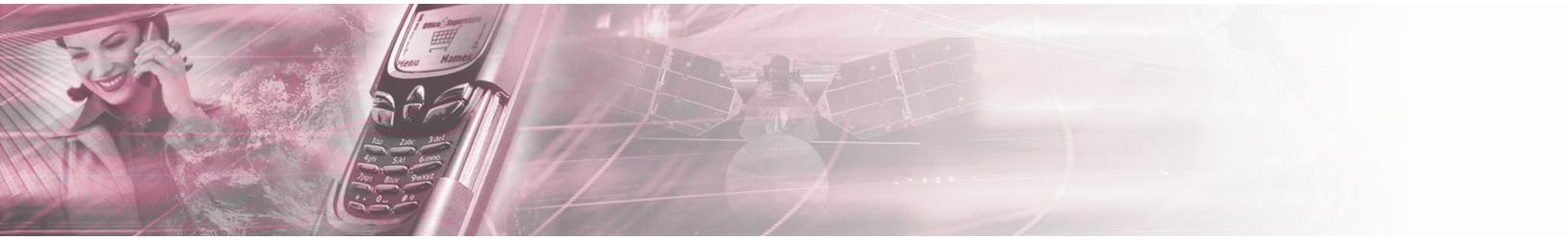
Republic of Serbia

RATEL

Republic Telecommunication Agency

An Overview of Telecom Market in the Republic of Serbia in 2007

Belgrade, 2008



IMPRESSUM

Title: An Overview of Telecom Market in the Republic of Serbia in 2007

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TABLE OF CONTENTS

A WORD OF INTRODUCTION

The process of liberalization and elimination of monopoly in the telecom sector in the Republic of Serbia, as well as the beginning of harmonization with the European Union legislation, began with the adoption of the Telecommunications Law, in the mid 2003. The necessary requirement for the implementation of this Law was the constitution of the Republic Telecommunication Agency (RATEL). On 23 May 2005, the National Parliament of the Republic of Serbia had appointed the Managing Board of the Agency, which provided for all necessary requirements within the stipulated timeframe, enabling RATEL to become functional and begin its work on 19 December 2005.

Pursuant to the Telecommunications Law, RATEL has been bestowed the task of telecom market regulation in the Republic of Serbia, in order to provide conditions for creation of an open market and further development of the telecommunications sector, as well as the fulfilment of public interests declared in the following documents:

- Telecommunications Law ("Official Gazette of RS", Nos. 44/03 and 36/06),
- Strategy for the Development of Telecommunication in the Republic of Serbia from 2006 until 2010 ("Official Gazette of RS", no. 99/06),
- Strategy for the Development of Information Society in the Republic of Serbia ("Official Gazette of RS", no. 87/06),
- National Strategy for the Economic Development in the Republic of Serbia 2006-2012 (passed by the Government of the Republic of Serbia).

Observing the declared principles of lawfulness, competence, impartiality and transparency, RATEL endeavours to act in a timely, efficient and professional manner.

Telecom market regulation with the purpose of its development, reflected in the introduction of modern services and information-communication technologies, can only be achieved through creation of the conditions for an open market. This includes the prevention of monopolistic or oligopolistic behaviour. It is therefore necessary to ensure competition as the principal and only means that guarantees the achievement of the goal.

Competition can be achieved through the entry of new operators and introduction of new technologies, otherwise SMP operators need to be identified. In case of a closed market, prices have to be regulated and formed using a cost-based model. The experience of other developed countries tells us that a successful telecom market development can only be achieved in this way, therefore market regulation is RATEL's basic task.

In 2007, RATEL stimulated competition in telecom sector by preparing the necessary regulations and initiated further introduction of new technologies and services.

Conditions have been created for launching a public tender procedure for license issuance for FWA service provision, specifically WiMax, in order to ensure broadband development, and a public tender procedure for license issuance for using CDMA-PAMR, in order to ensure public voice service and Internet access in the scarcely populated areas. Regulations which offer the possibility for opening the fixed market and issuing a license to a new fixed operator have been adopted.

Mobile competition has been significantly improved. Provision of 3G network services has begun, enabling, *inter alia*, high speed Internet and television signal transmission. Competition led both to the introduction of new services and to a considerable price cut for mobile services.

