

Report on implementation of bSEE Action Plan

February 2008

BOSNIA AND HERZEGOVINA

THE SITUATION OF BROADBAND COMMUNICATIONS IN BOSNIA AND HERZEGOVINA

UMTS license issuance

The development of the **broadband** communications market in Bosnia and Herzegovina during 2006 and 2007 didn't show the expected results. The issuance of three UMTS licences for three existing GSM operators was planned for the Year 2007 but it is still uncertain when the tendering process will start or licences will be granted.

The Study for UMTS implementation in BiH was finished by the expert Group nominated by BiH Ministry of Transport and Communications in February 2007, but necessary procedure for the licences issuing has not yet started.

The competition in the market of **UMTS** telecom services can't be expected within next two years.

The Policy of Telecommunication Sector for the period to the end of 2007 was adopted by the BiH Council of Ministers in November 2006.

License-free bands designed for BWA

RAK has defined free band, which are not subject to licensing, in 2400-2483.5 MHz. There is only a requirement to register base stations. These bands are designed for operation of low-cost BWA networks and are expected to be used mainly by small Internet service providers. This band is regulated by Rec.7003 ;

Bands 3.4-3.6 which are subject to licensing

As for the BWA band which are subject to licensing, the relative regulations and allotment plan are underway. The tender procedure, leading to the license issuance for these bands is planned to the end of 2007 . Allotment is planned to be based on the regional coverage. The operators may have regional or national coverage. These bands, which are subject to licensing, will be mostly used for WiMAX technology. This type of

communication is considered to be the fastest alternative to fixed telecommunications, directly introducing competition in the fixed services market.

ADSL market

According to recent estimates, currently there are around 31000 thousand ADSL connections in the BiH market. It is expected that the number of ADSL connections will reach 35 000 in 2007.

Principles for usage of free capacities and rights of way

This document will define the cases when an operator is required to lease the free capacities, regarding both cable ducts and optical fibres, and the cases where there is no such requirement. It is expected that in this way the economic usage of the free capacities will be enhanced.

IP telephony

RAK is working on the document which will be regulating IP telephony within Internet networks..

Policy and Regulation

1.	Telecommunications Sector Policy to the end of 2007 adopted in November 2006		Focus on LLU, USO, UMTS and W and F Broadband communications
2.	Regulation for non-licensed bands 2.4 and	According to Rec. 7003	
3.	Regulation for licensed bands 3.5 and 3.7 GHz	In preparation	
4.	Regulation for network licensing	In 2002	
5.	Regulation for common use a telecommunication infrastructure	In preparation	
6.	Regulation on Interconnection of communications networks	Adopted in November 3, 2002	
7.	Tender procedure for licensing mobile UMTS operators	In preparation for 2007	Three licenses, for existing mobile operators
8.	Tender procedure for licensing mobile and fixed WiMAX operators	In preparation for 2007	

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Content and Services

eCommerce

1.	eBanking, implemented in several Banks for distant payment for business and householders.	

eGovernment, addressed to eSEE

eEducation – eScience

1.	Distant learning implemented in few faculty's	Capability for distant tracking lectures in real and non real time
2.	Normal communications over website for students in purpose of learning in all Faculty's at state Universities and some secondary schools in BiH	

eHealth, addressed to eSEE

eCulture, addressed to eSEE

Nuber of licenced operators

		Description	Characteristic
1.		Number of ISP	57
1.1		Number of ISP with BWA	>5 in 2.5 GHz band
1.2		Number of ISP with XDSL	3

2		Total Number of Networks operators	75
2.1		Network operators on the State level	12
2.2		Network operators on the regional level	8
2.3		Network operators on the local level	55
3		Number of GSM operators	3
3.1		Number of UMTS operators	0
4		Number of fixed operators	3
5		Licenced providers of fixed public telephone services	11

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular telephone subscribers (post-paid + prepaid)	Refers to users of portable telephones subscribing to an automatic public mobile telephone service that provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This can include analogue and digital cellular systems but should not include non-cellular systems. This should also include subscribers to IMT-2000 (3G) high-speed mobile networks (i271G). Subscribers to public mobile data services or radio paging services should not be included. If this service has a name, please indicate in a note as well as the year the service commenced operation.	> 2,2 Milion
9.2	271G	Number of subscribers to IMT-2000 (3G) high-speed mobile networks	Number of subscribers to IMT-2000 (3G) high-speed mobile networks (e.g., CDMA2000 1X, WCDMA, CDMA2000 1xEV-DO, etc.) regardless of whether they are using multimedia services, though with capacity for data communications, via Internet. In this context, "high-speed mobile" implies a speed that is equal to, or greater than, 144 kbit/s in at least one direction. - <i>Code Division Multiple Access (CDMA) 2000 1x</i> is an IMT-2000 3G mobile network	

			<p>technology, based on CDMA, that delivers packet switched data transmission speeds of up to 144 kbps. -<i>Wideband CDMA (W-CDMA)</i> is an IMT-2000 3G mobile network technology, based on CDMA, that presently delivers packet switched data transmission speeds up to 384 kbps and up to 2 Mbps when fully implemented. Known as <i>Universal Mobile Telecommunications System (UMTS)</i> in Europe.</p> <p>-<i>CDMA2000 1xEV-DO</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 2.4 Mbps. -<i>Enhanced Data rates for GSM Evolution (EDGE)</i> is an intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbits/s.</p>	
13	4213	Total Internet users	$4213 = 4213tb + 4213d + 4213l$ The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.	~962.000
13.1	4213d	Dial-up Internet users	Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.	~913.000
13.2	4213tb	Total broadband Internet subscribers	$4213tb = 4213cab + 4213dsl + 4213ob$ Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a note. The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	~43.000 (mid 2007)
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	~12 000

13.2.2	4213d sl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	~31 000
13.2.3	4213o b	Other broadband Internet subscribers	Internet subscribers using other than DSL and cable modem. This includes technologies such as mobile cellular technologies, Satellite broadband Internet, Fibre-to-the-home Internet access, Ethernet LANs etc	WLA (2.4GHz) ~ 4000
13.3	4213l	Leased line Internet subscribers	Number of leased line Internet subscribers.	~1300
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.11b standard, commonly referred to as WiFi.	
32	153l	Private leased line charge (2 Mbit/s)	Connection charge and monthly rental charge for 2 Mbit/s private leased line.	
34.1	4213b c	Broadband Internet connection	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	15 -25 EURO

		charge		
34.2	4213bs	Broadband Internet monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	15 EURO, 256 Kb/s 25 EURO, 512 Kb/s 35 EURO, 768 Kb/s Pricing ranging from 12.5- 200 Euro depending on the package offered and operators

CROATIA

THE SITUATION OF BROADBAND COMMUNICATIONS IN CROATIA

The basic Act regulating the telecommunications field in Croatia is the Telecommunications Act (OG 122/03, 158/03, 60/04 and 70/05). The development of the telecommunications sector in Croatia is based on the following documents: Information and Communication Technology – Croatia in the 21st Century (OG 109/02), Broadband Development Strategy in the Republic of Croatia by the year 2008 and the Action Plan for Implementation of Broadband Development Strategy for the year 2007. Co-operation with the EU in the area of electronic communications is based on Article 98 of the Stabilisation and Association Agreement.

