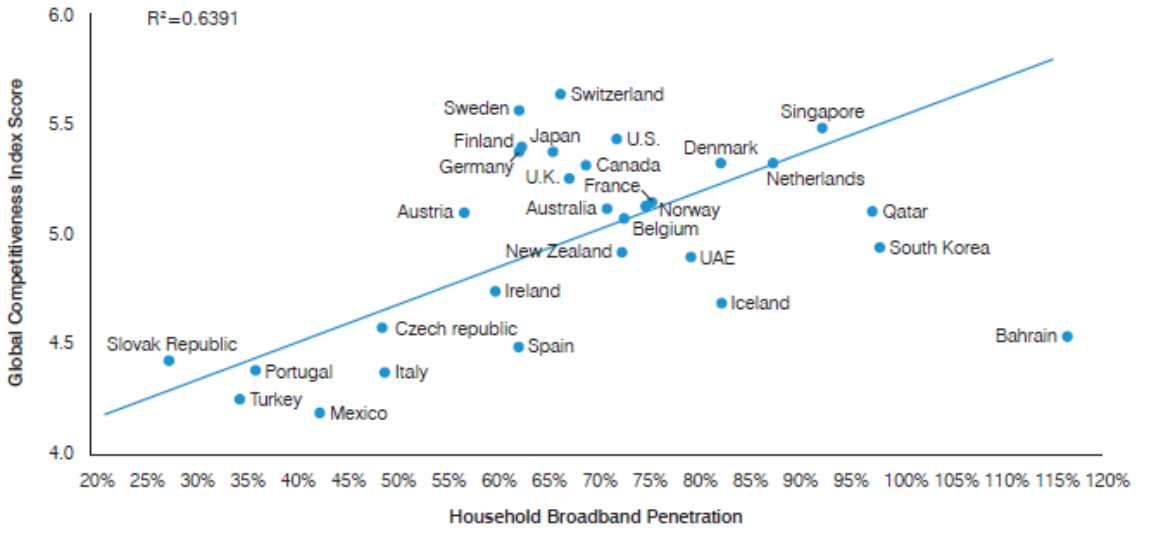
- Increases availability through electronic communications, improves efficiency and minimizes time for decision making.

ICT as a mechanism which encourages national economy was recognized in the Strategy for the Development of Information Society 2012-2016. But in order to contribute to the development, it must be a Strategy and platform for all government bodies in Montenegro and its services. In this sense, implementation of the Strategy requires collective efforts of all stakeholders: national authorities, agencies and services, private sector, all users and the overall community.

1.4 Obstacles to the development of ICT in Montenegro

Aware of the importance of the development and application of ICT, in the previous period Montenegro has made significant steps in this direction. This is very clearly identified in the World Economic Forum ranking - the Network Readiness Index (NRI), where it is ranked to the 44^{th} position of a total of 138 countries, far above other European countries in the region. With penetration of mobile network users of nearly 200% and penetration of Internet users which is continuously growing, it is evident that the ICT sector in Montenegro is undergoing rapid growth.

COMPETITIVENESS VS. BROADBAND PENETRATION, 2010



Note: "Global competitiveness" is defined as the set of institutions, policies, and factors that determine the level of productivity of a country.
Source: World Economic Forum, 2010; Booz & Company analysis

As presented in the digital Agenda for Europe, the growth of broadband market must be a national priority for all developed markets, because it is widely recognized as a key platform for the overall socio-economic development. The chart below clearly shows that national competitiveness is directly related to the broadband use. High-speed broadband access enables citizens and companies to communicate and produce faster and more efficiently.

According to the research conducted by OECD increase in investments in the field of electronic communications of 8% conditions gross domestic product growth of 1%, and based on the World Bank Group research the increase in penetration of broadband connections by 10% enables gross domestic product growth of 1.38% in developing countries, that is, 1.21% in the developed countries.

Despite a significant increase in mobile sector, broadband market, according to the European standards, has not reached its full potential yet. The analysis of the development of broadband access in Montenegro shows lagging behind when it comes to the number of broadband access connections in relation to the average of the European Union member states. There is a considerable unevenness in the density and the number of broadband connections in the areas/regions, which is caused by unfavourable demographic structure, lack of knowledge about the ways of how to use information and communication technologies by some citizens and the lack of availability of broadband access infrastructure in all regions. Analysis of the current technological representation shows the dominance of one type of access associated with the existing communication network of

copper wires, which meets current options, but does not enable relevant qualitative step forward in accessibility to the broadband Internet that is high-speed Internet access.

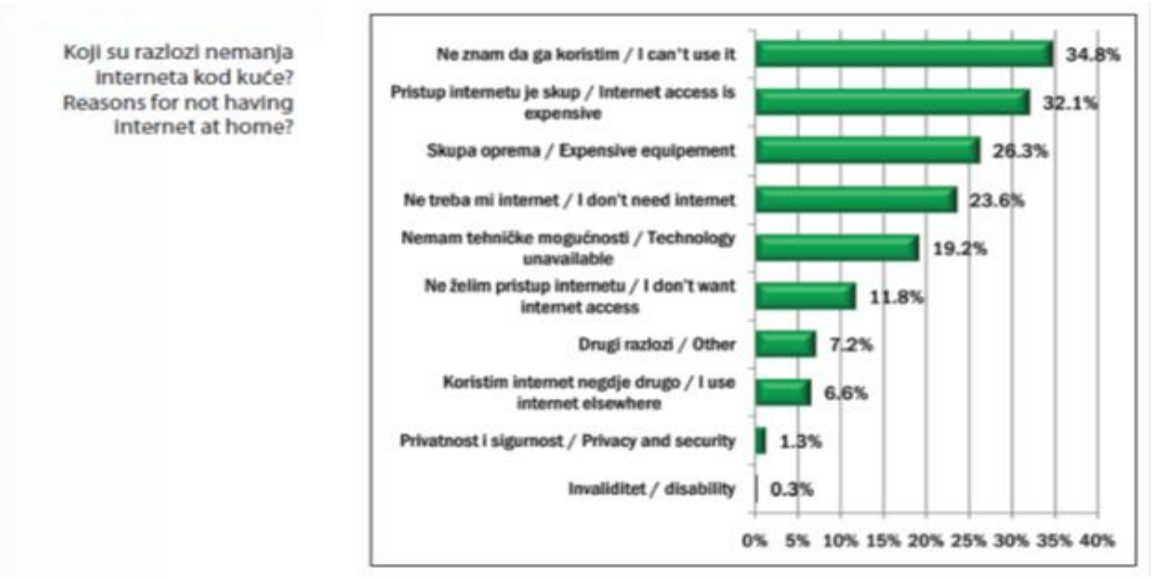
Currently, broadband market in the country, regardless of the access to technology used, is far from the European average of 27%. The lowest rate among the EU-27 countries is 14%. Parallel to this, in Montenegro, the ratio between the mobile sector and broadband use is 17:1, whereas the average in EU-27 countries is about 4.5:1. This shows that broadband market in Montenegro is not sufficiently developed, particularly in relation to other services that are provided in electronic communications market. In contrast to this, citizens of Montenegro undoubtedly show great interest in broadband connecting and the use of modern and in terms of capacities demanding multimedia applications.

As shown before, it is of great importance for Montenegro to direct all its strengths towards the development of broadband market. In this way, faster development of ICT sector will be enabled, and then the socio-economic development. While analyzing the way of using ICT in Montenegro in a recently published Study (Research of the Use of ICT in Montenegro, April 2011), the following reasons were identified as key reasons for not using the Internet:

- Lack of education and understanding of the necessity and advantages of using the Internet - **lack of unique digital literacy**;

- High cost of access to the Internet and related equipment - lack of effective competition in the broadband market;

- Lack of Internet/broadband technology - **lack of broadband infrastructure**.



1.4.1 Lack of Unique Digital Literacy

Younger population in Montenegro uses the Internet almost on the level of the EU average. On the other hand, population aged 25 to 54 lags significantly behind that average. That is

why it is important to provide ambiance and adopt incentives that will improve ICT involvement and thus enable a broadband Internet access to all citizens of Montenegro – “BROADBAND FOR ALL.”

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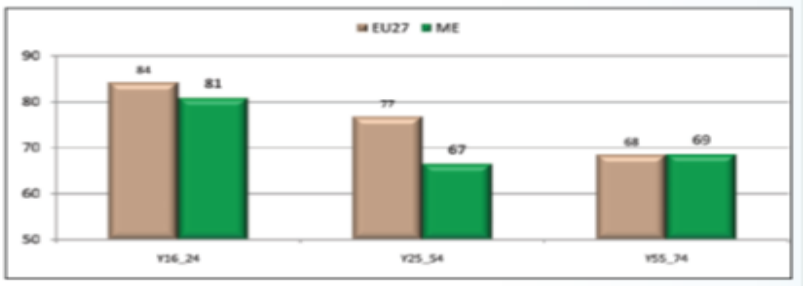
Poređenje EU i CG u svakodnevnom korišćenju interneta po starosnim kategorijama u odnosu na one koji su koristili internet u posljednja 3 mjeseca
Comparison between use of internet within age groups in EU and MNE within last three months



Focus must be put on the following:

- Encourage activities aimed at further stimulation of utilization of ICT among all age groups and all regions of the country, and raise awareness of citizens about the importance of ICT, which will be achieved by training all age groups throughout Montenegro. In that sense, it is necessary to provide high availability and use of ICT services among students, provided most attractive services of public administration on the eGovernment portal, encourage companies to implement ICT training and encourage all the employed to use the Internet in accordance with standards, etc..

1.4.2 Lack of Efficient Competition in the Market

Despite the fact that broadband retail prices have significantly decreased during the previous period, they still represent a significant burden on average salary of citizens of Montenegro. An average 2Mbps broadband package is priced at € 18 per month, which amounts to 4% of average monthly salary, while the equivalent European average is almost lower than 1%. The situation is similar with wholesale Internet prices.

Therefore, focus must be put on the following:

- Prompt and active engagement in the activities of regulation of market which will encourage further development of competition when it comes to broadband. It is necessary to urgently implement a rigorous, effective and timely “bitstream, line-sharing and local loop unbundling[1]” regulation of operators with the biggest market power. Based on the pace of opening the "last mile" access, and by providing access to other service providers, it is essential that the Regulator examine other possibilities of available mechanisms of regulation (which are not foreseen by the existing law provisions), including a summary of functional and structural separation.

[1] Regulation: wholesale broadband access, the joint utilization of subscriber lines and analyze the local loop
[2] Long-term prjected incremental costs (cost model)

- Adoption of the regime of forming the price based on costs (Long Run Incremental Costing[2], Fully Distributed Costs[3], etc.), to revise and define prices charged by the dominant operator in the market of broadband access, and in the market of backhaul/transport network, Internet transit and international Internet market.

- Provide increase in mobile broadband markets by accelerating the project of digitization.

1.4.3 Lack of Broadband Infrastrucutre

Based on the data provided by the Electronic Communications Regulator, at the present only 21% of Internet subscribers have access to broadband networks with speeds exceeding 2Mbps. In relation to the European average, where more than 23% of subscribers have access to broadband networks with speeds of at least 10Mbps and average broadband coverage of 95% of the population, current situation in Montenegro, in order to be improved, requires taking urgent measures. It is necessary to create environment and allow for investments in broadband infrastructure as a platform for the improvement of the overall socio-economic development.

Focus must be put on the following:

- Encourage Internet service providers to effectively improve speed of broadband access in accordance with policy guidelines and vision;

- Encourage Internet service provider to enable symmetrical broadband access with guaranteed flow capacities for remote users;

- Provide adequate, reliable, accessible international Internet connections which will allow for future broad access bands while maintaining the specified quality level;

- Identify optimal funding mechanisms (e.g., concessions, public-private partnership, direct public investments) which will contribute to the efficient development of accession broadband networks.

1.5 Vision

Technology can be crucial for obtaining information but technology itself cannot contribute to socio-economic development of Montenegro, nor will any obtained pieces of information do it until they are exchanged in time and a form acceptable to users and only when users learn how to use information in the right way. Information, communication, technology and knowledge must be viewed as a system that functions as a whole in which each of these components has a unique role in the development.

Bearing in mind the actual status of ICT in Montenegro and obvious achievements accomplished in recent years, an ambitious strategy will enable the development of information society and provide benefits for all stakeholders.

[2] Long-term prjected incremental costs (cost model)
[3] Fully distributed costs (cost model)

In this sense, the vision by 2016 must be clear: “Montenegro-digital state - country that has recognized social and economic potential of ICT and broadband.”

As a result of the vision in 2016 benefits from the development of ICT and broadband services and solutions in key aspects of society and economy must be recognized and easily measurable. In addition, ICT will contribute to easier and faster integration into the European economy by affirming Montenegro as a regional centre for ICT business opportunities, entrepreneurship and creativity.

1.6 Goals and Objectives

Main goals to be achieved by this Strategy are as follows:

- Achieve preconditions and define directions of further accelerated development of ICT sector and broadband;

- Increase interest and provide investments in ICT sector and broadband;

- Encourage competition in the market of electronic communications;

- Provide accessibility to the Internet broadband access;

- Encourage end users, citizens and business entities to use available ICT tools and services in everyday life and business;

- Ensure the application of cutting-edge technology solutions.

Significant support to the development of ICT sector by the state should be reflected through the creation of conditions, creation of environment and provision of financial support for the implementation of quality initiatives and projects. Stable ICT sector should be the platform for implementation of the set goals, plans and programmes of all social and economic activities. State and ICT sector must work together to eliminate business barriers at all levels. Precondition is the inclusion of all relevant factors with the obligation to actively participate in further development of the knowledge-based society and information society on its way to a digital society.

Modern digital society requires a strong and generally available infrastructure that enables high-speed broadband connections for all households and companies under equal conditions, which also provides solid, relevant and reliable international Internet connections. Because of this, one of the main goals is to create preconditions for the accelerated development of fast and ultrafast broadband networks that is infrastructure for broadband Internet access.

Latest broadband services (education via Internet, social networking, high quality IP TV, work from home, etc.) require adequate transmission capacities (more than 20 Mbit/s) that can be achieved through optical access infrastructure and corresponding next-generation wireless technologies. Accordingly, it is necessary to create appropriate incentives for the investment in wire and wireless networks of new generation. Also, new and broader

government bodies' services availability via the Internet will provide more efficient public institutions and a very active civil society where high quality services that meet the needs and emergency requirements of its citizens and companies will be provided.

Parallel to the above mentioned, through the effective implementation of this Strategy by 2016 Montenegro wants to achieve the following visible, clear, measurable and key goals:

- Increase the share of ICT sector in GDP by 50%,

- Enhance workforce in ICT sector by 50%,

- Raise the possibility of broadband access that is high-speed access by providing a symmetrical, guaranteed access to broadband (agnostic approach) of at least:

- 10Mbps for 50% of the population by 2014

- 10 Mbps for 100% of the population, and 30Mbps for 50% of the population by 2016

- Achieve mass acceptance of ICT and the Internet and improve digital inclusion and reach the level of:

- use of the Internet of 70% by 2014 and 80% by 2016

- broadband access – of 25% by 2014 and 40% by 2016

- Provide wide accessibility to the most used electronic services of public administration: to ensure accessibility of 100 most used services of government agencies and local self-governments on the eGovernment portal by 2014 that is 200 services by 2016.