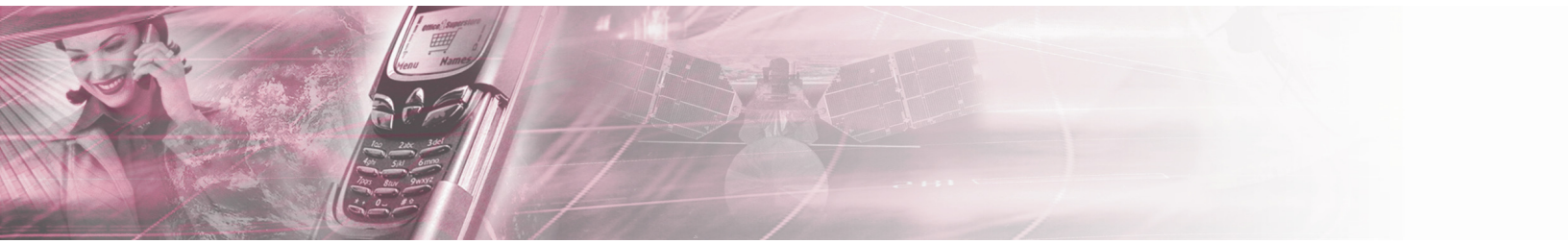
Telecom market analysis shows that last year there was an increase of total revenues in this sector. The revenue amounts to 1.47 billion euro, which is an increase of 10% compared with 2006. The allocation of revenues and investments in the development by telecom networks and services is interesting.

The revenues from the fixed market decreased from 426 million to 414 million euro, however there was a significant increase in investments, from 62 million to 166 million euro. The revenues from the mobile market saw a considerable increase, from 581 million to 839 million euro, and the investments show a sharp growth, from 103 million to 210 million euro. The revenues from the Internet increased from 26 million to 59 million euro, while the revenues from cable services were practically doubled.

Such increase in the revenues and considerable investments in the development had an impact on the increase in the number of users in all telecom networks and services. The significantly increased investments also contributed to the introduction of new technologies and new services, as well as the improvement of their quality. The fixed penetration grew from 36% to 38%, while the digitalization rate was increased from 88.6 to 93.3%. The mobile penetration showed a remarkable increase, amounting to 112.7%, which means that the number of mobile users is over 8.4 million. The Internet penetration also increased amounting to almost 17%, with around 1.27 million subscribers, whereas the real number of the Internet users is 2 or 3 times higher. It is of particular interest that the broadband penetration also grew from 1.6% to 7.8%. This growth refers to the access via ADSL, HFC and mobile Internet (3G).

In 2008, RATEL's main task will be the beginning of application of the cost/based model in telecom market regulation, with the purpose of preventing the abuse of monopoly, and creating conditions for the introduction of competition.

Along with this primary task, in 2008, RATEL will pay particular attention to encouraging new services and development of telecom infrastructure, broadband in



particular. It will work on providing the conditions for the application of new technologies and services: VoIP, 3Play, IPTV, DTV, e-government.

The Managing Board and the management of the Republic Telecommunication Agency would like to underline once again their openness for cooperation with all relevant professional and scientific institutions and companies who can help us accomplish the RATEL's mission of in the telecom market of the Republic of Serbia. In this regard, RATEL will also continue using the opinions and recommendations of the Agency Advisory Council. In order to present our views and results to a wider public and get to know the reactions, we will continue organizing professional discussions, and, finally, we will do our best in order to continue making the decisions through an open dialogue with all participants of the telecom sector, i.e. operators, providers and end users, such as to bring this sector of our economy closer to the experiences of the economically developed countries.

Chairman of the Managing Board of the
Republic Telecommunication Agency

Prof. Dr. Jovan Radunović

1. RATEL's ACTIVITIES IN 2007

It is with great pleasure that RATEL is publishing the "AN OVERVIEW OF THE TELECOM MARKET IN THE REPUBLIC OF SERBIA" for the third year in a row. This Overview represents a basic document that can be used to predict changes in the field of telecommunications in the Republic of Serbia in the following period.

After the initial period of Agency operations (the years 2005 and 2006), the year 2007 was, in our opinion, a very successful year for RATEL, as evidenced by the following overview of business activities performed between 1 January and 31 December 2007.

Regulatory Activities

The Law on Telecommunications (*Official Gazette of RS*, nos. 44/03 and 36/06, hereinafter: Law) established the Republic Agency for Telecommunications (RATEL) as an independent legal entity, an organization *sui generis* and/or a regulatory agency with the mandate to ensure conditions for an efficient implementation and promotion of the established policy in the field of telecommunications in the Republic of Serbia. At the same time, the Agency is an independent organization performing public duties and/or is independent in function from other national agencies and organizations and persons dealing with telecommunication networks, resources or services. The said Law distinctly distributes the duties among the Government, responsible ministry and RATEL, thus ensuring the distinction between political, operational and regulatory functions.