Pursuant to the Telecommunications Act, the Croatian Telecommunications Agency has been established as an independent national regulatory authority for performing regulatory activities and other tasks within its scope and its competences.

After public consultations, on 13 October 2006 the Government of the Republic of Croatia adopted the *Broadband Development Strategy in the Republic of Croatia by the year 2008* and the *Action Plan for Implementation of Broadband Development Strategy in the Republic of Croatia for the year 2007*. The aforementioned Strategy was made for the purpose of establishing clear strategic objectives in the area of development of broadband internet access as the basic infrastructure of the information society. The objectives stipulated by this Strategy are defined on the basis of the present situation and realistic economic potentials of the Republic of Croatia.

Following the above-mentioned Strategy and the Action Plan, Ministry of the Sea, Tourism, Transport and Development is in charge for the drafting of the proposal of the *National Broadcasting Switchover Strategy* (roll out of digital terrestrial TV and switch off of analogue terrestrial TV), which should be completed by the end of 2007.

On 21st of December 2006 the Government of the Republic of Croatia passed the Decision on amount and manner of distribution of the revenues over expenses of the Croatian Telecommunications Agency in the year 2005.

Decision on criteria and measures for assignment of stimulating funds for broadband infrastructure development in the regions of Croatia in which there is an insufficient commercial interest for development and investments in broadband access infrastructure has been adopted by the Government.

2 August 2007 the Decision on amount and manner of distribution of the revenues over expenses of the Croatian Telecommunications Agency in the year 2006.

In accordance with Item III of the above mentioned Decision, the Croatian Telecommunications Agency is obliged within the period of 30 days to launch the public tendering procedure in accordance with the Public Procurement Act for the following:

- Drafting of the Proposal of the National Broadcasting Switchover Strategy (roll out of digital terrestrial TV and switch off of analogue terrestrial TV);
- Stimulating participation of local and regional self-government bodies in establishing favourable environment for development of broadband infrastructure (programs for training of local self-government for preparation of development programs, analysis of the best practice from Croatia and abroad);
- Preparation of overview and guidelines for development of public-private partnership models for development of broadband infrastructure and services;
- Drafting the proposal of tax relief and other measures for private entrepreneurs, who are willing to invest into broadband infrastructure in the regions of Croatia, in which there is an insufficient commercial interest for such investments.

Pursuant to the above-mentioned Decision, and upon the proposal by the the Central State Administrative Office for e-Croatia, the Government of the Republic of Croatia passed on its meeting held on 13 September 2007 the Decision on manner of distribution of subsidies and criteria and conditions of granting the subsidies to the natural persons paying the radio and television subscription, while purchasing adapters (Set Top Boxes) for the reception of DVB. In accordance with that Decision, a certain amount of subsidies for STBs shall be granted to the radio and television subscribers – natural persons on the territory of the Istrian County, in form of vouchers. This pilot project, aimed to foster the deployment of digital terrestrial television in Croatia, will be afterwards applied onto other Croatian regions, under the same criteria and conditions.

Ministry of the Sea, Tourism, Transport and Development is in charge for the drafting of the proposal of the National Broadcasting Switchover Strategy (roll out of digital terrestrial TV and switch off of analogue terrestrial TV), which should be completed by the end of 2007. Tendering procedure for the selection of the consultants for the above mentioned Strategy is currently underway.

On 9th May 2007 the Government of the Republic of Croatia adopted the General principles of the new Electronic Communications Act, which has been drafted in cooperation with international experts within CARDS 2004 Project and Cullen Int. The aforementioned General principles made for the purpose of establishing of starting points, main principles and objectives of the new Act, which will completely substitute the existing Telecommunications Act.

Level of Acquis alignment:

The current legal framework for telecommunications (electronic communications) in Croatia, which already comprises a part of provisions from the EU 2002 regulatory framework, is completely liberal and contains no obstacle to further development of the telecommunications services market and the promotion of the market competition. It also confers appropriate competences and powers to the Croatian Telecommunications Agency, as an independent national regulatory authority, on the basis of which it may in full impartiality and responsibility, conduct its duties on the Croatian telecommunications services market.

The Republic of Croatia shall finalize the alignment of the legislation pertaining to telecommunications (electronic communications) with the EU *acquis* on electronic communications networks and services by adopting the new Electronic Communications Act at the beginning of 2008. Consultations with the European Commission experts on drafting of this Act are already underway. The new Electronic Communications Act will be fully aligned with the EU *acquis* on electronic communications networks and services.

Agency has passed a number of important regulatory decisions and rulings within the scope of its competencies:

- In November 2006, Agency started negotiations with the incumbent (HT) with the aim to obtain the Bit stream Access Offer. The Bit stream Access Offer will include the access of providers to the HT network (existing general conditions for providing the ADSL transport service), as well as the access of end customers to the HT network, in order to enable alternative ISPs to provide whole service to end customers;
- At the end of November 2006, according to Article 51 of the Telecommunications Act, Agency started the process of SMP designations on the following markets: interconnection market, market of the public voice telephony services in mobile networks and leased lines market;
- In December 2006, the Agency Council approved the amended Reference Unbundling Offer (RUO). Terms, conditions and prices for the provision of shared access service became a part of the newly approved RUO;
- At the beginning of 2007, the questionnaires were sent to the providers of broadband Internet access service with the purpose of analysing retail and corresponding wholesale markets in a manner determined by the Implementation Action Plan of the Strategy for the Development of the Broadband Internet Access in the Republic of Croatia for the year 2007.
- HT wholesale conditions for ADSL were amended on 20th April 2007.
- Contest for provision of governmental grants to operators who will provide broadband Internet on the islands has started in June.
- In July CTA finished the market analysis according to the Action plan. There were analyzed the retail and corresponding wholesale markets for the provision of Broadband Internet Access service.

- After having finished the market analysis document, the Agency launched the public consultation on the aforementioned document. Answers to the comments on the consultation document are in progress.
- Contest for provision of governmental grants to operators who will provide broadband Internet in the regions of Croatia in which there is an insufficient commercial interest for development is to be launched soon.

Fulfilment of the requirements from Action Plan for Implementation of Broadband Development Strategy in the Republic of Croatia for the year 2007.