1.7 Strategy – Five Pillars of Development

Based on the above mentioned, five strategic national pillars of development of ICT are defined in a manner to ensure the planned vision through a direct implementation of the set goals and objectives:

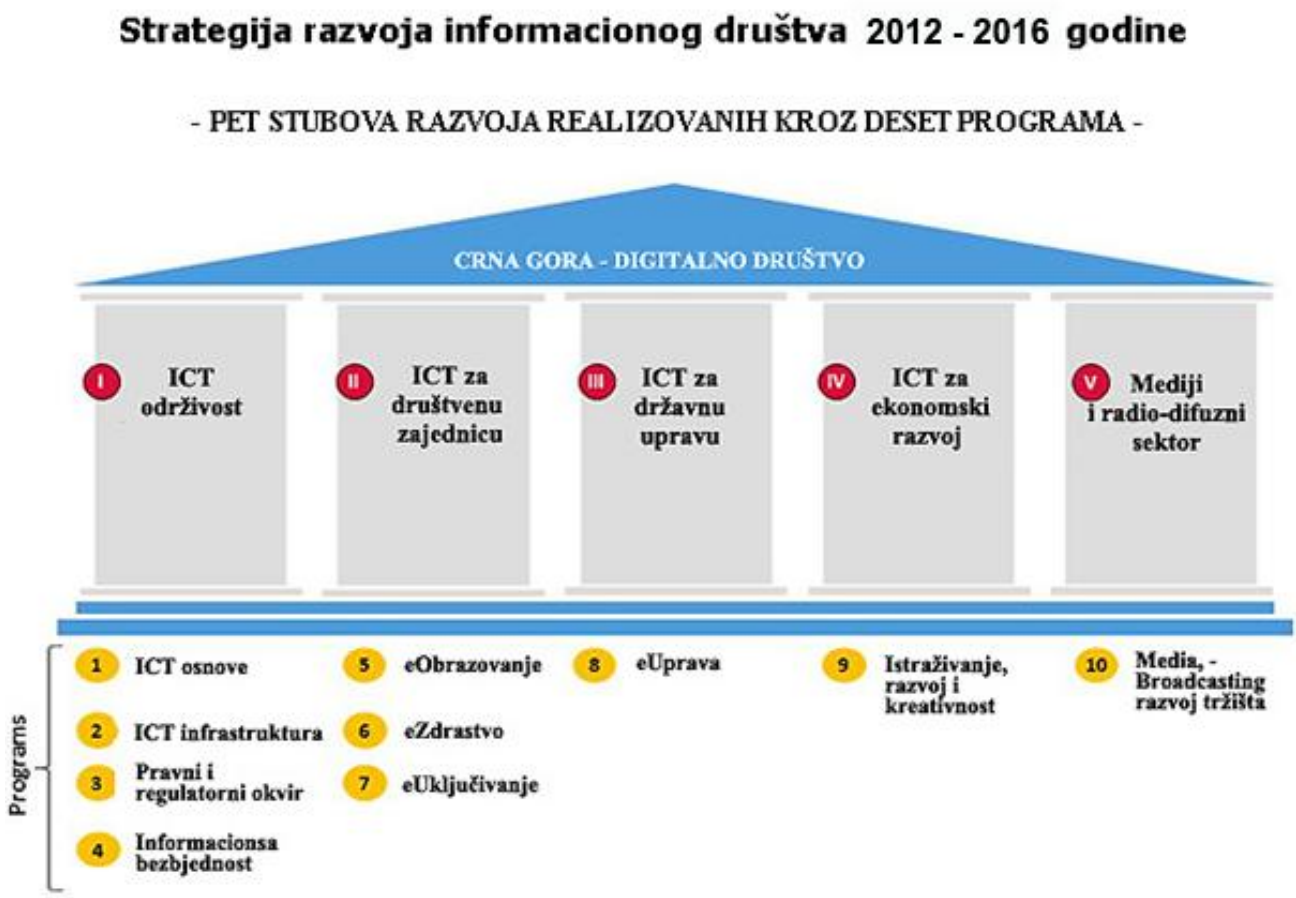
- **ICT sustainability**: It will provide that all citizens, companies and public administration have a comfortable access to ICT high-speed infrastructure, high-quality and high-capacity international Internet connection and legal and regulatory framework to support competitive and sustainable ICT system.

- **ICT for community**: To strengthen ongoing activities and include new actions that will further stimulate economic sectors and academic institutions to use ICT.

- **ICT for public administration**: To enable further development and defining of eGovernment and encourage public administration and key economic sectors to use innovatively ICT, to increase productivity and concentrate on customer requirements and service quality.

- **ICT for economic development**: Encourage productive and sustainable ICT system by making the ICT base of new generation talents while encouraging creativity and entrepreneurship.

- **Development of media and broadcasting market** - Provide rapid development of electronic-communications networks and services, conditions for healthy competition in the market, economy and introduction of new technologies and services in this sector, the application of international standards and principles, especially more efficient use of radio-frequency spectrum as a limited natural resource.



These five pillars are supported by ten national ICT programs which ensure implementation of the Strategy:

1.7.1 ICT Sustainability is supported by four national ICT programs aimed to ensure accessibility to necessary technology, spectrum and modernized regime of licensing, accessibility to the required, adequate and accessible broadband infrastructure, to create safe and secure ICT environment and further develop legal and regulatory framework for the efficient development of ICT sector.

- **Program 1 - ICT basics** – create preconditions for the development of ICT infrastructure and above all, infrastructure and technical solutions, regime of using radio-frequency spectrum and licensing system in order to enable ICT growth.

- **Program 2 - ICT infrastructure** aims to provide quality broadband Internet access of all citizens and enterprises in Montenegro. Parallel to this, it should provide adequate, affordable and reliable international Internet connection which will address all current and future requirements and throughput capacity at the state level.

- Program 3-ICT policy-regulatory framework – its goal is to improve policies and regulations to foster competition in the ICT market in Montenegro, and create ambience that will provide investment and creativity.

- **Program 4 – Information security** is aimed to provide safe and secure information space, by strengthening digital confidence of all stakeholders of information society, while protecting national ICT infrastructure.

1.7.2 ICT for Community is supported by three national ICT programs aimed to improve access of citizens, and to improve efficiency of use of modern technologies in education and health while providing necessary skills and tools which would become more competitive in the region and Europe.

- **Program 5 - eEducation** aims to improve experience of learning through ICT, to constitute ICT as an important part of curriculum and education and to create basic ICT capacities which will enable students, teachers and schools to achieve their full potential and contribute to the national development.

- **Program 6-eHealth** aims to enable healthcare facilities, physicians and patients to benefit from ICT, to facilitate access to the most recent medical information and data, to contribute to the development of timely, accessible and efficient health services for all.

- **Program 7-eInclusion** aims to bridge digital gap in Montenegro by increasing ICT skills and use for all, regardless of age groups and geographic distribution.

1.7.3 ICT for Public Administration is supported by one national ICT program, which includes encouraging the use of portal **eGovernment** by encouraging citizens and businesses to use electronic services of public administration.

- **Program 8-eGovernment** is aimed at further modernization of operations of public administration by using ICT and enabling all users' access to affordable, simple and secure services of public administration.

1.7.4 ICT for Economic Development is supported by one national ICT program aimed at accelerating the growth of ICT sector by building local base of ICT talents and by encouraging creativity and entrepreneurship among the community of ICT investors and other interested parties.

- **Program 9 – research, development (R & D) and creativity** are aimed to develop ICT sector by encouraging creativity and entrepreneurship while providing long-term sectoral sustainability through research and promotion of the sector development (R&D), incubation, access to funds and resources, and strategic regional and international partnerships.

1.7.5 Media and Radio-Broadcasting Sector

Program 10 - Development of media and radio-broadcasting markets

A successful implementation of the Law on Electronic Media and the Law on Digital Radio-Broadcasting is the backbone of this sector's development.

Adoption of the Law on Electronic Media as well as the amendments to the Law on Electronic Communications in August 2010 created a set of complementary solutions in terms of segregation of duties between the Agency for Electronic Media and the Agency for Electronic Communications and Postal Services, as a regulator of the sector of audiovisual services and electronic communications sector. One of these is the Decision based on which the Agency for Electronic Media is awarded responsibilities concerning the right to call public tender and award rights for the use of radio-broadcasting frequencies for broadcasting or distribution of radio and TV programs i.e. AVM services.

With this Law Montenegrin legislation was harmonized with the EU Directive on Audiovisual Media Services (AVMS Directive) to a large extent. Having this in mind, the new Law, apart from traditional radio and television services, advertising services, sponsorship and teleshopping gives new definitions and classification of AVM services. They are systematized as follows:

- Electronic media (radio or television program). Apart from the current classification to public and commercial broadcasters, the new Law foresees work of non-profit broadcasters.

- AVM on-demand services - service which allows the reception of radio and/or television programs based on individual user request and catalog of programs selected by the AVM service provider, which is available exclusively on the basis of user contract or another form of prior individual authorization, and

- Commercial audiovisual communication in the form of radio and television advertising, teleshopping, sponsorship or placement of products.

Montenegro provides freedom of reception and rebroadcasting of AVM from the European Union member states and other European countries signatories of the European Convention on Transfrontier Television, and in some cases it may restrict freedom of reception and rebroadcasting, in accordance with international agreements and the Law on Electronic Media.

The Law on Digital Broadcasting was adopted in mid-2011 bringing solutions that should accelerate the process of transition from analogue to digital broadcasting systems. The Law stipulates that operator of the first network and multiplexes will be "Broadcasting Centre of Montenegro" Ltd (BCM) which will be obliged to transmit and broadcast two television programs of TVCG in standard quality (SDTV). Apart from TVCG programs, BCM will have the right and obligation to transmit the signal of those broadcasters who gain the right based on public tender to access the capacity of the first multiplex.

2 ICT Sustainability

2.1 ICT Basics - *Program 1*

2.1.1 Technological Framework

Infrastructure of fixed communications networks

In terms of information capacity, the most important parts of electronic communications networks are:

- **Transmission segment**, which allows a large transmission capacity and transmission of information at long distances (long-haul networks), and

- **Access segment**, which has a lower transmission capacity and is used at relatively short distances and to the end user.

Operators in Montenegro have so far planned, built, maintained and exploited their own transmission segments of network independently from each other. For this reason, at this moment, there are multiple transmission networks used by operators in order to connect various elements in their networks. Transmission networks are implemented by using modern technologies (SDH, DWDM, MPLS, etc.) which use optical fiber or radio transmission system as physical medium.

Access segment of networks in Montenegro is mainly based on copper twisted pairs as in most countries in Europe. Copper twisted pairs have for years been the dominant medium for access of end users to electronic communications services offered by operators. In the last few years networks based on other access technologies (coaxial cables, fixed wireless access systems (WiMAX, RLAN, etc.))have been developed in Montenegro. In particular, it is important to emphasize the beginning of building of access networks based on optical fiber (FTTH) by individual operators.

It can be assumed that further development of fixed communications network will go towards the development of the next generation networks - NGN. Basic idea underlying the NGN is that one package-based network transmits all kinds of information and services (conveying voice, data, multimedia, etc.).

As for the access networks, development of access networks based on FTTx technologies can be expected. Dynamics and the extent of development of such access networks certainly represent one of the key elements for the development of new and the improvement of the existing electronic communications services as well as the entire ICT sector.

Infrastructure of mobile communications networks

A wide range of mobile communications services in Montenegro is provided through three terrestrial mobile communications networks. All three networks are based on the

harmonized standards of the second generation (GSM, including its improvements in GPRS and EDGE) and third generation (UMTS, including HSDPA and HSPA +). In all three operators, 2G and 3G networks operate integrally with an integrated core of network and shared transmission network.

Degree of technological development of modern mobile communications networks is reflected in the performance of network able to support primarily broadband data services. When it comes to *data* services, GPRS is implemented at all GSM/DCS1800 radio base stations for all operators, EDGE is available in all major populated areas, while the UMTS / HSDPA is implemented in urban parts of cities. As already known, GPRS allows flow of 53 kb/s towards the user (theoretical maximum of 115 kb/s is limited by the terminal), EDGE allows flow of about 230 kb/s towards the user (theoretical maximum of 384 kb/s is limited by the terminal).

Theoretically in the UMTS network it is possible to execute maximum flow rate of 384 kb/s, while in the networks of Montenegrin operators HSDPA improvement (3GPP Release 5) is implemented, which enables a maximum flow rate of 1.8 Mb/s to 7.2 Mb/s towards the user (*downlink*). As already mentioned, mobile operators have already implemented in their networks in urban parts of the larger cities HSPA + (3GPP Release 7), which allows maximum flow of 21.1 Mb/s towards the user (*downlink*) that is 11 Mb/s from the user (*uplink*). However, the actual flow at the application level is often significantly lower for the reasons which do not always have to be related to the network. Using broadband services with flow rates above 3.6 Mb/s is significantly limited by availability of terminals that support such flows, whether these are *handheld* terminals, or USB that is PCMCIA modem.

It is assumed that the further development of mobile communications networks must go towards a broader implementation of HSPA + technology, through the implementation of UMTS networks in lower radio frequency bands (900 MHz and 1800 MHz), which will lead towards a complete abandonment of GSM and to the development of networks based on new technologies (LTE and SAE) in mobile networks. These technologies define future requirements for network access (LTE) and core of the network (SAE) in mobile networks. In the 3GPP Release 8 a new physical layer for wireless network that allows flows of 100 Mb/s in the *downlink,* i.e. up to 50 Mb/s on the *uplink* and *all*-IP commutation is specified. The new concept is based on OFDMA technique of access to *downlink* and is known as *Long Term Evolution* – LTE.

Infrastructure for distribution of radio-broadcasting programs

Operators who carry out distribution of radio and TV programs via cable network based on coaxial cables are usually local in character and provide their services in the territory of some municipalities in Montenegro, while MMDS, DTH and IPTV operators distribute radio and TV programs in the territory of the whole country.

Besides the distribution of radio and TV programs, KDS systems are used to provide a range of other services, particularly broadband access to the Internet, using the DOCSIS 1.0 standard.

It is expected that in future KDS systems will continue to improve, which will enable provision of a variety of electronic communications services to customers such as: high speed Internet access, video surveillance, telemetry video on demand or IP telephony. Implementation of DOCSIS 3.0 standard is also expected which will enable high-speed Internet access.

Modern cable distribution systems in addition to the distribution of radio and television programs allow for the provision of Internet services and telephony. Network through which radio and television signals are transmitted use coaxial cables, HFC networks and fiber optic cables. Operators are increasingly investing in the existing networks and coaxial networks are replaced with HFC and optical networks, whose technical features are at a significantly higher level compared to characteristics of coaxial cable. In this way they contribute to raising the quality of services, offering new services and thereby increasing the number of active users.

Infrastructure for Internet/Broadband

Broadband access services may be provided through a variety of electronic communications networks. The most important electronic communications networks through which services of broadband access are provided are as follows:

- Cable networks:

♣ The existing telephone networks (xDSL - networks based on copper cables)

♣ Next generation networks (FTTx - networks based on optical fiber cables)

♣ Cable operators networks (networks based on coaxial cables)

♣ Hybrid optical-coaxial networks (HFC).

- Wireless networks:

♣ GSM/GPRS/EDGE - second generation mobile networks,

♣ UMTS / HSDPA / HSPA + - third generation mobile networks,

♣ Wi-Fi - wireless local area networks,

♣ WiMAX - Fixed Wireless Access,

♣ LTE - fourth generation mobile networks.

Although networks based on optical cables allow higher transmission rates than networks based on copper cables it is predicted that copper twisted pairs, due to its prevalence in the access infrastructure and application of xDSL technologies, will remain to be a

dominant medium for the provision of quality broadband services with minimal investment for a long time.

Availability of broadband access of the existing copper access network, as well as the speed of broadband access can be increased:

- By applying new optimization methods/algorithms and methods of work without any change in the length of the connection – by the application of the method of spectrum management or L0/L2 model of work,

- Inclusion of advanced xDSL technology, which requires shortening of the copper twisted pair and extension of the network based on optical cables.

Technique of alignment of spectrum and signal known as spectrum management are essential for better use of the existing access network in the provision of high-quality broadband services. As for long copper twisted pairs (local loop) transmission speed can be increased by shortening the length of copper twisted pairs (local sub loop) and with their gradual replacement with optic fiber (FTTC approach) preferably to the end user (FTTH).

The largest number of users (over 95%) who have access to fixed public telephone network can have a fixed broadband Internet access. Users in urban areas of all municipalities in Montenegro can have mobile broadband access (via the third-generation mobile networks).

As outlined in the previous text which refers to infrastructure for the provision of various types of electronic communications services, further development of infrastructure will go in the direction of convergence, where the main challenge will be to develop access networks that will provide access to high and ultra high-speed broadband access. In this context particularly important is of course the development of cable access networks based on FTTx technologies, as well as the improvement of the existing and the development of fourth-generation mobile networks (LTE).

Internet protocol of version 6 (IPv6)

In recent years, the Internet is experiencing exponential growth - the number of users is increasing and types of technologies used for Internet access. By integrating traditional networks, which are based on IP protocol, with other user communication networks and systems, new needs and requirements that the current version IPv4 protocol cannot satisfy are created. Since the IPv4 protocol cannot meet the requirements for an increasing number of Internet users, because of its limitations in addressing (IPv4 address space allows about 4.2 billion IP addresses), the lack of address space will be resolved by using the IPv6 protocol. It is expected that the amount of available (free) IPv4 address will be exhausted by 2011 or at least 2012. This is why it is necessary to prepare a plan to migrate to IPv6, in accordance with relevant decisions of the European and international bodies (Declaration of the Committee of Ministers of the Council of Europe on the management of addressing capacity of the Internet protocol in public interest, 2010 and Resolution

WGPL/8 Plenipotentiary Conference of ITU (Guadalajara, 2010) – "Facilitating transition from IPv4 to IPv6").