Pursuant to the Law, the Agency, *inter alia*, is bestowed with the following competencies:

a) Regulates more closely the performance of activities in the field of telecommunications, in particular if there is one or more public telecommunications operators who, by criteria set forth in the Law, have a significant market power;
b) Issues: permits on account of public telecommunication networks and public telecommunication services (license and authorization), permits for radio stations and technical permits-certificates;

   Licenses are issued to national or foreign natural body or legal entity intending to build, own or operate a public telecommunication network or provide public telecommunication services, in cases where the exploitation of the network and/or the provision of a telecommunication service is based on using limited resources (e.g. radio-frequencies or numbering). Licenses are issued after a public tender procedure. In addition to a one-year reimbursement for using the license, there is also the one-off reimbursement which represents the revenue on account of the budget of the Republic of Serbia.

Authorizations are issued for utilizing the public telecommunications network and providing telecommunication services to an unlimited number of entities and/or anyone meeting the prescribed conditions.

Radio-station permits provide for the right to use a radio-station and/or the right to use radio frequencies listed in the permit.

Technical permit - certificate enables the procurement, installation and launch of a telecommunications network, system and/or asset in line with technical standards and norms.

c) Issues consent for import of goods such as transmitters, radars, antennae and electric machines and devices with special functions;
d) A special competency of the Agency refers to operators with a dominant role in the market, on account of which they may have significant impact on market relations. Operators proclaiming themselves dominant in the market (SMP – *Significant Market Power*) are liable to ask for the consent of the Agency for every change in the price of their services;
e) The Agency has competencies relating to interconnection and/or mutual connection of networks of different operators, universal service and/or liabilities relating to its provision and financing and line lease, entailing the liability of a public operator with significant market power to provide the service of leasing their lines under specific conditions;
f) The Agency is competent for the adoption of the Numbering Plan and for the management of the plan thereof, entailing a rational usage of numbering resources and the indiscriminate allocation of numbers to operators;
g) In the field of radio-communications, the competencies of the Agency relate, primarily, to the management of the radiofrequency spectrum and/or planning, coordination, allocation and rational usage of radio-frequencies.
h) The Agency, in addition to the regulatory function, is also bestowed with the control-supervisory function. The Agency looks after the application of legal provisions and supervises the work of telecommunications operators, entailing the authorization to set appropriate measures in line with the Law.

The regulatory activities in the course of 2007 included the adoption of the following (general) by-laws:

- Rules on conditions for the work of amateur radio stations (*Official Gazette of RS*, no. 06/07);
- Rules on classes of radio-stations for which radio-station licence is not required (*Official Gazette of RS*, no. 26/07);
- Numbering Plan of the Republic of Serbia for Telecommunications Networks (*Official Gazette of RS*, no. 87/07)

- Rules on Administering the Numbering Plan for Telecommunications Networks (*Official Gazette of RS*, no. 87/07);
- Instructions for Managing Public Consultations Procedure (adopted on 28August 2007 and published on the Agency's webpage).

With the aim of efficient usage and management of the radio frequency spectrum, pursuant to the Frequency Allocation Plan (*Official Gazette of RS*, no. 112/04), the Agency prepared and forwarded to the responsible ministry the proposals of the following frequency allotment plans:

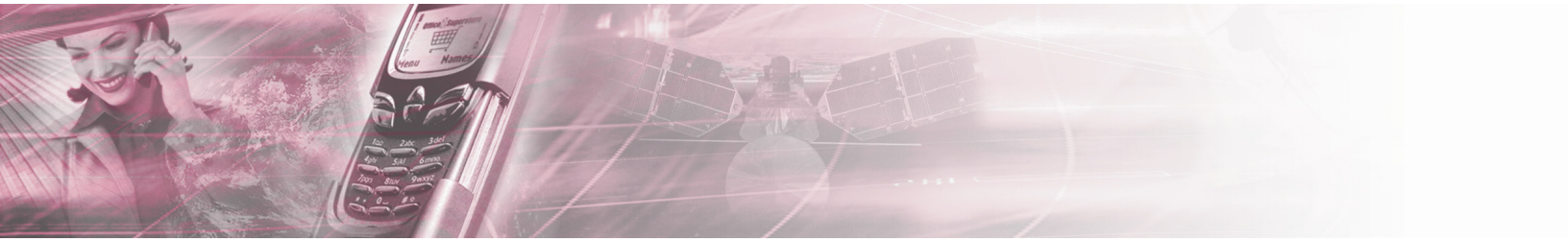
- Frequency allotment plan for systems with fixed wireless access (FWA) within frequency bands of 3410-3600 MHz and 3600-3800 MHz;
- Frequency allotment plan for the GSM/DCS 1800 radio system;
- Frequency allotment plan for the UMTS/IMT-2000 radio system;
- Plan on amendments to the frequency allotment plan for terrestrial analogue FM and TV broadcasting stations for the territory of the Republic of Serbia.