- In its work in order to fulfil the requirements set by the government in Action plan CTA has made market analysis document where they were defined and analyzed the relevant broadband access markets both on wholesale and retail level;
- CTA has also set in progress the drafting of contest documents in order to hire consultants to help the Agency staff with accounting separation and cost modelling.
- CTA is in process of negotiations with HT with the aim to obtain the Bitstream Access offer. Currently HT does not provide the access on all four points of access from ERG Common Position on Bitstream Access, but if it will be any request from the operators in future to access on some other point defined in ERG Common Position, than point three (IP level), HT will be obliged to fulfill the request of the operators.
- In December 2006 valid RUO has been modified in order to include the service of shared access.
- CTA council adopted a decision for shared use of the existing telecommunication infrastructure.
- CTA defined statistical data in order to monitor the development of broadband internet access services in Croatia. The questionnaires were sent to the operators and service providers.

Internet services:

There are 42 Internet service providers (ISPs) authorized to provide Internet access services and 39 service providers authorised to provide Voice over Internet services (VoIP).

At the end of Q1 2007, the total number of Internet users in the Republic of Croatia has reached **1,909,000**, which represents a market penetration of approximately **43%**.

At the end of 2006, there were 23 providers of the cable distribution services in the Republic of Croatia, two of them providing services of the cable distribution on the national level. Installed capacity of the cable distribution networks is 373,400 connections and the number of subscribers of the cable distribution services is currently 135,100.

The number of **broadband users** is currently **331,450** which accounts for the penetration of **7.47%** with respect to the population. In the Internet access market further growth of broadband access penetration is expected, which will be followed by reduction of broadband Internet access prices. Most important impetus for the development of the competition in the broadband access networks in 2007 will be the provision of the improved wholesale broadband offer of the incumbent as well as the improving of the process of local loop unbundling.

Broadband Infrastructure

		Description	Characteristic
1.		Number of ISP	42
1.1		Number of ISP with BWA	6
1.2		Number of ISP with XDSL	5
2.		Number of Cable operators	23
2.1		Number of Cable operators with IS	5
3		Number of GSM operators	3
3.1		Number of UMTS operators	3

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular telephone subscribers (post-paid + prepaid)	Refers to users of portable telephones subscribing to an automatic public mobile telephone service that provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This can include analogue and digital cellular systems but should not include non-cellular systems. This should also include subscribers to IMT-2000 (3G) high-speed mobile networks (i271G). Subscribers to public mobile data services or radio paging services should not be included. If this service has a name, please indicate in a note as well as the year the service commenced operation.	4 643 000

9.2	271G	Number of subscribers to IMT-2000 (3G) high-speed mobile networks	Number of subscribers to IMT-2000 (3G) high-speed mobile networks (e.g., CDMA2000 1X, WCDMA, CDMA2000 1xEV-DO, etc.) regardless of whether they are using multimedia services, though with capacity for data communications, via Internet. In this context, "high-speed mobile" implies a speed that is equal to, or greater than, 144 kbit/s in at least one direction. - <i>Code Division Multiple Access (CDMA) 2000 1x</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 144 kbps. - <i>Wideband CDMA (W-CDMA)</i> is an IMT-2000 3G mobile network technology, based on CDMA, that presently delivers packet switched data transmission speeds up to 384 kbps and up to 2 Mbps when fully implemented. Known as <i>Universal Mobile Telecommunications System (UMTS)</i> in Europe. - <i>CDMA2000 1xEV-DO</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 2.4 Mbps. - <i>Enhanced Data rates for GSM Evolution (EDGE)</i> is an intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbits/s.	145 000
13	4213	Total Internet subscribers	$4213 = 4213tb + 4213d + 4213l$ The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.	1 909 000
13.1	4213d	Dial-up Internet subscribers	Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.	787 000
13.2	4213tb	Total broadband Internet subscribers	$4213tb = 4213cab + 4213dsl + 4213ob$ Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256	331 450

			kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a note. The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	8 500
13.2.2	4213dsl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	310 000
13.2.3	4213ob	Other broadband Internet subscribers	Internet subscribers using other than DSL and cable modem. This includes technologies such as mobile cellular technologies, Satellite broadband Internet, Fibre-to-the-home Internet access, Ethernet LANs etc	1 500
13.3	4213l	Leased line Internet subscribers	Number of leased line Internet subscribers.	11 000
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	1 900 000
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.11b standard, commonly referred to as WiFi.	-

32	1531	Private leased line charge (2 Mbit/s)	Connection charge and monthly rental charge for 2 Mbit/s private leased line.	-
34.1	4213bc	Broadband Internet connection charge	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	-
34.2	4213bs	Broadband Internet monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	-

MOLDOVA

THE SITUATION OF BROADBAND COMMUNICATIONS IN MOLDOVA

UMTS license issuance

The documents on 3G mobile communications in Moldova are under final stage of their elaboration. The intention is to provide services of mobile communications in IMT2000 system, UMTS (W-CDMA) and CDMA 2000 standards.

The Strategy for the development of telecommunications

The Strategy for telecommunications development in the Republic of Moldova was approved on February 26, 2003. The electronic communications represents one of the priorities of the economical development of Moldova for the next 10 years. The transition from a monopoly dominated market to a competitive one is a very complex process, which includes two directions: regulatory framework elaboration and implementation of the proposed goals. The Strategy's aim is to systematise the necessary actions to be undertaken in the area of telecommunications in order to create conditions for the development of a viable mechanism which could guarantee a durable development of the sector and its integration in international informational infrastructure.

License-free bands designed for BWA

n/a

Bands 3.4-3.6 GHz and 3.6-3.8 GHz which are subject to licensing

Currently, the 3,4-3,8 GHz and 5,7-5,9 GHz bands are used by S.E. „Radiocomunicatii” for TV and radio translation over whole territory of the Republic of Moldova According to a decision of the Ministry of Informational Development Collegiums, the S.E. „Radiocomunicatii”, will start in 2007 a pilot project in Chisinau on broadband radio access services, using Wi-MAX technology. S.E. „Radiocomunicatii” will use for this purpose the unused partitions of above mentioned bands.

ADSL market

The number of broadband connections to the Internet rose more than twice in 2006 and is about 21.700 connections. The most preferred type of connections uses xDSL technology with 77,2%, followed by cable connections – 15,49%, local networks – 6,09%, and radio access – 1,22%. In 2006 the number of broadband connections xDSL was about 16.823 (to compare with 6.798 in 2005). The rate of narrowband connections is about 95% from total and of broadband connections is about 5%. The penetration rate of broadband connections remains relatively low – about 0,64%.

Principles for using cable channels

There are no regulatory acts in this area.

IP telephony

In 2006, 23 companies were authorised by NARTI to provide international IP-telephony services (Voice over IP), of which 13 companies were rendering IP international calls services by prepaid cards and 9 companies were rendering these services in call centers.