2.1.2 Radio-Broadcasting Spectrum Framework

Radio-frequency spectrum is a very important resource for the improvement of infrastructural base for achieving goals and vision of the future development of ICT sector, especially at the access level. Development of wireless access networks (fixed or mobile), based on modern, spectrally efficient technologies (LTE, WiMAX, 4G) can provide broadband access relatively quickly and with significantly less investment in relation to the construction of cable/fiber infrastructure, particularly in the areas where cable/fiber infrastructure is weak, including rural and sparsely populated areas. Also, by stimulating development of wireless networks further improvement of competition in access segment is provided and pressure is put on the existing operators to increase quality and reduce the prices of broadband services.

Spectrum policy – In relation of relation to the solutions from the current legal framework, the following changes could help create legally more stable and for the investment more attractive regulatory framework:

- foresee awarding exclusive use of radio frequencies in the entire territory of Montenegro exclusively within the procedure of public tender;

- foresee the procedure of public tender for awarding radio frequencies based on the principle of sealed bids, auction or a combination of these two methods;

- allow awarding authorizations for the use of radio frequencies on exclusive basis in the entire territory of Montenegro for a period of 15 years or longer.

Spectrum refarming[4] - Implementation of new, more advanced technologies instead of those for which radio frequencies have already been awarded/approved (*spectrum refarming*) contributes to greater flexibility and efficiency of the use of spectrum and allows improvement of infrastructural base for the provision of broadband services. Spectrum refarming is implicitly supported by the currently applicable legal framework in Montenegro, and some examples are already present (implementation of UMTS technology in GSM 900 MHz band with no additional fees).

Digital dividend - Completion of digitalization of radio-broadcasting, which is in Montenegro scheduled for end of 2012, in the UHF band a total of 72 MHz of spectrum (range 790-862 MHz) of very good advertizing characteristics ("digital dividend") will be released. According to the current Plan for utilization of radio-frequency spectrum, this range is designed for fixed, mobile and broadcasting services equally on primary basis.

Transfer of rights to use spectrum – Allowing transfer of rights to use radio-frequency among the users improves flexibility and rationality of the use of spectrum. Transfer of

[4] Technological re-use of radio-spectrum

rights to use radio-frequency from one holder to another entity is supported by the existing legal framework.

2.1.3 Framework for Consumer Protection

Consumer protection policy in further activities must be fully adapted to the European context.

User target group are the citizens and businesses who are wished to be provided a broadband access in business and everyday life, regardless of their location, education level, age or interests they may have, which implies higher density of broadband connections, availability of sufficient speed and affordable prices.

Key target group of users of broadband services, which is particularly important to this Strategy, are places where large number of people gathers (schools, kindergartens, government bodies and local self-government, healthcare institutions, cultural institutions etc.). An important target group are also households living in rural areas, which are enabled broadband access so that they are able to use services of information society, which enables development of all regions of Montenegro.

Access to electronic communications services, under the same conditions and affordable prices in the whole territory of Montenegro for the purpose of reduction of social differences is a particularly important task within the consumer protection policy.

2.2 ICT Infrastructure - *Program 2*

Overview

ICT infrastructure program aims to provide high-quality broadband Internet access and ICT infrastructure in accordance with the needs of end users. Parallel with it, it should provide adequate, affordable and secure international Internet connectivity which will meet all current and future requirements and throughput capacities at the state level, serving current and future interests of all persons interested in ICT sector.

The Government of Montenegro will also consider further development of future IP backbone network of state agencies through several possible solutions: the use of telecommunications infrastructure of the existing or new operators based on liberalized and non-monopolized market or creation of its own or the use of telecommunications infrastructure of the above mentioned companies.

In this way market liberalization will be stimulated and emergence of new operators will be encouraged whose activities will provide diversity of access technologies which will consequently lead to benefits in flexibility, performance and price.

Goals

- Act in order to encourage both development of the very ICT sector but also in direction of enabling access to other business sectors and the use of ICT service.

- Improve eInclusion and help bridge digital gap through an open and permanent access.

Objectives

- **High-speed broadband access**: provide symmetrical guaranteed broadband access with a minimum 10Mbps for 50% of the population by 2014; reach 100% of the population with a minimum of 10Mbps broadband access and 50% of the population with a minimum 20 Mbps broadband access by 2016.

- **International connection**: provide technologically divergent, capacitive and multiple international Internet access by 2014, which will allow open access and affordable international connection to the symmetrical Internet for all interested service providers.

Action Plan

- **National Broadband Network (MIDT and the Agency for Electronic Communications and Postal Services**): Accelerate establishment of a broadband high-speed network and open access, in order to offer connectivity to all citizens and enterprises in Montenegro, regardless of where they are. Necessary actions include a commitment of service providers to symmetric guaranteed speed broadband access as defined in Objectives, to identify opportunities for the development of broadband access infrastructure through PPP, EU structural funds, participation of regional authorities and other special privileges (e.g. reduced taxes, cheaper loans, subsidies) for service providers from private sector in order to develop necessary infrastructure. Also supplementing development by commercial wireless broadband, along with the establishment of Wi-Fi hot-spots/mesh, networks as part of the project “Wireless Montenegro.”

- **International connection (MIDT and the Agency for Electronic Communications and Postal Services):** As soon as possible ensure very fast, highly capacitive, affordable, secure and continuous international Internet connection in order to increase service quality and competitive position of Montenegro. Prescribed measures include identification of the width of connection needs, based on expected demand and identification of optimal mechanism (e.g. use of national utility networks, expansion of existing capacities for international connectivity services, etc.) which will provide adequate international connection. Parallel with this, it is necessary to make analysis, based on cost basis, for immediate payment of international connections and take all necessary regulatory activities in order to ensure affordable access to all service providers providing connection to the Internet.

- Collect data about the existing passive infrastructure (owned by the operator, but also local government units, state companies etc.) which can be used to build a broadband network, which would eliminate unnecessary duplication and thus reduce building costs.

2.3 Legal and Regulatory Framework - *Program 3*

2.3.1 Electronic Communications and Regulations

Level of cooperation/separation between holder and policy makers and regulators in electronic communications market is satisfactory.

However, in accordance with legal/legislative and regulatory framework of the EU in 2009, legal and regulatory framework in Montenegro will be further improved by the adoption of new regulations in this area which are fully harmonized with the EU regulatory framework.

By 2014 we can expect a fully developed legal and regulatory framework on new basis with clearly separated roles and responsibilities, as well as the high degree of independence of regulator from the policy makers in this area as well transposition of all relevant directives in our legal system.

2.3.2 Policy and Regulations

Overview

The Legal and Regulatory Framework Program aims to further specify and extend legal framework through ICT regulations, to protect consumers, to ensure effective implementation of necessary regulatory mechanisms for the encouragement of the development of competitiveness and to provide best services and respond to the demands of end users.

In order to further develop information society through the adoption of regulations, it should be influenced on the development in the following areas: in the field of electronic communications, smooth exchange of information and transactions via the Internet, data protection, protection of solutions of information-communication technologies and patents in order to prevent violations of copyrights and patents recognized in the country and abroad, etc. Continuous process of the creation of institutional and legislative framework includes harmonization with EU legislation, which is a basis of every task in the process of the EU accession. In addition to the adoption of harmonized regulations, activities aimed at the application of these regulations will continue.

Goals

- Provide active adoption and implementation of all necessary regulatory mechanisms which will enable development of competition;

- Ensure 100% coverage of population in connection with basic telephone and Internet services as done with Universal Service;

- Adopt modernized policy for the spectrum which will further support utilization of mobile broadband;

- Establish and implement regulatory mechanisms which provide multiple benefits, offer converged services at favorable prices to all citizens of Montenegro;

- Establish laws for consumer protection and privacy of their data through ICT channels and services;

Objectives

- Active implementation of open broadband access to regulatory mechanisms, more efficient managing radio-frequency spectrum and implementation of regulations – implementation of tasks is directly connected with the increase in broadband penetration;

- Adoption and implementation of all necessary regulations that protect the rights of users in electronic communications and electronic operations and at the same time encourage online transactions.

Action Plan

- Utilization of all telecommunication regulatory mechanisms (Agency for Electronic Communications and Postal Services EKIP): actively and quickly apply all necessary regulatory mechanisms to ensure a) efficient development of competition in broadband access, b) offer universal service and services available to all citizens, c) optimally use narrow resource of the spectrum for the use of mobile broadband d) prepare pathway for the acceptance of converged telecommunications/media service.

- As for the first goal, EKIP should continue more intensive application of regulations for the open broadband access (e.g. bitstream, division line, local loop unbundling) with the existing operators and to carefully monitor implementation of the Reference Unbundling Offer (RUO) and total development of broadband penetration and market. In case this is not implemented, EKIP should consider more drastic measures of regulatory interventions, including the implementation of functional and/or structural separation for each of the current operators.

- As for the second goal, EKIP must carefully supervise implementation of universal service and implementation of instructions in order to achieve 100% coverage of population for basic telephony and Internet services in accordance with foreseen deadlines. As for the third goal, EKIP in cooperation with MIDT and with the Ministry of Culture, media regulator and other responsible government bodies should provide timely and efficient completion of the process of digitalization which should result in the use of one part of freed spectrum for mobile broadband services (spectrum refarming cases). In the fourth case, EKIP must work closely with media regulator with the intent to provide regulatory instruments (e.g., content development, IP interconnection, digital rights), allowing effective development of triple/quad-play provider of broadcasting of convergent services.

- Active participation in the implementation of the Program of Consumer Protection (MIDT and the Ministry of Economy): Encourage development and implementation of laws that protect consumers, responsible handling, management, storage and control of personal data by any entity, through a comprehensive Law on Data Protection, which has a clear applicability in terms of online commercial or noncommercial transactions. Laws and

regulations must be fully adopted and they must be monitored, including intellectual property rights (IPR) and laws on digital rights, electronic trade, electronic procurement and the Law on Electronic Signature.

- Improvement of business environment for ICT sector and sector of electronic communications as generators of growth (MIDT and the Ministry of Finance): promote further revision of laws which will improve and encourage investments with special emphasis on ICT and sector of electronic communications.

- Analysis of the Law on Spatial Planning and Construction of Structures and its modification for the purpose of integrated planning, as well as for the removal of barriers in obtaining permits for new construction and reconstruction of the existing infrastructure, prescription of conditions for the construction of adequate electronic networks, in case of construction of new facilities and conditions for the connection to capacitive broadband networks.

- Provide easier access to land that is state-owned or owned by local self-governments for the construction of broadband infrastructure, and the analysis of fees charged for use of property and their reduction and potential elimination.

- Define quality of broadband services (and other services) that operators need to meet through the development of technical regulations for the construction of certain segments of network.

2.4 Information Security - *Program 4*

Overview

Information Security Program helps implementation of national goals for providing a safe and secure information space, increasing digital confidence for all stakeholders of information society, while preserving the national ICT infrastructure.

Data protection that is protection of information systems is a primary goal of the development of information security as well as its bringing into the optimum level. This is a continuous process that requires constant investment in knowledge and technology. The adoption of basic legal legislation, information security program, appropriate regulations and policies, establishment of ME-CIRT set up the basics for the establishment of a quality system of protection, data and infrastructure with the purpose to create a sustainable information society, but development of appropriate regulations should be continued with since they will harmonize approach to information security policy in public administration bodies; it should be also worked on the development of training programs and a catalog of knowledge in the domain of information security for the education of all users of information systems.

Goals

- Provide early detection of information threats and incidents at the national level and adequately react and respond to them.

- Improve readiness and capabilities of employees in public and private sector when it comes to information threats.

- Develop a model for managing information security and provide tools and processes that will raise the level of user protection in Montenegro.

Objectives

- 50% of schools and universities should use the programs aimed at education of teaching staff and students about information security by 2014 and 90% of schools and universities by 2016.

Action Plan

- **Adoption of a plan for implementation of information security policy (MIDT)**: Ensure that national ICT systems support the activities and operations by ensuring confidentiality, integrity and availability of information, communication and technical means and resources.

- **Management of the national informational incidents (MIDT):** Analyze and manage national informational threats and weaknesses, and provide timely and effective response to incidents, with coordination and reporting.

- **Information security - awareness and control (MIDT)**: Provide: a) a safer Internet environment for the people of Montenegro by developing structure for security information management; b) guidelines in coordination with local stakeholders and international partners; c) empowering users through raising awareness of the need for training. Special attention should be paid to new generations as end users of Internet and continuously introduce new programs on information security for all levels of education in order to use developed information systems.

3 ICT for Society

3.1 eEducation - *Program 5*

Overview

The eEducation Program helps to implement the national goal: that educated people have benefits from modern and accessible education system.

It is necessary to integrate information and communication technology in all aspects of education process aimed at more effective and efficient education. In this sense, application of these technologies in education will continue activities aimed at establishing modern education system adapted to the needs of information society, development of digital educational contents, skillfulness of teachers to use these technologies, introduction of a modern concept of e-learning and distance learning, development of the concept of lifelong education, inclusion of social groups with special needs, etc. In addition to the development of application of information and communication technologies in the education process, it is necessary to raise simultaneously technological basis in schools, which means equipping schools with necessary information equipment, and connecting schools in terms of communications with satisfactory access to the Internet. There are various types of specialized hardware and software for disabled people. Measures to be taken aimed at the introduction of ICT in these schools are similar to regular schools, with emphasis on the purchase of specialized hardware and software. One of the most important segments is the acquisition of didactic eMaterials and softer.

Goals

- Improve education process through modern mechanisms and tools for learning (e.g. platform for eLearning), supported by strong broadband network and centralized database system, which allows direct access to information and digital assets, which further allows communication and collaboration between students and teachers.

- Train teachers and educators to acquire needed skills, knowledge and resources in order to apply more easily modern learning techniques. For some specialist areas of strategic importance, such as for example security of information systems, it is necessary to enable an efficient system of education, particularly postgraduate and specialist courses in order to produce expert staff.

- Encourage students to study ICT science and create conditions for their employment in ICT industry.

Objectives

- In order to implement ICT in education in all towns of Montenegro at least one school will be equipped with a system for distance learning, as well as the central location in the Department of Education.

- 100% of primary and secondary schools should have access to broadband services (speed of at least 10Mbps) to 2014;

- 50% of teachers should use ICT tools in teaching in elementary and secondary schools by 2014 - to reach the level of 100% by 2016;

- 100% of teachers/instructors should use ICT tools for teaching at universities by 2014;
- 100% of teachers in primary and secondary schools and universities should be ICT trained by 2014;

- 100% of primary and secondary schools need to use consistently a common and well-developed platform for eLearning for teaching purposes by 2016;

- The number of ICT graduates should increase to 25% of the total number of graduates by 2014 and up to 30% by 2016.

Action Plan

- **The National Education Network (MIDT in cooperation with the Ministry of Education and Sports)**: Provide connectivity of all educational institutions to the broadband network (Montenegro Research and Education Network - MREN), safe and reliable with high-speed, as a backbone for ICT education and facilitated exchange of information.

- **Infrastructure for ICT centralized education (MIDT and the Ministry of Education and Sports)**: Fully realize the safe and secure national education data center (for primary and secondary schools it already exist with the Ministry of Education and Sports), with sufficient capacity and infrastructure for physical placement and operations with all data related to education, systems and infrastructure components (e.g. platform for e-learning).

- **Learning management systems (MIDT and the Ministry of Education and Sports)**: Develop and implement a centralized environment for virtual learning (e.g. e-learning platform) in all educational institutions in order to create a platform for national knowledge that students, teachers and administrators will benefit from.

- **ICT use in education (MIDT and the Ministry of Education and Sports)**: Implement professional development framework which will provide training and counseling services to the existing and future teachers while simultaneously promoting the use of ICT among all interested parties.

3.2 eHealthcare - Program 6

Overview

The eHealth Program contributes significantly to achieving the national goal of a healthy population with access to modernized and regularly updated and integrated healthcare system.

Support to the performance of activities of the healthcare system is a basic favor that information-communication technologies do to that system. Apart from supporting its functioning, healthcare information system must improve reforms in this area. In this respect activities aimed at modernization of healthcare system will be continued in order to reduce healthcare workers workload, which will stimulate them to use computers in order to improve work efficiency. Activities will focus on automation and thereby reduction of costs, all administrative procedures and processes of health care systems, quality, secure and rapid exchange of information between all participants in the healthcare system, while respecting citizens' rights to privacy and security of their healthcare data. Electronic knowledge bases will be designed for healthcare professionals to encourage research in the field of healthcare and prevention programs, and proper attitude of the population will be encouraged by presenting high quality contents concerning healthy lifestyles and disease prevention on adequate web portals etc.

Goals

- Standardize the use of ICT in healthcare by introducing a unified ICT system for document management, which guarantees protection and privacy of patients;

- Include most advanced ICT services in healthcare institutions with the aim to increase quality of healthcare, operations and efficiency;

- Increase access to healthcare and information on healthcare protection through ICT.

Objectives

- 50% of the citizens have Electronic Healthcare Card by 2014 and 100% by 2016;

- 100% of healthcare providers to be certified through ICT by 2014;

- Establish eHealtcare online portal by the end of 2012.

Action Plan

- **National Healthcare Networks (MIDT, the Ministry of Health and Health Fund)**: Provide that all healthcare institutions, physicians and practitioners in public health care system are connected to a secure and reliable high-speed broadband network, which enables data exchange and information dissemination and access as well as the use of sophisticated medical applications.

- **Electronic Healthcare Card (MIDT, the Ministry of Health and Health Fund)**: Introduce system for electronic healthcare card (eHC) for all the people of Montenegro. eHC will contain details and records of on health condition of individuals, information on medical treatments, etc., which would be safe to see and share among the involved physicians and practitioners.

- **Health Information System (MIDT, the Ministry of Health and Health Fund)**: Support the implementation of healthcare information systems through key healthcare institutions; support the delivery of relevant information for the needs of Electronic Healthcare Cards.

- **eHealthcare Portal (MIDT, the Ministry of Health and Health Fund)**: Establish online portal to provide users with healthcare information and services, including scheduling appointment with doctors, online pharmacies and direct contacts with local and international institutions aimed at their healthcare education.

- Use of ICT in healthcare (MIDT, the Ministry of Health and Health Fund): Promote the use of ICT in healthcare and develop capacities of healthcare services and actors involved in education and training; provide incentives to hospitals and all healthcare institutions to introduce specialized ICT training for all their employees.

3.3 eInclusion - *Program 7*

Overview

The eInclusion program helps implementation of national goals of social equality and equal access to opportunities for all citizens of Montenegro, regardless of their age and geographic position as well as the inclusion of ICT vulnerable social groups.

Goals

- Provide ICT access to the members of society who have traditionally been neglected, and to those who live in remote places far from urban centers, the disabled and elderly;

- Improve ICT literacy of all citizens of working age population through ICT targeted campaigns and training programs.

- Educate citizens, especially vulnerable groups about how to use ICT.

Objectives

- Penetration of Internet users should be 70% by 2014 and 80% by 2016;

- 65% of vulnerable social groups should gain informatics literacy by the end of 2014 and 85% by 2016.

Action Plan

- **eAccessibility for all (MIDT)**: Develop standards and guidelines to ensure that Internet/broadband infrastructures, eGovernment portal and supporting e-services are available to all citizens, paying special attention to individuals who live in rural areas and/or persons with special needs.

- Digital literacy for all (MIDT): Develop a comprehensive and targeted ICT campaign to increase awareness of the need of Internet literacy and training plan to improve ICT skills of all citizens, businesses and government, educate them about the benefits of ICT in everyday life and encourage them to be factors of information society.

- **Adoption of ICT in business (MIDT and national companies)**: Develop a promotional and a plan of adoption of support to enterprises, especially SMEs, incorporate and use ICT in their business processes and educate them about the benefits of adopting ICT. Provide

specific incentives (e.g. tax reliefs, subsidies) for the implementation of specialized and focused ICT trainings for the employed in companies.

4 ICT for Public Administration

4.1 eGovernment - Program 8

Overview

Vision of modern administration in Montenegro implies the use of information-communication technologies which among other things significantly improves provision of public services with the increase of democratic participation and involvement of the public in decision-making and policy formulation.

Main goal of eGovernment is to increase availability of public services to citizens and businesses. It should also enhance the effectiveness of the state's management process, and provide better insight into the allocation of economic and social resources. In addition, eGovernment should facilitate and increase interaction between all three factors of society - government, physical and legal entities, in order to stimulate political, social and economic development of the country.

Goals

- Further improve and standardize government operations through the most modern and most advanced tools that enable development and dissemination of information between government and physical /legal persons, with support of a solid and reliable ICT infrastructure.

- Modernize and expand user oriented public administration and increase its availability through the improved and safe delivery channels.

- Stimulate demand among citizens and enterprises for the widely deployed services of electronic public administration.

- Establish interoperability framework, which will create conditions for the improvement of the process of information management and exchange of data between the government bodies and citizens, which will enable easier and quicker electronic provision of public services to citizens.

- Enable automated exchange and use of information kept in public registries and other information systems.

Objectives

- 100 of the most used government services to be accessible via the portal eGovernment by 2014 and 200 of the most used services by 2016;

- 100% of civil servants to be trained to use portal eGovernment by 2014;

- Establish a system for automated data exchange ESB (Enterprise Service Bus) as a connection between a unique network and systemic infrastructure underlying the information system of government bodies and technologically divergent applicative

solutions of individual government agencies or services which enables exchange of data between several systems, regardless of compatibility of the systems they have by 2013;

- Costs for issuing digital certificates for physical persons to be reduced by 50% by 2013.

Action Plan

- **Priorities of public administration services (MIDT)**: Rank currently available services provided by government agencies based on the level of use with the intent to attract end-users and facilitate implementation of eGovernment portal.

- **Availability of public administration services on eGovernment portal (MIDT)**: Initiate discussions with all interested individuals and institutions to achieve that 100 most frequently used services are presented on the eGovernment portal by 2014 and 200 services by 2016;

- **Training of employees in public administration (MIDT)**: Start training program for education of all representatives of public administration aimed at using electronic services by 2014;

- **ESB** - Develop technical specifications for the system by the end of 2012 and begin activities of implementation and its establishment by 2013;

- **Costs for digital certificates (MIDT)**: Initiate activities and identify mechanisms for the reduction by 50% of the current price of issuing digital certificates. If necessary, based on the price, implement the process of external audit.

5 ICT for Economic Development

5.1 R&D and Innovations-ICT technologies Servicing the Development of Science and Research - *Program 9*

Overview

This program directly supports economic distribution of goals for the creation of knowledge-based economy of Montenegro which is characterized by innovation and entrepreneurship. It aims to develop national ICT sector by encouraging innovation and entrepreneurship and by providing sectoral long-term sustainability through research and development (R&D), promotion, incubation, removal of barriers to foreign direct and domestic investments, access to funds and resources and strategic regional and international partnerships.

Goals

- Promote technology and allow innovation and entrepreneurship by providing support to both beginners and entrepreneurs;

- Support growth and expansion of ICT sector in Montenegro and stimulate ICT entrepreneurship;

- Encourage the use of ICT in regular activities of companies and as a means of participation in the global economy.

Objectives

- 20% increase in public and private investments in ICT sector by 2014 and 30% increase by 2016;

- Achieve increase of 50% in the newly registered ICT companies by 2014 and 100% increase by 2016.

Action Plan

- **ICT incubation (MIDT and the Ministry of Science)**: Establish ICT incubators (techno-parks)/groups providing the required level of basic and additional services, which enables the development of ICT contents and applications that can be commercially exploited at a later stage.

- Funding mechanisms (MIDT and the Ministry of Finance): Evaluate and consider possible opportunities for funding and establish mechanisms to attract funds from various sources (e.g. scholarships, investment funds, investors from companies, debt) while supporting creativity and innovations in the field of ICT business sector.

- **Promotion of ICT business (MIDT and the Ministry of Science)**: Support growth and expansion of local ICT companies through policies, partnerships, sellers' offers and initiatives and increase in ICT entrepreneurship.

6 Development of Media and Radio-Broadcasting Market

6.1 Media and Radio-Broadcasting Technology and Infrastructure

Network Planning for Digital Terrestrial Broadcasting is conducted in accordance with the Plan of awarding radio frequencies which prescribes technical requirements and methods of using individual radio frequencies and geographic areas. This plan is adopted by EKIP and it must be in accordance with the Plan of purpose of radio-frequency spectrum as defined by the Law on Digital Radio-Broadcasting.

Deadline for the transition to digital radio-broadcasting is 31 December 2012.

Introduction of digital systems significantly increase the efficient use of frequency spectrum, and its efficiency is further increased by the possibility of implementation of single frequency networks. In fact, in the same frequency channel, along with radio and/or television programs other contents can be broadcasted which was not the case with analogue technology of signal broadcasting.

Development of technology and convergence of networks and services create a dynamic environment in which digital broadcasting is no longer just a trend, but a necessity. It is a project that has its economic, social and technical implications, which is why it is important to provide a high level of compliance of all participants in the process.

The accepted standard for digital radio-broadcasting is DVB-T2 standard, which was approved in September 2009 by the European Telecommunications Standards Institute (ETSI).

It is undisputed that technologically newer DVB-T2 standard has advantages compared to DVB-T having in mind that:

- DVB-T2 provides 30 - 50% greater utilization of frequency spectrum;

- DVB-T2 provides significantly greater throughput within the same range of television channels of 8 MHz/7 MHz;

- DVB-T2 offers extremely good protection of signals suitable for transfer in environments with high noise and interference;

- DVB-T2 is less susceptible to interference which facilitates design of SFN networks;

- DVB-T2 offers great flexibility when it comes to the transport stream (TS) and protocol for a generic encapsulation of stream which enables compatibility with IPTV;

- MPEG-4/DVB-T2 combination gives good results for the flow of up to 45 Mb/s in a television 8 MHz wide channel;

- With DVB-T2 it is possible to provide sufficient flow for the needs of HDTV program;

- In DVB-T2 standard a wider range of selection of parameters of coding and modulation is defined, so that it is flexibly adapted to the conditions in environment.

Implementation of transmitter's network with national coverage of the territory of Montenegro will be implemented through the IPA program within the project of support to the public radio-broadcasting service in the process of transition from analogue to digital radio-broadcasting systems, which was approved by the European Commission in 2009. The aim of implementation of this project is to support public radio-broadcasting service of Montenegro in the process of transition from analogue to digital radio-broadcasting systems, providing the necessary transmission equipment and adequate training of technical services of the company “Radio-difuzni centar” Ltd., with respect that this public company deals with the transmission and broadcasting of radio-broadcasting signals for the needs of public radio-broadcasting service; it leases locations, services and all necessary consultation for the development of the project and maintenance of technical facilities and equipment of commercial radio-broadcasting services, as well as through the maintenance of the entire transmission network in the area of Montenegro.

Transfer to the digital TV frees up one very important radio-broadcasting frequency spectrum between **790-862MHz** -> digital dividend. The existing Plan of purpose of radio frequencies of Montenegro foresees work of television and DVB-T at **470-862MHz**, which means that it includes digital dividend.

It is the European Commission which pushes and imposes shorter deadlines for commercial reasons in which member states are interested. Digital radio-broadcasting is a consequence of the exhaustion of resources of radio-frequency spectrum; in fact, this process has been imposed as a necessary and logical solution. This statement can be confirmed by a simple insight into the state of spectrum in Montenegro. In transmission facilities serviced by Montenegrin municipalities via radio-broadcasting signal, there are almost no free resources in terms of available frequencies, particularly in transmission facilities which are serviced by bigger and more developed municipalities. This significantly reduces the space for further development of television services, the entry of new electronic media into the market, provision of new and higher quality services, etc.

One of the major advantages of digital radio-broadcasting systems is the possibility of easy change of configuration of the system by a simple change of basic parameters of the broadcasted signal (the so called protective interval, the system for protection from error, modulation schemes, etc.)

6.2 Media and Radio-Broadcasting Laws and Regulations

Upon the entry into force of the Law on the Ratification of the European Convention on Transfrontier Television, Montenegro committed to ensure freedom of expression and information in accordance with Article 10 of the Convention for the Protection of Human Rights and Fundamental Freedoms, to guarantee freedom of reception and that it will not limit re-broadcasting of program services in its territory in compliance with provisions of this Convention.

Adoption of the Law on Electronic Media in August 2010 represents a huge step towards harmonization of Montenegrin media legislation with the European standards. This Law implements provisions of Directive 2007/65/EC of the European Parliament and Council of Audiovisual Media Services concerning the reception or re-broadcasting of audio-visual media services from other countries.

Goals:

- Create a stable, transparent, technologically neutral environment in which implementation of transfer from analogue to digital radio-broadcasting systems is promoted as well as the development of electronic communications infrastructure aimed at the development of information society engaged to satisfy the needs of the public;

- Create conditions to enable availability of digital radio-broadcasting services to all citizens of Montenegro, either via terrestrial network of transmitters (free-to-air) or via satellite digital radio-broadcasting until the targeted date set for the shutdown of analogue TV broadcasting (12 Dec.2012.)

- Create and promote opportunities to meet the needs of persons with disabilities and the needs of vulnerable groups of population in Montenegro;

- Provide digitization of production and broadcasting of national public electronic media programs (RTCG).

Objectives:

- Implementation of necessary public tenders for awarding commercial broadcasters (AEM)
- 1Q2012 with the rights of access to capacity of the first MUX;

- Timely planning and provision of funds for digitization of production and broadcasting by RTCG (RTCG, the Ministry of Culture and the Ministry of Finance) → annually;

- Define mechanisms to subsidize purchase of receiver equipment especially for vulnerable groups of population in Montenegro (MIDT, the Ministry of Labor and Social Welfare).

7 Preconditions for Implementation

A comprehensive five-year action plan for further development of information society has been prepared by the Ministry for Information Society and Telecommunications. This plan represents a shared commitment to achieve the national ICT vision and goals for the creation of digital country by 2016.

A basic prerequisite for a successful implementation of ambitious goals of the Strategy is adequate coordination of activities, which according to the system of public administration belongs to the Ministry for Information Society and Telecommunications, as well as the existence of institutions that operate as a support to the coordinator in the process of the development of information society in Montenegro, that is, implementation of tasks set by all identified entities.

The Ministry for Information Society and Telecommunications will monitor the implementation of the established goals through the annual action plans for the implementation of the Strategy measures and reports on their implementation.

List of 25 performance key indicators (PKI) will help to proactively identify challenges and potential obstacles which hinder development, which will condition the adoption of the plan for the elimination or reduction of obstacles.

Funds for the national ICT initiatives will be distributed in accordance with the distribution of responsibilities among stakeholders according to individual initiatives. The involved ministries, agencies and services will ensure that their annual budget proposals include funds for initiatives for which they are responsible.

Based on individual plans and aspirations of stakeholders three possible funding mechanisms in the development of the missing infrastructure can be considered:

- **Direct public ownership**: Government, public institutions own or manage ICT/ high-speed access broadband infrastructure; funds may be provided either from the annual state budget or through adequate EU development funds.

- **Public-Private Partnership (PPP)**: The Government decides about the contract with private companies/physical persons aimed at cooperation and development of the national ICT and/or high-speed access broadband infrastructure. Private companies/physical persons may include service providers, financial institutions, strategic partners or others. A comprehensive framework should be developed by prescribing participation of a portion of capital of involved entities, the role and responsibilities and duties of PPP.

- **Concession**: The Government provides special incentives for private sector to accelerate development of ICT and/or high-speed access broadband infrastructures (e.g. tax subsidies, cheap loans etc.).

Each program for the Strategy by 2016 should contain optimal ways of funding, provided that all prerequisites, mechanisms and resources are available while creating a long-term success and sustainability of the program efforts and results.

ANALYSIS OF THE CURRENT CONDITION OF INFORMATION SOCIETY IN MONTENEGRO

1 ELECTRONIC COMMUNICATIONS – current situation

The new Strategy for the Development of Information Society 2011-2016 should pursue its continuity of the development and precisely determine strategic directions which will be in accordance with the European concept of development. The previously mentioned implies a full application of European directives and presentation of the results achieved aimed at the adequate monitoring of the achieved and comparison with the developed EU countries.

Overview of the situation and the achieved level of development of information society is given in the in the analysis presented in the "Strategy for the Sector of Electronic Communications 2006 -2011" and the "Strategy for the Development of Information Society 2009-2013," while focusing on the most significant results; a more detailed elaboration is presented in Annexes which are supporting materials to the Strategy.

1.1 Introductory Notes

After a five-year implementation of the Strategy for the Sector of Electronic Communications (SEC) from May 2006, it can be concluded that its recommendations and goals have been met in high percentage and that there is a continuity of intensive development of electronic communications started in 2000. Specific SEC goals have been met and in some areas they have been significantly surpassed.

ANNEX 1 presents an overview of key recommendations and the level of implementation of the current Strategy for the Sector of Electronic Communications.

1.2 Legal/Regulatory Framework

The Law on Electronic Communications - LEC (Official Gazette of Montenegro 50/08, 53/09, 70 / 09, 40/10 and 49/10), was enacted on 29 July 2008. In accordance with statutory obligations relevant activities have been conducted regarding the issue of harmonization of licenses and permits issued by the Agency for Electronic Communications and Postal Services and the Agency for Electronic Media with provisions of the new Law on Electronic Communications as well as preparations for technical bases for the regulations passed by the line ministry in accordance with responsibilities established by LEC.