The total volume of the voice international traffic recorded by suppliers through fixed public network and GSM networks rose with 35%: 150 millions minutes, in comparison with 111 millions minutes at the end of 2005. Despite more slow, vis-à-vis of IP voice international telephony traffic, though, the ordinary voice international traffic realised a 17,4% growing comparing with the end of 2005 year - from 92.6 minutes in 2005 to 108,8 millions minutes, respectively.

From the total recorded volume of the voice international traffic, the IP voice international traffic represents 27,2%, growing with 10,12 percentage points (from 17,08%), comparing with the end of the 2006. The IP voice international traffic generated by alternative operators is growing, overrunning with 147,5% (22,37 millions minutes) the value of 9,04 millions minutes recorded at the end of 2005. Thus, the market quota held by those 23 alternatives' suppliers of IP international telephony, calculated subject to numbers of the recorded minutes, reached 54,2%, the rest 45,8% went to the historic operator of the fixed public networks S.C. „Moldtelecom”.

The IP services are regulated by the NARTI through licensing of these services. For rendering of VoIP services the operators have to possess a general license in the informatics field, which includes the IP telephony services. An important moment in the VoIP services regulations is the access' deficit in the rate of 0,39 lei per minute, paid by the rendering IP telephony services operators on the initiating of the international calls using the IP protocol.

Policy and Regulation

1.	National Strategy on Informational Society development and Action Plan “eMoldova”	http://www.mdi.gov.md/info21_en/	The Strategy and the Action Plan are in the process of implementation
2.	The harmonisation of legal and regulatory framework in the area of ICT with the European norms and provisions	http://www.mdi.gov.md/img/mejsotr/MoldovaEUAP_en.pdf	According to the EU/Moldova Action Plan (objectives 67, 68), the draft of new law on electronic communications was elaborated and adopted by the Parliament in first reading in December 2006. The draft law was submitted to the European Commission for the expertise. Currently, the objections and proposals of the EU experts are examined in the Parliament and the final adoption of the draft law

			is expected in next few months. After the Law on Electronic Communications is in force NARTI will approve a regulatory framework in accordance to the EU regulatory framework.
3.	eSEE Agenda Plus and bSEE Action Plan	http://www.mdi.gov.md/img/sitnic/agenda_eese+_en.pdf	These documents are still under elaboration. From our perspective, the importance for the promotion at national level of common guidelines in the area of IS building, as well as on broadband communications development is considerable.
4.	Regulation on licence issuance in telecommunications and informatics	http://www.anrti.md/Regulamente/en/Regelib_licent_en.htm	The Regulation on License Issuance in Telecommunications and Informatics sets forth the manner and conditions of license issuance, modification, renewal, suspension and revocation, license copy and duplicate issuance by the National Agency for Regulation in Telecommunications and Informatics (ANRTI) in compliance with the Law on Telecommunications No. 520 of 07.07.95, Law on Informatics, Law on Audiovisuals No. 603-XIII of 03.10.95, Law on Licensing Certain Types of Activities No. 451-XV of 30.07.01 (Art. 5, 8, 9 paragraph (1), Art. 18, Art. 22 paragraph (6), (7), (8) and Art. 23) ANRTI Regulation approved by Government Decree No. 843 of 17.08.2000 and other legal and normative acts currently in force.

Content and Services

eCommerce

1.	Law on e-commerce	Law was adopted on July 2004, but a serie of normative-regulatory acts in this field are still under elaboration
2.	eBanking system is implemented in most Banks and National Treasure	This is used for distant payment for business and householders
3.	Distant payments	Is implemented in some big general stores, entertainment centers, for bills payments, etc.

eGovernment

1.	Conception of e-Government	Was adopted in June 2006 by the Government Decision no. 733. A range of interdepartmental programmes are already implemented. Also, is prepared and is ready for approvement a separate Government Decision regarding a National action plan on further eGovernment implementation.
2.	Electronic document and digital signature	Law on electronic document and digital signature was adopted in July 2004. The Certification centre of the superior level is functional from July 2006. Starting from August 2006 the Certification centre of public keys for public institutions is also functional. In due time will be opened and other public and private certification centres of public keys for diferent categories of users.
3.	National informational automatic systems and resources	In May 2006 was adopted the Government Decision no.562 on Creation of national informational automatic systems and resources
4.	Public administration authorities in Internet	Based on June 2006 Government Decision no. 668 all the public administration authorities should have a web page with a a wide range of information regarding their activities, provided public services, all sectorial legislation, as well as the draft laws and draft regulattions for public considerations.
5.	Interactiv governmental portal	The preparation of the interactive governmental portal model is advancing. In short time, the eDeclaration portal should become operational. On its base will be developed the system of electronic services rendering to the public institutions, business community and citizens.
6.	Information technologies use in public administration institutions	In order to ensure the wide utilization of the information technologies by the civil servants, in August 2006, in a joint action of the Ministry of Informational Development, UNDP Moldova, Ministry of Education and Academy of Public Administration, were elaborated the Methodological norms of education and certification

		of public servants in the area of ICT use, as well as the subsidiary documents as curriculum, manuals, framework requirements for training and certification centres. The study process started in the beginning of 2007 at the Academy of Public Administration.
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eEducation – eScience

1.	eEducation: creation of Information system for education	Was elaborated the draft Concept on Information System for Education with the description of 4 sub-systems: (i) “Ministry of Education (ME) informational resources”, (ii) “ME telecommunication network”, (iii) “ICT implementation in education”, (iv) “Teachers and managers staff training”. This draft concept was presented to the Government for adoption recently.
2.	eEducation: implementation of National programme on school informatisation “SALT”	In order to connect to the Internet all pre-university institutions, Moldtelecom has provided a free connections for 1.749 schools.
3.	eEducation: Distant learning programs area implemented in different higher education institutions	
4.	eScience: the resources of the Higher Attestation Committee (Academy of Science associated body dealing with the attestation of researchers and candidates to the PhD degrees) are available on-line, including the final versions of research studies	

eHealth

1.	Integrated informational system of medical assurances management	Was elaborated and implemented in cooperation between the Ministry of Informational Development and National Company for Medical Insurance. It is designated for the registration and management of the insurance policies in the territorial agencies and medical institutions.
2.	Electronic system on registration, evidence and control of the	Was elaborated and implemented in cooperation between the

	medicines circulation and realisation	Ministry of Informational Development and the National Agency of the Medicines.
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Broadband Infrastructure

	Description	Characteristic
1.	Number of ISP	41 active providers
1.1	Number of ISP with BWA	2,4 GHz band - 16 3,5 GHz band - 0 5,5 GHz band -4 10,5 GHz band -1
1.2	Number of ISP with XDSL	N/A
2.	Number of Cable operators	134
2.1	Number of Cable operators with IS	N/A
3	Number of GSM operators	3
3.0	Number of CDMA operators	1 (CDMA 2000 1x)
3.1	Number of UMTS operators	None