ANNEX 2 presents an overview of adopted regulations for electronic communications and postal services in 2009 and 2010 and an overview of regulations to be adopted by the end of 2011.

HARMONIZATION OF LICENSES AND FEES

In the process of harmonization of licenses or permits, pursuant to Article 141 of the Law, EKIP introduced in the registry of operators of electronic communications networks and/r services a total of 29 business organizations and in this process of harmonization it has issued a total of 172 decisions which harmonize licenses and permits issued by the Agency

for Electronic Communications and Postal Services and the Radio-Broadcasting Agency (with some entities several licenses and/or permits were harmonized in one decision).

IMPLEMENTATION OF UNIVERSAL SERVICE

The EKIP Council adopted decisions on determining Universal Service Operator for the period of five years based on the public tender. The selected bidders were required to start providing services as of 1 May 2011.

Users expect from the Universal Service Operator to allow any reasonable requests for connection to the public telephone network at a fixed location, regardless of geographic location in the entire territory of Montenegro, which allows them to use publicly available telephone services. An important segment is that now public service provider will have a unique database for all service users and will be accessible from all service provider operators' networks to users in Montenegro. Information about users of all service provider operators will be equally treated.

ANNEX 3 presents an overview of the process of selection of Universal Service Operator and service rates.

ANALYSIS OF RELEVANT MARKETS

On the basis of Directives and recommendations of the European Commission, the EKIP Council adopted the Decision on relevant service markets and relevant geographic market (Official Gazette of Montenegro 29/09) and territory of Montenegro has been determined as a relevant geographic market among 7 relevant markets.

After the analysis of relevant markets has been conducted and after operators with significant market power have been identified, EKIP has prescribed regulatory duties which are proportional and adequate in relation to the determined current and potential obstacles to the development of competition in the market.

EKIP is currently in the phase of implementation of the process of analysis of 5 relevant markets for which it is necessary to conduct a previous 3-criteria testing in order to assess the needs of *ex ante* regulation.

ANNEX 4 presents tabular overview of operators with a significant market power and regulatory obligations stipulated in relevant markets.

ACCOUNTING SEPARATION AND COST ACCOUNTING

Accounting separation is the most common instrument used to thwart the activities such as: retail services high prices, pricing discrimination, cross-subsidization and predatory pricing.

Purpose of introducing obligatory cost accounting is price regulation. The obligation of introducing cost accounting can be introduced for wholesale and retail market.

EKIP has started a Project of accounting separation and cost accounting and in early 2011 it began work with the selected consultant of KPMG Croatia.

ANNEX 5 presents a plan, scope and phases of the Project of accounting separation and cost accounting.

NUMBER PORTABILITY

The Law on Electronic Communications in Articles 98, 99 and 100 establishes obligations of operators and other entities regarding the implementation of number portability as well as special obligations of EKIP.

After the two rounds of public consultation and compliance with telecommunications operators in December 2009, EKIP adopted the Rulebook on Number Portability (Official Gazette of Montenegro 89/09). The Rulebook regulates conditions and manner of implementation of number portability in fixed and mobile networks. Amendments to the Rulebook on Number Portability as of 19 April 2010 stipulate that number portability system testing will start no later than on 27 May 2011, that is, three months prior to the beginning of providing number portability service (Official Gazette of Montenegro 21/10).

After the conducted tender procedure on 17 June 2011, the Agreement on Implementation of the Ported Numbers Central Database and Administration Service was signed with the company Teletech.

NUMBERING AND ADDRESSES

The Law on Electronic Communications prescribes responsibilities of the Agency in terms of limited resources - numbering and addresses. In accordance with this EKIP has adopted a new Numbering Plan and a new Addressing Plan. Also, as needed EKIP updates the National Numbering Plan and submits it to the International Telecommunications Union. The National Numbering Plan and Addressing Plan are published on the EKIP's website.

EKIP issues licenses to operators to use numbering and/or addresses based on general administrative procedure and via the tender procedure in accordance with the Law. Telecommunications operators are obliged to pay fee for the use of these resources in accordance with Article 97 of the Law as well as on the basis of the Rulebook on Methodology and Method of Calculation of Annual Fee for the Use of Numbers and/or Addresses (Official Gazette of Montenegro, 1 / 09 and 17/10) which was adopted by the Ministry of Transport, Maritime Affairs and Telecommunications.

EXERCISING RIGHTS AND PROTECTION OF INTERESTS OF USERS

Consumer protection policy in this area is part of measures and instruments taken in Montenegro in order to achieve better quality of life of all citizens. In this regard, the Consumer Protection Policy Framework consists of the Law on Electronic Communications, the Law on Consumers Protection and the National Consumer Protection Program adopted by the Government of Montenegro for the period 2010 - 2012.

Together with the Center for Consumer Protection (CEZAP) in 2008 EKIP started a joint activity aimed at the development of promotional materials, leaflets and brochures with brief information regarding the rights of users of electronic communications services and ways of exercising their rights and in this sense it issued the following 4 brochures, which were well received by consumers: “Availability of Multi-Play Services Offer,” “Broadband Access for All,” “Mobile Phones in Our Lives,” and “Online Security.”

Also in June 2011 “Instructions for Users of Electronic Communications Services,” was developed which pointed to fundamental rights of consumers in this area and the manner of exercising these rights with the service provider operators and the Agency for Electronic Communications and Postal Services, all in accordance with the Law on Electronic Communications. This manual was printed in cooperation with NGO “EKOM” in a form of brochure in 60,000 copies and was distributed with daily newspapers.

Importance of these activities is indicated by the fact that these activities have been foreseen as a separate activity in the National Consumer Protection Program.

1.3 Fixed Communications Market

Fixed telephony services in the territory of Montenegro were provided by **Crnogorski Telekom JSC** and **M: Tel in 2010.**

At the end of 2010 the number of fixed line subscribers was 170,553[5]. Compared with the 2009 obvious is decline of 0.7% in the number of fixed subscriber lines.

Of the total number of fixed telephone connections, Crnogorski Telekom JSC had 166,703, and M: Tel 3,850 or in percentage: T-Com 97.74% and M: Tel 2.26%. It should be noted that the operator M: Tel provides fixed telephony services via fixed wireless access - Wi-Max network (awarded numbering 078) implemented at the frequency range 3.4 – 3.6 GHz.

The level of digitalization of fixed connections in Montenegro has been 100% five year in a row, which places our country, according to this criterion, among the developed European countries.

The total number of ISDN connections at the end of 2010 was 5,710 of which 5,484 connections were in base access and 226 connections in primary access. The number of ISDN users is calculated based on these data which at the end of 2010 was 17,748. This number is lower compared to the previous year by 2.94%. Decline in the number of ISDN users can be understood as a consequence of penetration of ADSL and WiMAX services in the market of Montenegro.

The number of ADSL connections in 2010 was to 57,370 which is by 31.97% more compared to 2009. Given the fact that T-Com started providing this service 2005, this

[5] Note: Source for all data in the area of electronic communciations is the Agency for Electronic Communicauions and Postal Services

growth can be regarded as a very dynamic. Of this number of ADSL connections, 51,107 connections or 89.08% refers to physical persons and 6,263 or 10.92% refers to legal persons.

In 2010 the system of public payphones in Montenegro existed only with the Post Office of Montenegro - 193 public telephone booths. Given the total number of telephone booths installed in the territory of Montenegro, it is clear that this service provision has a downward trend, which is the consequence of the increasing orientation of citizens, businesses and tourists towards the mobile telephone services.

1.4 Mobile Communications Market

Market of mobile telephony of Montenegro is treated as a competitive market where three telecommunications operators operate - **Telenor Ltd.** 100% owned by "Telenor Mobile Communications AS," **Crnogorski Telekom JSC**, owned by Magyar Telekom and **M: Tel Ltd** owned by Telekom Srbija and Telekom Republika Srpska.

At the end of 2010 the number of mobile phone users in Montenegro amounted to 1,237,319, which corresponds with penetration of 199.52%, of which 895,411 are *prepaid* users and 341,908 are *postpaid* users.

1.5 Internet/Broadband and Cable Services market

The upward trend of the number of users of broadband Internet access continued in 2010 and penetration of fixed broadband access on 31 Dec 2010 was 11.6%, and penetration of mobile broadband access was 5.5%. As for the fixed broadband access largest was the number of ADSL users which is followed by WiMAX and cable-distribution systems users, and the number of users who use data SIM cards increased by 67.1%. The number of users who accessed the Internet via mobile phones is increasing. The number of users of dial-up access constantly declines which is conditioned a big drop in dial-up traffic.

Crnogorski Telekom has increased capacity of link to the Internet and in 2010 it had a 5GB/s towards Telekom Hrvatske and 3Gb/s towards Telekom Srbija. M: Tel had international Internet link whose capacity was 3x155Mb/s towards Telekom Srbija, while Telenor had link with capacity of 100Mb/s also towards Telekom Srbija (only international links are mentioned).

Dial-up Internet Access

Downward trend of the number of users who accessed the Internet via dial-up continues and the number of active dial-up users of Crnogorski Telekom dropped by 67.6% compared to 2009.

At the end of 2010 Crnogorski Telekom had 10,959 active dial-up users, of which 5,205 were *postpaid* and 5,754 were *prepaid* users.

Internet access via ADSL

In 2010 the upward trend of the number of ADSL users continued. In comparison to 2009 the number of users increased by about 32%. Crnogorski Telekom had 57,370 ADSL users in 2010 of which 51,107 were physical and 6,263 were legal persons.

The number of ADSL users increased continuously in all municipalities in the last 3 years. The largest number of users who access the Internet via ADSL is in Podgorica, which is followed by coastal municipalities and Niksic. As for residential users the most popular is *flat* package – ADSL, Fl@t2, with a maximum download speed of 2Mb/s. This package is used by about 76% of residential users. As for business users, 64% use Fl@tb4 package with a maximum download speed of 4Mbps. It should be mentioned here that Crnogorski Telekom increased transmission speed of all ADSL packages.

Availability of ADSL services is 97%. Thus, 97% of users who have a telephone connection can also use ADSL service. At the end of 2010 Crnogorski Telekom had 169 ADSL nodes.

Internet Access via WiMAX

The number of M: Tel users who access the Internet via WiMAX at the end of 2010 was 6,784 of which 6,326 were physical and 458 were legal persons. The number of Telenor users reduced compared to 2009 from 16 to 5 users. Among residential M: Tel users the most popular is flat package Net 0.5 M, which is used by 70% of users.

Internet access via cable distribution systems (KDS)

KDS operator M-kabl provides Internet access service through its cable distribution network in Podgorica, Pljevlja and Herceg Novi. M-kabl started providing Internet access service in late 2009. At the end of 2010 it had 675 users of which 666 were physical persons and 9 were legal persons. The most popular package among residential users is flat package of 512/64 kb/s, which is used by 50% of users. Total capacity of links to the Internet is 70MB/s. Capacity of the link in Podgorica is 40MB/s, in Pljevlja 10Mb/s and in Herceg Novi 20Mb/s.

Apart from M-kabl, Internet access via cable distribution network is provided by Cabling from Budva. The number of users of Cabling almost doubled in 2009 and at the end of 2010 Cabling had 853 users, of which 817 were physical persons and 36 were legal persons. Cabling provides Internet access service in cooperation with M: Tel. Capacity of a link to the Internet is 60MB/s.

Internet access via MPLS

Of 79 users of Crnogorski Telekom's MipNet network, only two users used the Internet access service. Of 56 users of M: Tel's IP MPLS VPN service, 15 uses this service to access the Internet.

Wireless access point (2.4 GHz and 5 GHz)

Total number of wireless access points is reduced compared to 2009 from 205 to 125, and Crnogorski Telekom had 17, MNNews 59, Telenor 42 and Dasto Montel 8 access points. In

2010 Crnogorski Telekom sold 219 vouchers to users. Telenor increased significantly the number of vouchers sold to users of these services from 124 in 2009 to 4,341 vouchers in 2010. At the end of 2010 MNNews had 2,100 users at the wireless access points which operate at 2.4 GHz radio-frequency spectrum. The number of Dasto Montel users increased from 206 to 357.

Mobile Broadband Internet Access

The number of users of mobile broadband access who access the Internet via data SIM cards increased by 67.1% compared to 2009. The number of users of T-Mobile doubled, while the number of Telenor users increased by 35.5%.

During 2010 187,918 users of M: Tel accessed the Internet via mobile phones and 3G modems of which 21,952 were postpaid users and 165,966 were prepaid users. Of the total number of M: Tel users who accessed the Internet via mobile phone or a 3G modem 37.8% connected via UMTS/HSDPA technology.

In December 2010 264,796 users accessed the Internet via mobile phone or 3G modem of which 78,646 were postpaid and 186,150 were prepaid users. Of the total number of 264,796 users, 135,918 were Telenor network users, 69,603 were M: Tel network users and 59,275 were T-Mobile network users. Of the total number of users who accessed the Internet via mobile phone or 3G modem, 35.6% connected via UMTS/HSDPA technology.

Telenor and T-Mobile introduced a flat package for their data SIM card users.

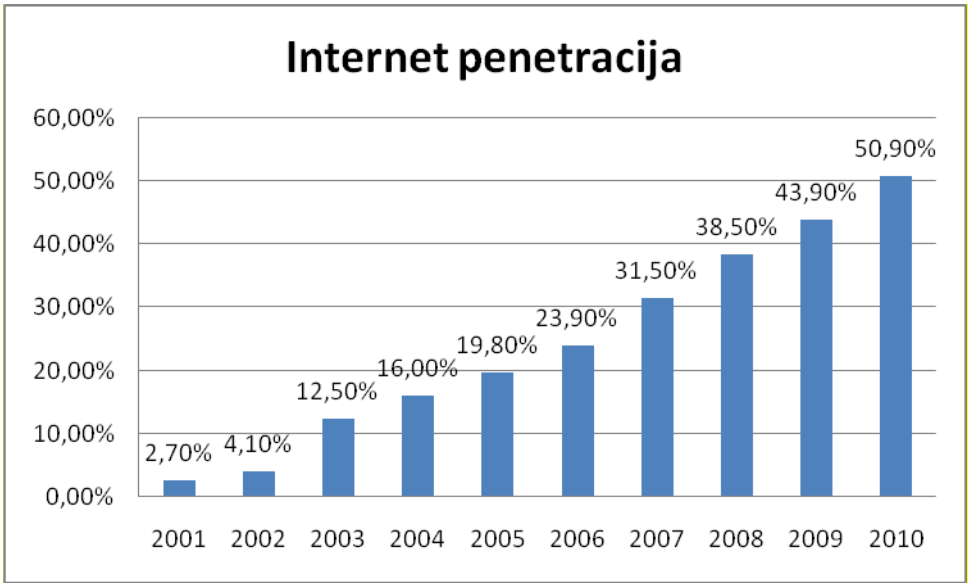
Internet Penetration

The number of registered Internet users at the end of 2010 was 175,399 which represents an increase of 16% compared to 2009. So, the upward trend of the registered Internet users also continued in 2010.

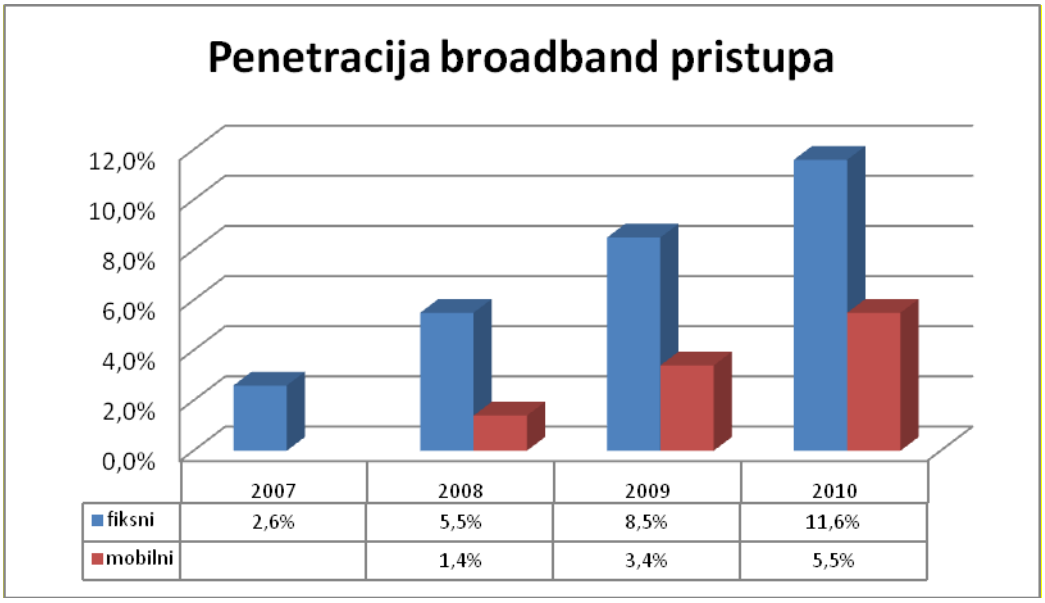
Taking into account the number of broadband connections, as well as a large number of users accessing the Internet at work and educational institutions, it is estimated that penetration in Montenegro is 50.9%, which is an increase of 7% as compared to the previous year.