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular telephone subscribers (post-paid + prepaid)	Refers to users of portable telephones subscribing to an automatic public mobile telephone service that provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This can include analogue and digital cellular systems but should not include non-cellular systems. This should also include subscribers to IMT-2000 (3G) high-speed mobile networks (i271G). Subscribers to public mobile data services or radio paging services should not be included. If this service has a name, please indicate in a note as well as the year the service commenced operation.	> 1.359.000
9.2	271G	Number of Y	Number of subscribers to IMT-2000 (3G) high-speed mobile networks (e.g., CDMA2000 1X, WCDMA, CDMA2000 1xEV-DO, etc.)	> 6.500 (CDMA2000 1X;

			<p>regardless of whether they are using multimedia services, though with capacity for data communications, via Internet. In this context, "high-speed mobile" implies a speed that is equal to, or greater than, 144 kbit/s in at least one direction. -<i>Code Division Multiple Access (CDMA) 2000 1x</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 144 kbps. -<i>Wideband CDMA (W-CDMA)</i> is an IMT-2000 3G mobile network technology, based on CDMA, that presently delivers packet switched data transmission speeds up to 384 kbps and up to 2 Mbps when fully implemented. Known as <i>Universal Mobile Telecommunications System (UMTS)</i> in Europe. -<i>CDMA2000 1xEV-DO</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 2.4 Mbps. -<i>Enhanced Data rates for GSM Evolution (EDGE)</i> is an intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbits/s.</p>	April 2007)
13	4213	Total Internet subscribers	$4213 = 4213tb + 4213d + 4213l$ The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.	> 460.000
13.1	4213d	Dial-up Internet subscribers	Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.	> 438.100
13.2	4213tb	Total broadband Internet subscribers	$4213tb = 4213cab + 4213dsl + 4213ob$ Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a	~ 21.800

			note. The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	> 3.400
13.2.2	4213dsl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	> 16.280
13.2.3	4213ob	Other broadband Internet subscribers	Internet subscribers using other than DSL and cable modem. This includes technologies such as mobile cellular technologies, Satellite broadband Internet, Fibre-to-the-home Internet access, Ethernet LANs etc	
13.3	4213l	Leased line Internet subscribers	Number of leased line Internet subscribers.	
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	22,5%
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.11b standard, commonly referred to as WiFi.	
32	153l	Private leased line	Connection charge and monthly rental charge for 2 Mbit/s private leased line.	

		charge (2 Mbit/s)		
34.1	4213bc	Broadband Internet connection charge	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	35 EURO <i>(including taxes)</i>
34.2	4213bs	Broadband Internet monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	21 EURO, 256 kbps 28 EURO, 384 kbps <i>(including taxes)</i>

Dissemination and social inclusion

The complex and harmonious development of the Information Society has a considerable contribution to the democracy development, dissemination and social inclusion. But the level of eInclusion development depends not only on the governmental, business community and civil society offers and contribution, but also on the needs, capacity and possibilities of the citizens to interact and benefit from it. That's the way in which the evolution of eInclusion in the Republic of Moldova, as well as in other similarly developed countries should be evaluated.

The positive dynamics and rise of the offered solutions and opportunities are stimulated by the increasing users interest as well as by the positive dynamics of the Internet penetration. The Internet penetration rate in Moldova is growing and at the end of 2006 it was about 13,55%. Using the data offered by the National Agency for Regulation in Telecommunications and Informatics, in 2006 comparing with previous year the growth was about 92 %.

Despite the rapid growth of the Internet popularity in the Republic of Moldova, this service is available, as a rule, for the large cities inhabitants. However, rural and low-income urban areas are underserved and are likely to remain so for the foreseeable future. The proportion of the Internet users from the total computer users is twice bigger in the urban area (79,5 %) than in rural area (40,8%). Analysing the proportion of the Internet users from the total number of population shows that in urban area 33,9 % have access to the Internet, while the rate of Internet users in rural area is only about 4,6%. This situation reflects the problem of a huge "digital divide" between urban and rural areas in Moldova, as well as between big and small cities.

One of the best world's practice solutions in this order is the organization and deployment of Public Internet Access Points (PIAPs) for increasing level of computer and Internet literacy and decreasing "digital divide". The improvement of the use of Internet and online services by the citizens via public computer training programmes and centers is one of the provisions of the EU/Moldova Action Plan 2005-2007 too.

The promotion of universal service and diversification of Public Internet Access Points (PIAP) network across the country is realized using different ways and different methods.

- The J.C. "Moldtelecom" opened about 56 PIAPs located in all administrative regional (rayonal) centres and other localities;
- MID on the basis of its territorial subdivisions created 6 PIAPs and Ministry of Justice opened 5 PIAPs;
- Soros Moldova Foundation contributed to opening of 102 PIAPs located basically in the public libraries;
- Local public authorities are in the process of implication in the PIAPs creation and maintenance.

Other possibilities of diversification of this network are studied. Also, the contribution of private investments in the large distribution of access points to the Internet is considerable. A wide range of private institutions for Internet access services providing were opened across the country.

Is expected that use of Internet and public interest will considerably rose in parallel with the diversification of eServices, especially with the implementation of the eGov services. An important step in this direction, as a pilot project, is the realisation of a common with UNDP Moldova project on elaboration of automated informational system eDeclaration. This is designated to on-line interaction between tax payers and Main State Tax Inspectorate.

MONTENEGRO

THE CURRENT ACTIVITIES ON THE TELECOMMUNICATION MARKET IN MONTENEGRO

The Ministry of Maritime Affairs, Transportation and Telecommunication has continued to work on preparing of the global environment for Broadband Access development. According to this, the Broadcast Agency has reached the decision to grant the rights to develop and use *cable and wireless system* for the distribution of radio and TV channels. The decision awarded considering the following conditions: benefit for the system user, planned number of connections, development dynamics, quality, structure and number of distributed TV and radio channels, and quality of technical solution for the development CDS and wireless system. Apart from the mentioned criteria, the financial indicators related to the possibility to survive on the market and possibility of feasible business operation, are considered as well. The license for development and use CDS is awarded to seven applicants, while three applicants obtained the license to use and developed wireless system. Due to the great interest for wireless distribution of radio and TV channels, the Broadcast Agency will initiate the amendment of the Radio-Frequency Allocation Plan. The Broadcast Agency will extend the frequency band 11.7-12.1 GHz for 400 MHz, to enable the larger number of connections.

All of the operators plan to employ system for provision of broadband services over their networks.