Penetration of **fixed broadband access** (users of ADSL, WiMAX, cable modems, leased lines etc.) was 11.6% at the end of 2010. So, in 2010 an increase in the Internet penetration of the fixed broadband access of 3.1% was recorded as compared to 2009. As for the number households, penetration increased to 40%, which is an increase of 10.8% as compared to 2009.

Penetration of **mobile broadband access** is 5.5%, which is an increase of 2.1% as compared to the previous 2009 (including data SIM cards users).



The following figure shows a graphical presentation of penetration of broadband access in the period 2007-2010.



1.6 Status of VoIP Services and Leased Lines Market

In 2010 VoIP services were provided by the following operators:

- *VoIP Telekom,*
- *IPMont*
- *Pošta Crne Gore Ltd*
- *VOIP Ltd*
- *ProntoTel Ltd*

At the end of 2010 the total generated VoIP traffic was 806,664 minutes which is a drop of 19.9% compared to 2009.

Leased lines are a very important electronic communications service for business users. They serve to connect business users' sites, whether they are in one or several countries via leased lines with constant capacities.

Leased line services in the market of Montenegro at the moment are provided by the following operators of public electronic communications services:

- Crnogorski Telekom JSC

- M: Tel Ltd,

- Radio-difuzni centar Ltd.

- MNNews Ltd.

Crnogorski Telekom is the only operator which uses optical fibre for the provision of leased lines services as a physical medium for transmission. This fact allows it to address demands for high-capacity leased lines in the country and to other countries. Other operators (M: Tel, Radio-difuzni centar and MNNews) provide leased lines services by using the radio transmission system as a physical medium. These radio transmission systems used by the above mentioned operators are a limiting factor for the provision of high-capacity leased lines.

In most European countries operators which have developed within electricity and railway companies were the biggest competition against the dominant operator. In Montenegro, Crnogorski elektroprenosni system (Montenegro electricity transmission system) and Fibernet are operators registered to provide leased lines services; they have laid optical cables but have not started leasing lines yet.

Total number of leased lines in 2010 was 563. This is the total number of leased lines, which includes national and international leased lines of all capacities. Also, this number includes the total number of lines leased based retail and wholesale.

In comparison to 2009, the number of leased lines increased by 8% (in 2009 the total number of leased lines was 521). In relation to the capacity of leased lines there was an increase in the number of leased lines concerning majority of considered capacities which are as follows:

- Capacity of <2 Mb/s 4.2%

- Capacity of 2 Mb/s and NX2 Mb/s 11.5%

- Capacity of 155 Mb/s 16.6%.

1.7 Status of Distribution of Radio and Television Programs Market

More dynamic development of cable television in Montenegro started in January 2007 when first licenses were officially awarded on the basis of international tender. Montenegro was among the last countries in the region which began with the development of electronic communications networks which are primarily used for the distribution of radio and television programs to the end user.

In Montenegro six operators operate. They use 4 different technological platforms for the distribution of radio and television programs to end users and they are as follows:

- Cabling, classical cable technology KDS,

- Eltamont, classical cable technology KDS,

- M-kabl, classical cable technology KDS,

- Broadband Montenegro Ltd, MMDS platform

- Total TV Montenegro, DTH (*Direct to Home*) platform, and

- Crnogorski Telekom JSC IPTV platform

- Media net Ltd.

MMDS/IPTV/DTH operators have developed their own network in the entire territory of the country while operators of classical cable technology are more local or regional, that is, they develop their own systems in the territory of one or more municipalities, which is as follows:

- Cabling in the territory of Budva municipality,

- Eltamont in the territory of Niksic municipality and

- M-kabl in the territory of municipalities of Bar, Bijelo Polje, Herceg Novi, Kotor, Pljevlja Podgorica and Tivat.

At the end of 2010 there was a total of 111,729 users; expressed as percentage per applied technology:

- KDS accounts for 14.40% of the market,

- MMDS accounts for 18.00% of the market,

- IPTV accounts for 36.86% of the market,

- DTH accounts for 30.74% of the market.

General assessment is that operators which have started to provide their services to end-users have generally had increase in the number of active users while the level of penetration and dynamics varies from one individual operator to another. The largest increase in the number of active users is recorded with the IPTV operator which currently owns more than a third of the total number of active users.

Penetration of cable television in relation to the number of households is around 57.36%. According to the data of the Statistical Office of Montenegro (*Census 2011 - Source: Monstat - Census of Population, Households and Dwellings in Montenegro*), average household in Montenegro has 3.21 members. If we take into account the fact that the largest number of connections refers to the category of households, it can be concluded that the number of potential users of cable television is about 360,000.

2 DEVELOPMENT OF ICT IN MONTENEGRO – current situation

2.1 Regulatory-Legal Framework

It should be mentioned here that progress in establishing legislative framework has been made. Emphasis is now transferred to the implementation of adopted laws, strategies, policies, programs and regulations.

ANNEX 6 presents an overview of adopted regulations pertaining to the Information Society.

2.2 eEducation

A significant part of activities in the field of eEducation was carried out which are aimed at the improvement of ICT infrastructure. Computer equipment and computer networks have been installed in all schools and in bigger schools one more computer classroom has been equipped; in accordance with technical capacities access to the Internet has been enabled in a greater number of schools. For the purpose of implementation of Integrated Information System of eEducation - three key Centers of Information System (CIS) have been connected to the following institutions: the Ministry of Education, University of Montenegro and Examination Center, which are relevant particularly in terms of database connections. Integrated information system of education will connect with other institutions in order to exchange information with Monstat, the Employment Agency the Ministry for Information Society and Telecommunications, etc. The eEducation Integrated Information System of Montenegro should be the backbone in building a modern educational system. MEIS - Montenegrin Educational Information System – the application which contains all relevant information related to education (students, teaching and administrative staff, marks, resources, etc.) has been completed and introduced in 12 secondary schools, and by the end of 2011 it will be introduced in all schools; it allows the following: keeping records and almost complete automation of all processes in education at all levels up to university, including records of resources and personnel, monitoring of teaching process, administrative and financial operations; easy, quick and simple communication and exchange of data and information between all entities of educational system; perception of positive and negative trends in education based on reports of various segments of the system; managing and checking quality in educational system of Montenegro. Underway is video-conference system testing, which will be made available to all educational institutions up to university level.

Introduction of mandatory and optional informatics subjects in primary and secondary schools represents a significantly advanced level of ICT knowledge that can be acquired in education. Realizing that application of ICT in educational system greatly depends on the level of ICT skillfulness of teachers, management structures and administrative staff in schools 16 regional ICT coordinators have been appointed and almost all schools have their local ICT coordinator.

Due to the importance of the segment of eEducation which refers to distance learning, the Ministry of Education and Sports has developed the Strategy for the Procurement of Didactic eMaterijals and Software, and certain number of students is educated based on the principle and with support of information and communication technologies.

Montenegrin Academic Network (MREN), formed within the Ministry of Science whose backbone is computer network of the University of Montenegro, is included in the GEANT - European Academic Network, which promotes activities aimed at the integration into international academic projects.

2.3 Registries

In order to establish a system that will enable data coverage on the spot where they are produced their online storage in a centralized database and enabling everyone who is legally recognized as entitled to use it, several registries have been established among which the most important are: the Central Population Registry, the Registry of the Pension and Disability Insurance Fund, the Registry of the Healthcare Fund, the Registry of the Employment Agency and the Central Registry of Business Entities. Underway is One-Stop-Shop project of unified registration of companies which will allow economic entities to register their activities at one place, to register as a tax payer or to enter customs, excise or any other registry. The following registries have been established: the Registry of Students, Schools and School Employees (MEIS - Montenegrin Educational Information System), Credit Bureaus and Public Credit Registry - records of credit borrowings of citizens and business entities. Activities aimed at the development of Information System for the records of scientific-research activities - eNID - Registry of Scientific Institutions, Personnel and Projects – integration of university registries and data about academic institutions at the country level etc.

2.4 eGovernment

The eGovernment portal has been developed. It presents services and information for citizens and businesses as well as information relevant for conducing internal administrative operations as a sort of electronic counter of public administration for physical and legal persons and for government bodies. This portal is a unique place on the Internet where it is possible to place all electronic public services offered by public administration bodies. Its aim is to provide all citizens and legal persons with possibility to obtain information and documents they need from any place via the Internet and eGovernment portal.

In the recent period one of the most complex projects - the System for Managing Documents in the Government and Ministries-eDMS (Electronic Document Management System), which involved all ministries and General Secretariat of the Government was implemented. Purpose of this project is informatization and electronization of office operations of the Government of Montenegro aimed at raising efficiency, time saving, cost

reduction and more quality management of documentation. The project is in its final stage of implementation and by the end of 2011 it will be implemented in all ministries.

2.5 eBusiness and eBanking

In order to create more quality base for e-business, infrastructure, which must be reliable, safe, accessible to all, it is tended to increase the quality and capacity of the existing communication systems and a broader use of broadband technologies. In the period of the previous implementation of the Strategy, percentage of the population that possesses and uses computer increased to 66.5%; percentage of the population with Internet access increased to 59.3%; the number of companies equipped with computer technology increased to 96.3%; the number of companies with Internet access increased to 94.9 %; and broadband access in companies increased to 89.5%. In the previous period certain funds were invested in the national ICT research projects, in infrastructure (laboratories) at faculties which deal with information technologies, procurement of scientific and research equipment for these faculties as well as in co-financing of scientific conferences, publishing papers in relevant journals etc.

In order to increase security of electronic operations and information security in Montenegro two certification bodies have been established - Public CA Post Office CA and internal CA GOV CA for the issuance of digital certificates.

In order to enable access for all and in all places, intensive activities aimed at the implementation of the project WIRELESS MONTENEGRO have been implemented. The Government of Montenegro has established a joint venture for the implementation of this project with their selected partner EOSS GmbH from Austria.

2.6 eHealthcare

In order to implement strategic priorities for the development of eHealthcare, information systems of primary and secondary healthcare level have been established. Information system of primary healthcare includes the work of all legal entities in public healthcare system engaged in providing primary level healthcare services. This system includes software modules of business and medical part of operations; the overall system is integrated with the existing healthcare system. Part of the system of the Institute of Public Health is associated with the Integrated Healthcare Information System which means the integration of operations of the Institute with service providers in healthcare domain. The information system of the General Hospitals has been installed and fully integrated into the existing system and in this way the Integrated Healthcare Information System includes processes related to secondary healthcare which creates conditions for more quality preparation of the reform in this segment of healthcare system and integration with the tertiary level. Within the Integrated Healthcare Information System in Montenegro, there are more than 250 remote locations with a total of over 2,000 computers. Users at these

sites exchange information with relating servers in “on-line” mode, using shared resources (communication links, communication equipment, hardware, etc.).

2.7 Data Protection

In the Ministry for Information Society and Telecommunications Computer Emergency Response Team/Computer Security Incident Response Team - CERT/CSIRT (Division for the protection against computer and security incidents on the Internet) has been established. Administrative agreement between Montenegro – the Ministry for Information Society and Telecommunications and the International Telecommunications Union has been signed in order to obtain specialized technical assistance for the needs of the establishment of the Computer Incident Response Team – CIRT (National team for processing and protection against computer incidents) which will operate in cooperation with CIRT’s network established by the International Multilateral Partnership Against Cyber Threats (IMPACT).

Through the system of inspection surveillance, implementation of the Law on Information Safety and Regulation on Measures for Information Security has been provided which contributes to raising the level of data protection.

ANNEX 1

Aim of the Strategy for the Sector of Electronic Communications which was adopted in 2006 was, among other things, to provide continuity of tendencies developed so far in the sector in telecommunications in the following five or more years. The Strategy also took into consideration basic international and regional processes relating to the sector of telecommunications and particularly the convergence of telecommunications and radio-broadcasting infrastructure in terms of services they provide (e.g. transmission of radio and TV programs via telephone networks, and telephone and Internet services via cable distribution network).

- Item 2.1 of the Strategy titled “Overview of Statements” among other things reads as follows:

Main topic which should be covered in the SEC Strategy is a convergence or increasing overlap of the until recently completely separated markets of networks and services such as telephony, radio-broadcasting and cable radio and television. The Strategy needs to address electronic networks and services in a manner described in the EU directives.

Namely, in the last several years huge development of electronic communications has led to the overlap of these services which allows talking about their separation. An example for this is Crnogorski Telekom, the operator which offers fixed telephony, Internet and IPTV services. Also the operator Cablig offers fixed telephony, Internet and cable TV services, while M-kabl offers cable TV and Internet.

- Item 2.7 of the Strategy titled “Internet Access” in the part relating to the broadband access, among other things reads as follows:

There is no overlap in services provided by operators of cable television and telecommunication operators. There is only one operator of cable television (Kabling Budva), which was established in municipality of Budva. Kabling Budva is building a hybrid optical-coaxial network (HFC) in cooperation with municipality of Budva and Crnogorki Telekom. Users which are about 5,000 (apartments and hotels) are offered a basic package of services which includes 30 TV channels in four languages. Future development plans of this company regarding the cover-up of the entire coastline with their network are inhibited by the uncertainty about whether Telekom can provide optical links for these purposes.

The development of broadband access services, as well as the issue of development of cable television should be major issues in the SEC Strategy. The issue of the development of cable television should be taken into account as well as interconnections and overlaps with the Radio-Broadcasting Strategy. Thus for example the obligation of public radio-broadcasting services “free transmission” whose provision is the obligation of the Government, applies to the operators of cable television, but also to the company Telekom for the next 20 years.

Access via cable network is a broadband Internet access through coaxial cable (or a hybrid optical-coaxial network), which at the same time distributes signal of cable television. This approach allows transfer of data in speeds approximately equal to the access via ADSL based on copper twister pair, and operates on the principle of sharing bandwidth. Service of retail broadband Internet access via cable networks in Montenegro is currently provided by the operators Cabling and M-kabl, but only at the local level of one or more municipalities. Eltamont is the only operator which provides only cable television services and uses its own network in the territory of one municipality which is based solely on coaxial cables. M-kabl uses partly its own HFC network, and partly rents part of the Crnogorski Telekom's network. Cabling uses only its own HFC network. As for Crnogorski Telekom, it uses only its own network based on the use of fiber optic cables.

3) Recommendation A1 of the Strategy titled "Activities of the Agency for Electronic Communications and Postal Services," among other things states that major priorities and comparison of initiatives of AEKP should include the following:

> *7) Stimulating the development and use of broadband services by conducting the following activities:*
>
> *- Determine conditions for spreading cable transmission networks which can provide competition for ADSL via cable modem (see Recommendation R10)*
>
> *- Impose conditions against Crnogorski Telekom to provide service of leasing a disintegrated local loop and wholesale of ADSL service (see Recommendation R6); and*
>
> *- Facilitate and encourage the introduction of broadband wireless access in a form of Wi-Fi (so-called "'hot-spots" in hotels, cafes and other locations such as airports and public buildings) and making available spectrum for new technologies such as Wi-Max. Practical value of "hot spots" will depend on whether broadband links from operators are made available to the owners of these locations at reasonable rates, mainly by Crnogorski Telekom.*

Pursuant to Articles 8, 41 and 42 of the Law on Electronic Communications EKIP conducted market analysis about the access to network infrastructure at the wholesale level and concluded that relevant market of access to network infrastructure at the wholesale level (including joint or fully de-committed access at the determined location), in the relevant period did not exist, but is treated as imagined and being such includes only services in capacities of self-supply of Crnogorski Telekom aimed at the provision of retail broadband access via ADSL and it stated that Montenegrin Telecom is the operator with significant market power in the market of network infrastructure access at the wholesale level. Also, EKIP determines that relevant geographic market for the provision of these services in terms of its scope is national since the prevailing conditions of competition as well as legal and regulatory framework and pricing policy are identical in the entire territory of Montenegro. EKIP's Council assigned Crnogorski Telekom , as the operator with

significant market power, with a duty to provide, among other regulatory duties, equal treatment-nondiscrimination and a duty to allow access to the network elements and their use.

Cable networks in Montenegro are currently not able to support any potential wholesale requests for broadband approach, because their functioning is based on multiplexing of several users signals, which prevents consistent quality of service which is present with ADSL technology. Some existing cable operators which have their own cable infrastructure, have adjusted their networks lately with some investments so that they can provide Internet access services but only at the level of individual municipalities, rather than at the national level, as is the case with Crnogorski Telekom. Consequently, broadband internet access via cable networks cannot be viewed as substitute for broadband Internet access via ADSL, but in case of additional investments in network, it would be a potential competition to the ADSL access.

Crnogorski Telekom should be committed to ensure a joint use of cable canalization that is to provide access to distributive telecommunications via cable to the operator's external board or another collection points in accordance with Article 33 of the Law on Electronic Communications (LEC). In relation to this, cost of leasing telecommunication canalization, which until recently amounted to almost € 0.32/m which was by EKP's decision derived based on market analysis, since February 2011 amounts to €0.09/m.

In case there is no room in cable canalization Crnogorski Telekom is obliged to offer the operator an alternative solution in accordance with given options. These measures will stimulate investments in the existing network infrastructure as well as innovations in access technology, which will affect the development of electronic communications networks. In this way ultimate goal will be achieved - to allow end users to choose between operators which provide broadband and voice services.

Montenegrin Telecom should provide the minimum required (technically feasible) collocation space at request of operator, which would prevent anti-competitive service connection. The obligation to provide collocation services within the duty to provide joint placement of equipment and other forms of joint utilization of capacities of infrastructure for the needs of access to unbundled local loop towards the Crnogorski Telekom will encourage investments in the existing network infrastructure, innovations in access technology and the development of electronic communication networks. Users will thus be able to choose the operator of broadband and voice services. In this way Crnogorski Telekom should provide at the event of providing services of collocations availability of its resources to the extent which is appropriate to the given request and in particular continuous power supply for other operators under the same conditions as for its own needs, which would allow cost optimization to operators.

The Law on Electronic Communications, as well as amendments to the Law on Electronic Communications and the Law on Electronic Media **fully resolve the issue of segregation of powers of the Agency for Electronic Communications and Postal Services and the**

Agency for Electronic Media (former Radio-Broadcasting Agency), as well as cooperation between these two regulatory bodies.

Thus, in order to provide conditions for a successful implementation of regulation of the sector of electronic media in accordance with recommendations of the Council of Europe and the Audiovisual Media Services Directive by adopting the Law on Amendments to Law on Electronic Communications and the Law on Electronic Media, responsibilities between the two regulatory bodies have been separated in the sense that:

- Tender procedure relating to the frequency intended for radio-broadcasting services,

- Regulation of providing audiovisual media services via other transmission systems (cable and wireless TV/radio distribution systems),

are implemented by a regulatory body for the area of electronic media.

EKIP continues to implement regulatory procedures and supervision of users of radio-broadcasting frequencies as well as providers of audiovisual media services through electronic communications networks in terms of technical supervision in order to monitor whether conditions prescribed by the Law on Electronic Communications and terms and conditions prescribed in the decisions issued to these subjects of supervision have been observed.

In July 2010 the Law on Electronic Media was adopted, which together with the Law on Amendments to Law on Electronic Communications creates preconditions for the establishment of **independent regulatory body in the area of electronic media and successful regulation of this area in accordance with positive practice of European countries and a set of directives and recommendations which regulate this the area**.

In item 3.3.1 of the Strategy titled “Planning and Use of Electronic Communications,” some of the goals of the Government as a user of electronic communications services are mentioned. The above mentioned goals according to the Strategy (p.75) are as follows:

> *“1) As a major consumer of telecommunications services (i.e. source of income for SEC), the Government of Montenegro can make a significant impact on operators and service providers (and thus help ensure timely and efficient implementation of the Strategy) in terms of type and commercial terms and conditions applying to services they provide and plan to improve and develop, if they are efficiently and effectively negotiated with in order to meet own needs, which would positively affect the movement of retail prices in the SEC market;*
>
> *2) The Government of Montenegro should minimize costs for network services it needs to provide its own services in many areas (healthcare, education, social welfare, security, administration related to judicial system, etc.) to users, i.e. physical persons, business organizations and local self-governments in the Republic, as well as to foreigners and international partners*.”

Meeting the above mentioned goals is foreseen by the implementation of two recommendations:

- *Recommendation G1 - integration of human resources*
- *Recommendation G2 - coordinated network planning.*

Recommendation G1, among other things, foresees establishment of the department for information and communication technologies, which would conduct the following activities:

- Function in a similar way as the IC and telecommunications sectors in many companies,

- Provide expert assistance to the competent Ministry in fulfilling its duties relating to the formulation of legislation and policy of the sector of electronic communications;

- Provide assistance to all sectors in the Government in fulfilling all relevant responsibilities as well as all specific users needs which refer to all forms of traffic such as voice, data and video;

- Influence the development of network and services for the needs of Government, which would provide that planned characteristics, availability and accessibility of network services meet all individual requirements;

- Act on behalf of all government ministries and bodies in negotiations with network providers and providers of electronic communications services, and conduct estimates on what the Government of Montenegro can do internally and what should be separated and contracted with third parties.

Recommendation G2, inter alia, provides that:

- The Government, through the activities of the sector for information and communication technologies, which would be formed in accordance with recommendation G1, should initiate for its needs planning of the future (after the expiry of the current contract with Telekom CG) integrated national IP-based network, which would transmit speech (telephony) and other types of traffic (data, images, videos). The Government should consider the following alternatives, (which does not mean that this is a definitive list):

    1) Continuation of the use of Telekom MPLS network, while adding other types of voice traffic (via VoIP),

    2) Building their own private IP network, which could be based on the capacity of transmission received from Telekom CG, another public operator or (even if this refers only to specific geographic areas) from other sources that would appeared in the market, such as BCM, EPCG and Railway of Montenegro etc.,

    3) Various hybrid combinations of their own equipment, services and equipment and services of third parties.

- The Government’s coordinated planning should include consideration of the needs of mobile communications and speech and other kinds of traffic, which could also be satisfied

through the combined use of public and private wireless networks and services. Alternatives to be considered include (this may not be the final list):

1) Development of separated digital radio line networks (TETRA-Terrestrial Trunked Radio) which should use different parts/services of the Government, as well as public companies or Government owned companies,

2) New or renewed negotiations about the arrangements for one or more Closed User Groups (CUG) with GSM operators (the Ministry of Internal Affairs has one existing arrangement of this kind with Monet), and

3) Combination of previous alternatives for different applications (e.g. TETRA for the needs of police, security and other services of public safety and emergency services and GSM in general).

Results of the fulfillment of recommendations:

In relation to the **recommendation G1**, it can be concluded that recommendations from the Strategy have been fulfilled.

Namely, based on Regulation on Organization and Manner of Work of Public Administration (Official Gazette of Montenegro 07/2011) the Ministry for Information Society and Telecommunications was established, which, in accordance with Article 17 of this Regulation is in charge, inter alia, for the following matters (in accordance with recommendation G1):

- Management and coordination of the projects in the area of information society for the needs of government bodies;

- Establishment of technology and security IT infrastructure in the government bodies;

- Rationalization of the use of IT resources in the government bodies;

- Establishing technical and other rules of the use of IT resources in the government bodies;

- Performing joint procurement of IT resources and Internet services for the government bodies;

- Analysis of the situation and resources required to develop e-government as well as planning the overall e-government architecture;

- Implementation of development policy and construction of information-communication infrastructure in Montenegro, public access to the Internet services, electronic government, electronic education electronic healthcare and electronic business operations;

- Providing technical assistance in the implementation of ICT in public administration.

Besides the fact that the Ministry for Information Society and Telecommunications performs all tasks in accordance with recommendations from the Strategy, the Ministry has been in charge as of the beginning of 2011 for designing the policy in the sector of electronic

communications. In this way as of the beginning of 2011 the Ministry has been in charge for electronic communications and information society, which was not the case in the previous period.

In relation to the **recommendation G2**, it can be stated that recommendations from the Strategy have been implemented to a large extent.

Namely, as noted in the part related to the fulfillment of obligation G1, the Ministry for Information Society and Telecommunications, on behalf of the Government, is responsible for the implementation of this recommendation. Given that these are operational matters, the Ministry has been continually working on the implementation of its obligations in line with its powers.

Apart from that on 29 December 2010 the Ministry published the “Invitation to public tender for collecting bids for the selection of strategic partner for joint investment in implementation of the project “Wireless Montenegro” in the territory of Montenegro.”

With this invitation the Ministry for Information Society and Telecommunications has launched efforts to increase Internet penetration. Accordingly there was a need to improve infrastructure and increase information-communication capacities in order to meet the optimal needs of end users, whether these are citizens, economy or government bodies that is institutions. In doing so, the government’s commitment is to achieve the above mentioned goal through the implementation of public electronic communications network for the provision of a wide range of IP services to all categories of users based on WiFi technology (project: Wireless Montenegro). Also, the project Wireless Montenegro includes implementation of a closed radio network/system based on TETRA technology for the needs of the government bodies i.e. institutions. Subject of this public invitation is the selection of a strategic partner for joint investment in the implementation of the project “Wireless Montenegro.”

As for the organizational structure of regulatory bodies responsible for the field of electronic communications and electronic media, different models can be identified, where **most countries have the model of organizational structure of separate regulatory bodies for the above mentioned areas**.

The model of organizational structure of **separate regulatory bodies** in the area of electronic communications and electronic media is present in the following European countries: Albania, Belgium, Bulgaria, Czech Republic, Greece, France, Holland, Croatia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Norway, Germany, Poland, Portugal, Romania, Slovakia, Slovenia, Serbia, Ukraine and Sweden.

The model of organizational structure of **converged regulatory bodies that is integrated bodies** in the field of electronic communications and electronic media is present in the following countries of Europe: Austria, Italy, Hungary, Switzerland and United Kingdom.

However, in a number of European countries (Belarus, Denmark, Estonia and Spain) regulatory function in the field of electronic communications is conducted by line ministries and individual sectors within them.

As for the election of management bodies various models apply as defined by national legislations. Election of management bodies of regulatory authority for electronic communications that is the body which has powers in that area is conducted by:

- Parliament, in Albania, Croatia, Italy, Hungary, Slovakia, Switzerland;

- President, in Lithuania and Romania;

- Government or government bodies in Austria, Belarus, Bulgaria, Czech Republic, Denmark, Estonia, Greece, Holland, Ireland, Cyprus, Norway, Germany, Poland, Portugal, Slovenia, UK, Spain and Sweden;

- The king, in Belgium.

ANNEX 2

The Government of Montenegro passed and published the following regulations:

1. Decision on pricing fees for covering administration costs of radio-frequency spectrum (Official Gazette of Montenegro 22/09)
2. Plan of intended use of the radio-frequency spectrum (Official Gazette of Montenegro 42/10)
3. Decree on the minimum set of services covered under the universal service (Official Gazette of Montenegro 60/10)

The Ministry passed and published the following regulations:

1. Rulebook on methodology and the manner of calculation of annual fees for the use of numbering and/or addresses (Official Gazette of Montenegro 01/09)
2. Rulebook on methodology and the manner of calculation of annual fees for the use of radio frequencies (Official Gazette of Montenegro 01/09, 77/10)
3. Rulebook on the manner, conditions and dynamics of introducing the common European emergency number 112, and on the quality of servicing calls made to this number (Official Gazette of Montenegro 64/09)
4. Rulebook on the conditions and manner of the use of the minimum set of leased lines (Official Gazette of Montenegro 70/09)
5. Rulebook on the content and manner of keeping registry of operators, registry of approved radio frequencies, and registry of assigned numbering and addresses (Official Gazette of Montenegro 71/09)
6. Rulebook on the manner of registration of users of public communications networks (Official Gazette of Montenegro 77/09)
7. Rulebook on the manner of establishing elements of electronic communications networks and supporting infrastructure, width of the protected zones and types of radio corridors where no other facilities may be constructed (Official Gazette of Montenegro 83/09)
8. Amendments to the Rulebook on methodology and the manner of calculation of annual fees for the use of radio frequency (Official Gazette of Montenegro 1/10)
9. Amendments to the Rulebook on the methodology and the manner of calculation of annual fees for the use of numbering and/or addresses (Official Gazette of Montenegro 17/10)
10. Amendments to the Rulebook on methodology and the manner of calculation of annual fees for the use of radio frequency (Official Gazette of Montenegro 1/10)
11. Rulebook on interoperability of digital television equipment (Official Gazette of Montenegro 43/10)
12. Plan of use of radio frequencies (Official Gazette of Montenegro 42/10)
13. Rulebook on pricing reserved postal services (Official Gazette of Montenegro 36/10)
14. Rulebook on service quality of Universal Service (Official Gazette of Montenegro 57/10)
15. Rulebook on establishing beneficiary categories in using Universal Service services (Official Gazette of Montenegro 57/10).

The Ministry plans to pass the following acts in 2011: the Rulebook on technical requirements for export, trading and using radio and telecommunications terminal equipment; the Rulebook on electromagnetic compatibility (EMC), the Rulebook on technical requirements for connecting to public electronic communications network; the

Rulebook on the quality of public electronic communications services; the Regulation on adjusting public electronic communications to residential and commercial buildings; the Rulebook on amateur radio communications; and the Rulebook on radio frequencies and conditions for using radio frequencies without the approval.

The Agency passed the following acts within its competence:

1. Numbering Plan (Official Gazette of Montenegro 34/09)
2. Addresses Plan (Official Gazette of Montenegro 34/09)
3. Decision on relevant markets in services and the relevant geographical market
4. Decision on establishing one-off fee for processing requests for approval of radio frequencies and the approval for the use of numbering and/or addresses (Official Gazette of Montenegro 11/09)
5. Instructions for the content of technical documentation to support operator registration application
6. Decision on pricing fees for covering administration costs of radio-frequency spectrum (Official Gazette of Montenegro 22/09)
7. Supplement to the Numbering Plan (Official Gazette of Montenegro 65/09)
8. Rulebook on the scope and manner of submitting information on the capacity of electronic communications infrastructure of common interest (Official Gazette of Montenegro 79/09)
9. Rulebook on operator's access and interconnection (Official Gazette of Montenegro 79/09)
10. Rulebook on the number portability (Official Gazette of Montenegro 89/09)
11. Amendments to the Numbering Plan (Official Gazette of Montenegro 11/10)
12. Rulebook on marginal values of electromagnetic field parameters with a view to limiting the exposure of population to electromagnetic radiation (Official Gazette of Montenegro 15/10)
13. Decision on the manner of disclosing information on prices, tariffs and general conditions for offering public electronic communications services (Official Gazette of Montenegro 21/10)
14. Rulebook on technical and exploitation conditions for using radio-broadcasting stations for frequency modulated transmission (Official Gazette of Montenegro 22/10)
15. Rulebook on technical and exploitation conditions for using radio-broadcasting stations for television broadcasting within frequency ranges VHF I and III and UHF IV(Official Gazette of Montenegro 22/10)
16. Decision on document templates for electronic communications infrastructure of common interest to be submitted by operators (Official Gazette of Montenegro 23/10)
17. Decision on amending the plan of assigning radio-broadcasting frequencies in Montenegro (Official Gazette of Montenegro 23/10)
18. Decision on the suspension of Rulebook on electronic communications subscriber installations in residential and commercial buildings (Official Gazette of Montenegro 31/10)
19. Rulebook on public invitation procedure and establishing criteria for the selection of Universal Service Operator (Official Gazette of Montenegro 35/10)

20. Rulebook on the criteria for the assessment of reasonableness of a user request for connection to the public telephone network and the need of end users in terms of geographic coverage of public pay telephone (Official Gazette of Montenegro 35/10)
21. Decision on amending the plan of assigning radio-broadcasting frequencies (Official Gazette of Montenegro 37/10).

Other planned secondary legislation to be passed by the Agency in 2011 are the following: The Rules on retail prices regulation; the Methodology of cost accounting and accounting separation; the Rulebook on tariffs and packages of Universal service for low-income and disabled users; Amendments to the plans of awarding radio frequencies; the Numbering Plan, and the Addresses Plan.

During 2009, the Agency laid professional grounds for acts to be passed by the relevant Ministry and forwarded them to the Ministry for further procedure. In 2011, the Agency is to prepare professional grounds for the following:

- Regulation/decision on the contents of the approval for radio frequencies used for terrestrial digital radio-broadcasting systems;
- Rulebook on the specification on receiver equipment for terrestrial digital radio-broadcasting;
- Rulebook on technical requirements for the realization of the first and the second network with the national coverage and general conditions for the realization of other networks.