Three licences for UMTS (one of them combining UMTS and IMT-2000) have been issued to:

1. M TEL
2. ProMonte GSM
3. T-Mobile Montenegro

In order to improve the existing network resources related to increasing of bandwidth for a variety of data-intensive applications, the Agency for Telecommunication and Postal Service of Montenegro has reached the decision to call public tender. The aim of the tender is to provide the public telecommunication services via *fixed wireless access* in 3400-3600 MHz radio-frequency bands. The fixed wireless access (WiMax) will be based on exclusive use of paired frequency blocks with the bandwidth of 2x21 MHz. Three licences have been issued to:

1. M TEL
2. Broadband Montenegro
3. T-Mobile

According to the Strategy of Development of Electronic Communication, the Government made the decision to change and adjust the Law on Telecommunications and all related laws. The law addendum is expected to be introduced as soon as possible.

USAID has launched Project Montenegro Connect- similar to the same Project in Macedonia. To support this project, Ministry has dramatically decreased the fee for international telecommunications (from 120.000 to 1.000 EUR/per year).

Ministry hopes that it will be an incentive for further development of competition, including development of broadband access network.

T-Com has been developing its ADSL network increasing the number of ADSL subscribers to approximately 8000 during the last two years.

THE BASIC CHARACTERISTIC OF MONTENEGRO

Number of inhabitants	620.145
Number of households	191.047
Number of municipalities	21
Number of rural areas	1246
Number of urban areas	40

POLICY AND REGULATION

1.	☼ Change and addendum of Law on Telecommunication	In progress	Special focus on Broadband communications
2.	Regulation for non-licensed bands 2.4 and 5.5 GHz	Adopted in 2006.	
3.	Regulation for licensed bands 3.5 GHz	Adopted in 2006.	
4.	Regulation for network licensing	In preparation	Legislation should be harmonized with EU2002. in ☼
5.	Regulation for common use a telecommunication infrastructure	Adopted in 2005.	Legislation should be harmonized with EU2002. in ☼

6.	Regulation on Interconnection of communications networks	Adopted in 2006.	Legislation should be harmonized with EU2002. in ☀
7.	Tender procedure for licensing mobile operators GSM and UMTS	Adopted in 2006	Three UMTS licenses have been issued to: ProMonte GSM, M TEL, T-Mobile
8.	Tender procedure for licensing mobile and fixed WiMAX operators	Adopted in 2007.	Three licences have been issued to: M TEL, T-com, Broadband Montenegro)
9.	Tenders procedure for awarding the rights to develop and use cable and wireless systems for the distribution of radio and TV channels to end users.	Adopted in 2007.	Three licences for provision wireless and seven licences for provision cable systems for distribution of radio and TV channels to end users

BROADBAND INFRASTRUCTURE

	Description	Characteristic
1.	Number of ISP	2
1.1	Number of ISP with BWA	2 (8 licences have been issued)
1.2	Number of ISP with XDSL	1
2.	Number of Cable operators	n/a
2.1	Number of Cable operators with IS	n/a
3	Number of GSM operators	2+1 (M TEL will start in June)
3.1	Number of UMTS operators	first operator will start in July 2007.

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular telephone	Mobile telephony is a segment of the telecommunications sector which has had the most dynamic development. In the March	661.659

		subscribers (post-paid + prepaid)	2007, the total number of mobile telephony customers reached 661.659, which was the increase of 20,7% in comparison with last year. This number corresponds to the penetration of 106.69%, which is a par with the respective average values in the EU member states.	
9.2	271G	Number of subscribers to IMT-2000 (3G) high-speed mobile networks	<p>Special licences for provision of public mobile telecommunication network has issued to: ProMonte GSM, T-Mobile Montenegro and M TEL.</p> <p>M TEL</p> <ul style="list-style-type: none"> ▪ Start in 90 days after obtaining the licence ▪ Expected dynamic of covering is as follows: 75.2% within 12 months, 83.9% within 36 months and 92.3% within 60 months ▪ Technical solutions: based on 3GPP Realise 5, including implementation of HSDPA/HSUPA ▪ Minimal data transmission speeds: 128/64kb/s (downlink/uplink) ▪ Maximum data transmission: 3.65Mb/s <p>PROMONTE GSM D.O.O</p> <ul style="list-style-type: none"> ▪ Start on July 1st 2007. ▪ Expected dynamic of covering is as follows: 40% within 12 months, 75% within 36 months and 97% within 60 months ▪ Technical solutions: based on 3GPP Realise 5, including implementation of HSDPA/HSUPA ▪ Minimal data transmission speeds: 128/384kb/s ▪ Maximum data transmission: 3.65Mb/s (within the first year), 6Mb/s (within the second year), 14Mb/s (within the third year and later) 	n/a

			<p>T-MOBILE</p> <ul style="list-style-type: none"> ▪ Start on November 1st 2007. ▪ Expected dynamic of covering is as following: 11% within 12 months, 28% within 36 months and 53% within 60 months ▪ Technical solutions: based on 3GPP Realise 4, including the basic version of HSDPA ▪ Minimal data transmission speeds: 62kb/s, 128kb/s, 384kb/s ▪ Maximum data transmission : 384kb/s (within the first year), 1.8Mb/s (within the second year and later) 	
13	4213	Total Internet subscribers	<p>$4213 = 4213tb + 4213d + 4213l$</p> <p>The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.</p> <p>The rate of Internet penetration in Montenegro (number of Internet users per 1,000 inhabitants) is around 20%;</p>	~ 36.000
13.1	4213d	Dial-up Internet subscribers	<p>Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.</p>	~ 27.000
13.2	4213tb	Total broadband Internet subscribers	<p>$4213tb = 4213cab + 4213dsl + 4213wl$</p> <p>Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a note. The statistic is measured</p>	> 9.000

			irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks.	n/a
13.2.2	4213dsl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	8.505
13.2.3	4213wl	Wireless Internet subscribers	2,4GHz and 5,4 GHz	~ 1.000
13.3	4213l	Leased line Internet subscribers	Number of leased line Internet subscribers.	130
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	~ 90.000
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.1b standard, commonly referred to as WiFi.	~ 15 outdoor hotspots
34.1	4213bc	Broadband Internet connection charge	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	30 EURO (D-link 360R) 50 EURO (D-link 548T) 65 EURO (D-link 684T)

34.2	4213bs	Broadband Internet Monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	30 EURO (512/125 Kb/s; 5GB) 43EURO (1024/256Kb/s;10GB) 85 EURO, (2048/512 ;20GB) 20EURO Student packet (512/128Kb/s; 5GB)
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ROMANIA

THE SITUATION OF BROADBAND COMMUNICATIONS IN ROMANIA

Policy and Regulation

1.	STRATEGY The Romanian National Strategy for Broadband	In preparation
2.	Regulation for licensed bands 3.5 and 3.7 GHz (BWA)	Under public consultation
4.	Regulation for network licensing	Adopted
5.	Regulation for common use a telecommunication infrastructure	Adopted
6.	Regulation on Interconnection of communications networks	Adopted
7.	Tender procedure for licensing mobile operators GSM and UMTS	Adopted in 2006
8.	Tender procedure for licensing mobile and fixed WiMAX operators	In preparation for 2008