ANNEX 3

The Agency for Electronic Communications and Postal Services (EKIP) announced the Invitation to tender for the selection of the Universal Service Operator on 25 October 2010 and it was open until 28 December 2010.

Bidders responded to the tender for all types of individual services under the Universal Service defined in Article 52 paragraph 4 points 1-5 of the Law on Electronic Communications (Official Gazette of Montenegro 50/08, 53/09, 70/09, 40/10 and 49/10) as follows:

1. Telenor Ltd and M: Tel Ltd responded to the tender for services defined under Article 52 paragraph 4 items 1, 2 and 5. Telenor Ltd was selected as the operator of individual services under the Universal Service involving meeting any reasonable requests of users for the connection to the public telephone network at a fixed location, which implies the establishment of phone calls, transfer of communication via fax and data communication at speed suitable for efficient Internet access, as well as the offering of certain benefits to end users – disabled persons and low-income users;
2. MCA Maribor and M: Tel Ltd responded to the tender for services defined under Article 52 paragraph 4 items 3 and 5. The selected operator was MCA Maribor for individual services under the Universal Service involving offering universal telephone directory and universal service for providing information on subscribers, as well as providing certain benefits to end users - disabled persons and low-income users; and
3. Halo Card Ltd responded to the tender for services under Article 52 paragraph 4 items 4 and 5. The public tender was cancelled. The services involved are the provision of public pay phones and certain benefits to end users - disabled persons. The offer made by Halo Card Ltd was assessed as unacceptable because it was not in line with the requirements defined in the Tender documents. The Invitation to tender with regard to these services was cancelled and it will be re-announced in the near future.

The EKIP Council passed decisions on the selection of the Universal Service operators for the period of five years, as per public tender. The selected bidders should start with provision of services as of 1 May 2011.

The accepted Telenor offer involves the cost of connection of €55,55, the price of local and long distance calls in off-peak hours between 20:00 hours and 08:00 hours on the following day of 0.04 €/min, while the price in peak hours between 08:00 hours and 20:00 hours is 0.06 €/min; the price of calls to cell phone networks in off-peak hours is 0.11 €/min and during the peak hours between 08:00 hours and 20:00 hours it is 0.19 €/min; the price of long-distance calls is 0.47 €. As for the Internet traffic, the price of 1MB is 0.017 €; all the

aforesaid prices do not include VAT. Discounts for disabled persons are envisaged, amounting to 50% for the connection and 20% for all calls and Internet traffic.

ANNEX 4

MARKET 1: ACCESS TO PUBLIC TELEPHONE NETWORK AT FIXED LOCATION FOR PHYSICAL AND LEGAL PERSONS – RETAIL LEVEL

Operators with significant market strength and regulatory obligations prescribed in the relevant market	**Overview of regulatory obligations in the relevant markets**
Operator Crnogorski Telekom JSC was prescribed regulatory obligations on both wholesale and retail levels: .	Obligations on the wholesale level: 1) possibility of service users to select/pre-select operator 2) obligation of wholesale lease of subscription lines at wholesale level, Obligations on the retail level: In its Rules on regulation of retail prices, the Agency will impose obligations at the retail level to cover the following: 1) Measures to prevent excessive prices calculation; 2) Measures to limit competition by setting up too high or too low prices; 3) Measures to prevent give unjustifiable advantage to certain categories of end users; 4) Measures to prevent unjustifiable bundling of certain cervices.

MARKET 2: CALLS ORIGINATING FROM PUBLIC TELEPHONE NETWORK AND OFFERED AT A FIXED LOCATION – WHOLESALE LEVEL AS WELL

Operator Crnogorski Telekom JSC was prescribed the following regulatory obligations:

1)provision of visibility – reference interconnection offer,

2)provision of equal treatment – non-discrimination,

3) accounting separation,

4) enabling access to the network elements and their use,

5) price control and cost accounting.

	Current price of outgoing calls of Crnogorski Telekom within the access point network code	Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)	Price to be applied 12 months following the day of entry into force of the Decision
Price in €c/min	2.25	1.59	0,93

	Current price of outgoing calls of Crnogorski Telekom	Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)	Price to be applied 12 months following the day of entry into force of the Decision
Price in €c/min	2.7	1.88	1.07

MARKET 3: CALLS ENDING IN INDIVIDUAL PUBLIC TELEPHONE NETWORKS AND OFFERED AT FIXED LOCATION – WHOLESALE LEVEL

Operator Crnogorski Telekom JSC was prescribed the following regulatory obligations:

1)provision of visibility – reference interconnection offer,

2)provision of equal treatment – non-discrimination,

3) accounting separation,

4) enabling access to the network elements and their use,

5) price control and cost accounting.

	Current price of outgoing calls of Crnogorski Telekom within the access point network code	Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)	Price to be applied 12 months following the day of entry into force of the Decision
Price in €c/min	2.25	1.59	0,93
	Current price of outgoing national call of Crnogorski Telekom	Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)	Price to be applied 12 months following the day of entry into force of the Decision
Price in €c/min	2.7	1.88	1.07

Operator M: Tel Ltd was prescribed the following regulatory obligations:

1)provision of visibility – reference interconnectio

	Current price of M; Tel mobile termination (single transit) in €c/min	Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)	Price to be applied 12 months following the day of entry into force of the Decision
Price	3	2,81	1,42

n offer, 2)provision of equal treatment – non-discrimination, 3) enabling access to the network elements and their use, 4) price control	<table><tr><td>in €c/min</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>

MARKET 4: ACCESS TO NETWORK INFRASTRUCTURE ON THE WHOLESALE LEVEL (INCLUDING COMMON OR COMPLETELY UNBUNDLED ACCESS AT FIXED LOCATION) – WHOLESALE LEVEL

Operator Crnogorski Telekom JSC was prescribed the following regulatory obligations: 1)provision of visibility – reference interconnection offer, 2)provision of equal treatment – non-discrimination, 3) accounting separation, 4) enabling access to the network elements and their use, 5) price control and cost accounting.	<table><tr><td>Monthly subscription fee</td><td>Price in EUR to be effective as of the day of publishing the Reference interconnection offer (12 February2011)</td></tr><tr><td>for total access to the local loop</td><td>3,88</td></tr><tr><td>for common access to the local loop</td><td>1,16</td></tr></table> <table><tr><td>Monthly subscription fee for common use of cable sewage</td><td>Price in EUR to be effective as of the day of publishing the Reference interconnection offer (12 February2011)</td></tr><tr><td>space for a cable of 40 mm/canal per meter</td><td>0,0811</td></tr><tr><td>space for a cable of.20 mm /canal per meter</td><td>0,0304</td></tr><tr><td>space for a cable in PE tube Ø</td><td>0,0945</td></tr></table>

	40mm, located in u PVC tube Ø 110mm	

MARKET 5: BROADBAND ACCESS – WHOLESALE LEVEL

Operator Crnogorski Telekom JSC was prescribed the following regulatory obligations: 1)provision of visibility – reference interconnection offer, 2)provision of equal treatment – non-discrimination, 3) accounting separation, 4) enabling access to the network elements and their use, 5) price control and cost accounting.	The benchmarking exercise established the "minus" of 42% which Crnogorski Telekom is obliged to apply in relation to the level of retail prices. For example, for the price of 17.08 € for the flat rate package of 2 Mb/s (VAT excluded), after the deduction of 42%, the wholesale price obtained is 9.90 € for the relevant capacity.

MARKET 6: TERMINAL LEASED LINE SEGMENT REGARDLESS OF TECHNOLOGY USED TO ENSURE THE LEASED OR AWARDED CAPACITY – WHOLESALE LEVEL

Operator Crnogorski Telekom JSC was prescribed the following	**OVERVIEW OF MAXIMUM PRICES OF LEASED LINES AS PER THE EC RECCOMMENDATION**					
	Capacity	Upper limit, the	Upper limit, the	Upper limit, the	Upper limit, the sum of	**Upper limit for**

regulatory obligations:

1)provision of visibility – reference interconnection offer,

2)provision of equal treatment – non-discrimination,

3) accounting separation,

4) enabling access to the network elements and their use,

5) price control and cost accounting.

	sum of monthly subscription fee and 1/24 of the price for the connection for up **to 2 km** in length	sum of monthly subscription fee and 1/24 of the price for the connection for up **to 5 km** in length	sum of monthly subscription fee and 1/24 of the price for the connection for up **to 15 km** in length	monthly subscription fee and 1/24 of the price for the connection for up **to 50 km** in length	**the connection price**
64 kbits	61	78	82	99	542
2 Mbits	186	248	333	539	1112
34 mbits	892	963	1597	2539	2831
155 mbits	1206	1332	1991	4144	3144

MARKET 7: CALLS ENDING IN INDIVIDUAL MOBILE NETWORKS – WHOLESALE LEVEL

OperatorsT-Mobile, Telenor d.o.o and M:tel Ltd were prescribed the following regulatory obligations:

1)provision of visibility – reference interconnection offer,

2)provision of equal treatment –

	Current price of mobile termination	**Price to be effective as of the day of publishing the Reference interconnection offer (12 February2011)**	**Price to be applied 12 months following the day of entry into force of the Decision**
Price in €c/min	10,00	8,5	7,06

non-discrimination, 3) enabling access to the network elements and their use, 4) price control and cost accounting	

Effects of regulatory measures to be generated based on the analysis of the aforesaid markets will reflect in the following:

(1) creation of a stimulating environment in terms of removing or reducing barriers to the entry into the relevant market, which offers to all competitors equal conditions to operate in the market,
(2) a higher degree of market competition, thus maximizing benefits to end users with regard to opportunities for a greater selection of service providers and innovative services, more favourable prices of services, better service quality,
(3) restricting or preventing anti-competitive conduct by operators with significant market strength in the relevant market.

ANNEX 5

PROJECT OF ACCOUNTING SEPARATION AND COST ACCOUNTING

EKIP has initiated the Project of Accounting Separation and Cost Accounting and started working with the selected consultant from KPMB Croatia at the beginning of 2011.

The plan, scope and stages of the Project of Accounting Separation and Cost Accounting are as follows:

Preparation of a draft Consultation document – Methodology for Accounting Separation and Cost Accounting, which will be the subject of a public consultation process no later than by 1 April 2011. A draft methodology will contain an overview of regulatory financial reports, a proposed method of cost accounting for every relevant market and connected market segments, guidelines for the cost accounting system, and the like. The deadline for consultations is one month.

Responses to any remarks and comments made by the operators will be made no later than one month following the receipt of any such remarks or comments;

A decision on regulatory obligation to be based on proposals and recommendations contained in the Consultation document will be passed by the EKIP Council by 31 July 2011.

The operator obliged to apply accounting separation and cost accounting (Crnogorski Telekom) will submit by 1 September 2011 Draft accounting documents, Document on allocation method, and the Implementation plan that the EKIP should approve no later than by 31 December 2011. .

Until 1 May 2012, Crnogorski Telekom should prepare first financial reports as per the fully distributed costs (FDC) method on the basis of historical cost accounting (HCA).

Until 1 June 2012, Crnogorski Telekom should submit to EKIP reviewed financial statements to be approved by EKIP.

Accounting separation is the most frequently used tool to prevent activities such as too high prices of retail services, pricing discrimination, cross-subsiding, and predatory pricing.

The purpose of introducing cost accounting is price regulation. The obligation of cost accounting is possible to introduce both in wholesale and retail markets.

ANNEX 6

Legislation

- The Law on Electronic Signature (Official Gazette of Montenegro 55/03, 31/05)

  http://www.gov.me/files/1198662448.pdf

- The Law on Amendments to the Law on Electronic Signature (Official Gazette of Montenegro 41/10)

  http://www.mid.gov.me/biblioteka/zakoni

- The Rulebook on Technical Rules and Conditions of Connecting the System of Certification of Electronic Signatures (Official Gazette of Montenegro 25/05)

  http://www.mid.gov.me/biblioteka/pravilnici?query=pravilima&sortDirection=desc

- The Rulebook on Measures of Use and Protection of Electronic Signature, Instrument for Production of Electronic Signature and System of Certification (Official Gazette of Montenegro 25/05)

  http://www.mid.gov.me/biblioteka/pravilnici?query=upotrebe&sortDirection=desc

- The Rulebook on the Contents and Manner of Keeping Records and Registry of Certification of Service Provider (Official Gazette of Montenegro 71/10)

  http://www.mid.gov.me/biblioteka/pravilnici?query=evidencije&sortDirection=desc

- The Law on Electronic Trade (Official Gazette of Montenegro 80/04)

  http://www.gov.me/files/1198662564.pdf

- The Law on Amendments to the Law on Electronic Trade (Official Gazette of Montenegro 41/10)

  http://www.mid.gov.me/biblioteka/zakoni

- The Law on Electronic Document (Official Gazette of Montenegro 5/08)

  http://www.gov.me/files/1221489506.pdf

- The Law on Application of Regulations which Regulate Protection of Rights of Intellectual Property (Official Gazette of Montenegro 45/05)

  http://www.pkcg.org/zakonodavstvo/intelektualna_svojina/dok_1.pdf

- The Law on Media (Official Gazette of Montenegro 51/02, 56/04)

  http://www.aBCMg.org/index2.php?option=com_docman&task=doc_view&gid=20&Itemid=26

- The Law on Public Radio-Broadcasting Services of Montenegro (Official Gazette of Montenegro 79/08)

  http://www.skupstina.me/cms/site_data/23_%20SAZIV%20ZAKONI/ZAKON%20O%20JAVNIM%20RADIO-DIFUZNIM%20SERVISIMA%20CRNE%20GORE.pdf

- The Law on Confirming the Convention on Computer Crime (Official Gazette of Montenegro "International Treaties", 4/09)

  http://www.skupstina.me/cms/site_data/novo/Zakon%20o%20potvrdjivanju%20Konvencije%20o%20racunarskom%20kriminalu.pdf

- The Law on Confirming Additional Protocol with the Convention on Computer Crime (Official Gazette of Montenegro – International Treaties", 4/09)

  http://www.skupstina.me/cms/site_data/novo/Zakon%20o%20potvrdjivanju%20Dodatnog%20protokola%20uz%20Konvenciju%20o%20racunskom%20kriminalu%20koji%20se%20odnosi%20na%20kaznjavanje%20akata.pdf

- The Law on Electronic Communications (Official Gazette of Montenegro 50/08)

  http://www.gov.me/files/1227718289.pdf

- The Law on Amending the Law on Electronic Communications (Official Gazette of Montenegro 14/10)

  http://www.skupstina.me/cms/site_data/PREDLOZI/PREDLOZI3/ZAKON%20O%20DOPUNI%20ZAKONA%20O%20ELEKTRONSKIM%20KOMUNIKACIJAMA.pdf

- The Rulebook on the Contents and Manner of Keeping Register of Operators, the Registry of Approved Radio-Frequencies and Registry of Awarded Numbering and Addresses (Official Gazette of Montenegro 50/08)

  http://www.mid.gov.me/biblioteka/pravilnici

- The Rulebook on the Conditions and the Manner of Use of Minimum Set of Leased Lines (Official Gazette of Montenegro 70/09)

  http://www.mid.gov.me/biblioteka/pravilnici

- The Rulebook on the Manner of Registration of Users of Services of Public Communication Networks (Official Gazette of Montenegro 77/09)

  http://www.mid.gov.me/biblioteka/pravilnici

- The Rulebook on Operator Access and Interconnection (Official Gazette of Montenegro 79/09)

  http://www.ekip.me/download/regulativa/pero/2009_79%20Pravinik%20o%20oprat%20pristupu%20i%20interkonekciji.pdf

- The Rulebook on Conditions for Interoperability of Digital Television User Equipment (Official Gazette of Montenegro 43/10)

  http://www.mid.gov.me/biblioteka/pravilnici

- The Rulebook on Determining Category of Users of Benefits in the Use of Services Provided by Universal Service (Official Gazette of Montenegro 57/10)

  http://www.mid.gov.me/biblioteka/pravilnici

- The Rulebook on Quality of Services of University Service (Official Gazette of Montenegro 57/10")

  http://www.mid.gov.me/biblioteka/pravilnici

- The Law on Confirming Additional Protocol with the Convention on the Protection of Persons in Relation to Automatic Processing of Personal Data in Relation to Supervisory Bodies and Cross-Border Flow of Data
  http://www.skupstina.me/index.php?strana=zakoni&id=530
- The Law on Information Security (Official Gazette of Montenegro 14/10")
  http://www.skupstina.me/cms/site_data/AKTI%202010/Zakon%20o%20informacionoj%20bezbjednosti.pdf
- The Law on Electronic Media (Official Gazette of Montenegro 46/10)
  http://www.skupstina.me/cms/site_data/AKTI%2020104/Zakon%20o%20elektronskim%20medijima%20PDF.pdf