Broadband Infrastructure

		Description	Characteristic
1.		Number of ISP	1.389
1.1		Number of ISP with BWA	1101
1.2		Number of ISP with XDSL	69
2.		Number of Cable operators	>300 (2 having 75% of the market)

2.1		Number of Cable operators with IS	2
3		Number of GSM operators Number of CDMA operators	3 1
3.1		Number of 3G operators	4 (3 are operational)

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular telephone subscribers (post-paid + prepaid)	Refers to users of portable telephones subscribing to an automatic public mobile telephone service that provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This can include analogue and digital cellular systems but should not include non-cellular systems. This should also include subscribers to IMT-2000 (3G) high-speed mobile networks (i271G). Subscribers to public mobile data services or radio paging services should not be included. If this service has a name, please indicate in a note as well as the year the service commenced operation.	> 19,5 Milion
9.2	271G	Number of subscribers to IMT-2000 (3G) high-speed mobile networks	Number of subscribers to IMT-2000 (3G) high-speed mobile networks (e.g., CDMA2000 1X, WCDMA, CDMA2000 1xEV-DO, etc.) regardless of whether they are using multimedia services, though with capacity for data communications, via Internet. In this context, "high-speed mobile" implies a speed that is equal to, or greater than, 144 kbit/s in at least one direction. - <i>Code Division Multiple Access (CDMA) 2000 1x</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 144 kbps. - <i>Wideband CDMA (W-CDMA)</i> is an IMT-2000 3G mobile network technology, based on CDMA, that presently delivers packet switched data transmission speeds up to 384 kbps and up to 2 Mbps when fully implemented. Known as <i>Universal Mobile Telecommunications System (UMTS)</i> in Europe.	>1 Milion

			- <i>CDMA2000 1xEV-DO</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 2.4 Mbps. - <i>Enhanced Data rates for GSM Evolution (EDGE)</i> is an intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbits/s.	
13	4213	Total Internet subscribers	4213 = 4213tb + 4213d +4213l The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.	>4,52 Milions
13.1	4213d	Dial-up Internet subscribers	Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.	0,32 Milions
13.2	4213tb	Total broadband Internet subscribers	4213tb = 4213cab+4213dsl+4213ob Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a note. The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	> 2,33 Milions
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	>390.000
13.2.2	4213dsl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	0,18 Milions
13.2.3	4213o	Other	Internet subscribers using other than DSL and cable modem. This	>1.2 Milion

	b	broadband Internet subscribers	includes technologies such as mobile cellular technologies, Satellite broadband Internet, Fibre-to-the-home Internet access, Ethernet LANs etc	
13.3	42131	Leased line Internet subscribers	Number of leased line Internet subscribers.	
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	~ 7 Milions
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.11b standard, commonly referred to as WiFi.	522
32	1531	Private leased line charge (2 Mbit/s)	Connection charge and monthly rental charge for 2 Mbit/s private leased line.	
34.1	4213b c	Broadband Internet connection charge	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	Ususally, it comes in the subscription package
34.2	4213b s	Broadband Internet monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	Depends on the Internet provider ~ 8 EUR, 1Mbps ~ 13 EUR, 3 Mbps 11 to 21 Euros, 4Mbps (without VAT) ~ 25 EUR, 6 Mbps

SERBIA

THE SITUATION OF BROADBAND COMMUNICATIONS IN SERBIA

UMTS license issuance

The development of the **broadband** communications market in Serbia during 2006 was influenced by the following events related to the issuance of three **UMTS** licenses, namely to:

1. Telekom Srbija
2. Telenor Norway
3. MobilCom Austria

The telecom market regulator (RATEL) has defined very strict conditions and deadlines for **UMTS** network building. The operators are required to achieve the coverage of 25% within 24 months and the coverage of 60% within 36 months. On 27th December 2006, Telekom Srbija put the **UMTS** network into operation in Belgrade and several larger towns in Serbia. Telenor announced that they would put the same network into operation in March 2007. MobilCom will put their network into operation sometime later. In this way the market of **UMTS** telecom services has been formed and we a strong competition can be expected.

Due to strong competitive activities, the prices of some **GSM** services started to decrease. Similar tendency can be expected with **UMTS**.

The Strategy for the Development of Telecommunications

In early October, the Government of the Republic of Serbia adopted *The Strategy for the Development of Telecommunications in the Republic of Serbia from 2006 until 2010*. The Strategy firmly supports the development of **broadband** communications and emphasises the importance of strong development of this type of communications and all the benefits **broadband** involves. There are initiatives for making a separate Strategy for the development of broadband.

License-free bands designed for BWA

RATEL has defined free bands, which are not subject to licensing, namely: 2400-2483.5 MHz and 5470-5725 MHz. There is only a requirement to register base stations. These bands are designed for operation of low-cost BWA networks and are expected to be used mainly by small Internet service providers.

Bands 3.4-3.6 and 3.6-3.8 GHz which are subject to licensing

As for the BWA bands which are subject to licensing, the relative regulations and allotment plan are underway. Once these documents are completed, the tender procedure, leading to the license issuance for these bands, will be initiated. Allotment is planned to be based on the regional coverage, with most likely four operators in 3.4-3.6 GHz frequency band. The operators may have regional or national coverage. It is expected that the tender procedure will be carried out during 2007. The tender for 3.6-3.8 GHz frequency band will be carried out afterwards. These bands, which are subject to licensing, will be mostly used for WiMAX technology. This type of communication is considered to be the fastest alternative to fixed telecommunications, directly introducing competition in the fixed services market.

ADSL market

The development of the ADSL market was slow for a long time. The reason for this was primarily a rather high price of leased lines. In the past months the price has decreased considerably (40% on average), partly due to reduction in prices of leased lines by Telekom Srbija, but also because the Internet providers cut down their share in the price of service. According to recent estimates, currently there are around 25 - 30 thousand ADSL connections in the Serbian market. It is expected that the number of ADSL connections will reach 100,000 in 2007.

Principles for using cable channels

RATEL has adopted a document named: *Principles for using cable channels*, thereby adopting a policy to be followed in cases where leasing is requested from an operator owning cable infrastructure. This document defines the cases when an operator is required to lease the free capacities, regarding both cable ducts and optical fibres, and the cases where there is no such requirement. It is expected that in this way the economic usage of the free capacities will be enhanced.

IP telephony

RATEL is working on the document which will be regulating IP telephony within Internet networks. There will be no restrictions in terms of IP telephony usage within Internet networks. The only restriction so far concerns the transfer from IP addressing to numerical and vice versa. Nevertheless, this restriction is temporary and it is expected that, once the WiMAX technology is introduced, this restriction will no longer be in force.

Policy and Regulation

1.	STRATEGY for the Development of Telecommunications in the Republic of Serbia from 2006 until 2010, adopted at the beginning of October 2006.	http://www.ratel.org.yu/english/regulations.html	Special focus on Broadband communications
2.	Regulation for non-licensed bands 2.4 and 5.5 GHz	Adopted by MB.	
3.	Regulation for licensed bands 3.5 and 3.7 GHz	In preparation	
4.	Regulation for network licensing	In preparation	
5.	Regulation for common use a telecommunication infrastructure	Adopted by MB.	
6.	Regulation on Interconnection of communications networks	In preparation	
7.	Tender procedure for licensing mobile operators GSM and UMTS	Adopted in 2006	Three licenses, for mobile operators
8.	Tender procedure for licensing mobile and fixed WiMAX operators	In preparation for 2007	Probably four operators
9.	Preparation Broadband Strategy, by Executive Council of Vojvodina	In preparation	

MB - Managing Board of Republic Agency for the Telecommunication, RATEL

Content and Services

eCommerce

1.	eBanking, implemented in most Banks and National Treasure for distant payment for business and householders.	
2.	Distant shopping, implemented in many big general stores, and specialized stores	

eGovernment, addressed to eSEE

eEducation – eScience

1.	Distant learning implemented in few faculty's	Capability for distant tracking lectures in real and non real time
2.	Normal communications over website for students in purpose of learning in all Faculty's and University's in Srbija	

eHealth, addressed to eSEE

eCulture, addressed to eSEE

Broadband Infrastructure

		Description	Characteristic
1.		Number of ISP	~150
1.1		Number of ISP with BWA	>14 in 2.5 GHz band 4 in 3.5GHz band >3 in 5.5 GHz and
1.2		Number of ISP with XDSL	12
2.		Number of Cable operators	around 55
2.1		Number of Cable operators with IS	5
3		Number of GSM operators	3
3.1		Number of UMTS operators	first operator, started at 27. December 2006

Market	ITU code	Indicator	Definition	Value
8	271	Mobile cellular	Refers to users of portable telephones subscribing to an automatic	> 5.51 Milion

		telephone subscribers (post-paid + prepaid)	public mobile telephone service that provides access to the Public Switched Telephone Network (PSTN) using cellular technology. This can include analogue and digital cellular systems but should not include non-cellular systems. This should also include subscribers to IMT-2000 (3G) high-speed mobile networks (i271G). Subscribers to public mobile data services or radio paging services should not be included. If this service has a name, please indicate in a note as well as the year the service commenced operation.	
9.2	271G	Number of subscribers to IMT-2000 (3G) high-speed mobile networks	Number of subscribers to IMT-2000 (3G) high-speed mobile networks (e.g., CDMA2000 1X, WCDMA, CDMA2000 1xEV-DO, etc.) regardless of whether they are using multimedia services, though with capacity for data communications, via Internet. In this context, "high-speed mobile" implies a speed that is equal to, or greater than, 144 kbit/s in at least one direction. - <i>Code Division Multiple Access (CDMA) 2000 1x</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 144 kbps. - <i>Wideband CDMA (W-CDMA)</i> is an IMT-2000 3G mobile network technology, based on CDMA, that presently delivers packet switched data transmission speeds up to 384 kbps and up to 2 Mbps when fully implemented. Known as <i>Universal Mobile Telecommunications System (UMTS)</i> in Europe. - <i>CDMA2000 1xEV-DO</i> is an IMT-2000 3G mobile network technology, based on CDMA, that delivers packet switched data transmission speeds of up to 2.4 Mbps. - <i>Enhanced Data rates for GSM Evolution (EDGE)</i> is an intermediate technology that brings second-generation GSM closer to third-generation capacity for handling data speeds up to 384 kbits/s.	
13	4213	Total Internet subscribers	4213 = 4213tb + 4213d +4213l The number of total Internet subscribers includes dial-up, public leased lines and broadband subscribers. Only active subscribers should be included.	>750.000

13.1	4213d	Dial-up Internet subscribers	Number of Dial-up Internet subscribers. Dial-up is a connection to the Internet via a modem and telephone line, which requires that the modem dial a phone number when Internet access is needed. Dial-up modem speeds are generally limited to speeds of 28 kbit/s to 56 kbit/s.	
13.2	4213tb	Total broadband Internet subscribers	4213tb = 4213cab+4213dsl+4213ob Total broadband Internet subscribers refers to a subscriber who pays for high-speed access to the public Internet (a TCP/IP connection). High-speed access is defined as being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions. If countries use a different definition of broadband, this should be indicated in a note. The statistic is measured irrespective of the type of access, or the type of device used to access the Internet, or the method of payment.	~35.000 (2006)
13.2.1	4213cab	Cable modem Internet subscribers	Internet subscribers using modems attached to cable television networks. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	? 23.956
13.2.2	4213dsl	DSL Internet subscribers	Internet subscribers using Digital Subscriber Line (DSL) technology. DSL is a technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines. Speed should be equal to, or greater than 256 kbits, as the sum of the capacity in both directions.	9530 (2005) ~35.000 (2006) (100K-200K in 2007)
13.2.3	4213ob	Other broadband Internet subscribers	Internet subscribers using other than DSL and cable modem. This includes technologies such as mobile cellular technologies, Satellite broadband Internet, Fibre-to-the-home Internet access, Ethernet LANs etc	
13.3	4213l	Leased line Internet subscribers	Number of leased line Internet subscribers.	14.968 (2004) 9255 (2005)
14	4212	Estimated Internet users	The estimated number of Internet users. A growing number of countries are measuring this through regular surveys. Surveys usually indicate a percentage of the population for a certain age group (e.g., 15-74 years old). The total number of Internet users in this age group	

			should be supplied and not the percentage of Internet users in this age group multiplied by the entire population. In situations where surveys are not available, an estimate can be derived based on the number of subscribers. The methodology used should be supplied, including reference to the frequency of use (e.g., in the last month).	
15	424	PWLAN locations	The number of <i>Public Wireless Local Area Network</i> (PWLAN) locations (i.e., <i>hotspots</i>). PWLANs are based on the IEEE 802.11b standard, commonly referred to as WiFi.	>200
32	1531	Private leased line charge (2 Mbit/s)	Connection charge and monthly rental charge for 2 Mbit/s private leased line.	
34.1	4213bc	Broadband Internet connection charge	The initial, one-time charge for a new broadband internet connection. Refundable deposits should not be counted. A note should indicate whether taxes are included (preferred) or not.	80 EURO
34.2	4213bs	Broadband Internet monthly subscription	The monthly subscription charge for broadband internet service. A note should indicate whether taxes are included (preferred) or not.	15 EURO, 256 Kb/s 25 EURO, 512 Kb/s 32 EURO, 768 Kb/s