Furthermore, a number of by laws were prepared in the course of 2007, with drafts adopted by the Managing Board of the Agency. However, the by-laws remained in the adoption procedure throughout the year 2007, since the drafts were submitted to the responsible ministry for obtaining the opinion on the constitutionality and legality pursuant to the provision of Article 57 of the Public Administration Law (*Official Gazette of RS*, nos. 79/05 and 101/07).

- Rules on the amount of radio frequency usage fee;
- Rules on terms and conditions and procedure of authorization issuance to public telecommunications operator for connecting a national telecommunications network with a telecommunications network of another state;
- Rules on general terms and conditions for interconnection of public telecommunications networks;
- Decision on the amount of annual fee for the usage of the allocated numbers and addresses from the Numbering Plan;
- Decision on the proposal for the minimum set of services of the Universal Service.

The Managing Board of the Agency adopted a number of individual decisions in the course of 2007, within its mandate to perform the competencies set forth by the Law, in order to regulate the telecommunications market in the Republic of Serbia.

In conformity with the competencies set forth by the Law relating to prevention of anti-competition and/or monopolistic activities of public telecommunication operators, the Managing Board of the Agency, *inter alia*, adopted:



- Decision on declaring a public telecommunication operator with significant market power for the service of radio and television programs distribution via cable distribution network (SBB);
- Decision on Consent to the "Telekom Srbija" a.d. Telecommunication Company regarding Prices of PSTN/ISDN Additional (Special) Services.

Telecommunications Networks and Services

By drafting regulations and initiating the procedure for introducing new technologies and services in 2007, RATEL stirred up competition in the segments of the telecommunications market that were closed. Moreover, the Agency enabled further development of competition in those segments where it already existed.

In the field of mobile telephone service, all the necessary regulations were adopted for the development of existing technologies, as well as for the introduction of new mobile network technologies. In this manner, each of the three existing mobile telephone operators was allocated a frequency band necessary for introducing the so-called third generation of mobile telephone services which, among other things, enables broadband Internet and television program transmission. In addition to the introduction of new services for the end user, prices of mobile telephone services dropped significantly, which was a direct result of the competition and the substantial work that RATEL had performed in 2006, during the licensing process.

The Telecommunications Network Numbering Plan was adopted (*Official Gazette of RS*, no. 87/07) in order to ensure conditions for opening the market of the landline and mobile telephone services, as well as the Rules on Managing the Telecommunications Network Numbering Plan (Official Gazette of RS, no. 87/08), enabling the operators to manage the allocated sets of numbers that they further allocate to end users. Furthermore, the Decision on the Amount of Annual Fee foe Using the Allocated Numbers and Addresses of the Numbering Plan was also adopted, and then submitted to the responsible ministry in order to obtain consent of the Government of the Republic of Serbia, pursuant to Article 19 of the Law.

With the aim of introducing the principle of equality and non-discrimination with regard to the operators in the telecommunications market, a significant general legal instrument was adopted regulating interconnection of public telecommunication networks. The Rules, *inter alia*, establish the general terms and conditions of interconnecting the telecommunications networks of public telecommunications operators, technical and financial conditions of interconnection and the obligation to provide interconnection. RATEL worked long and hard to develop the Rules on General Terms and Conditions for the Interconnection of Public Telecommunications Networks which was adopted during 2007 by the Managing Board of the Agency and submitted to the Ministry of Telecommunications and Information Society for obtaining an opinion on constitutionality and legality.

With the aim of creating the environment for competition in the field of telephone services, with the goal of developing broadband access (fast Internet with voice transfer), a draft Plan for the Distribution of Frequencies for Fixed Wireless Access (FWA) Systems was created for the frequency bands of 3400-3600 MHz and 3600-3800 MHz. All parties interested in providing services in the said bands were registered, leading to the conclusion that there is a lot of interest among operators for introducing this technology.

In order to increase accessibility of public voice services and the Internet for all citizens, with emphasis on the population in rural regions where telecommunications infrastructure has still not been developed, the draft Frequency Allotment Plan for CDMA – PAMR Radio Stations within the 411.875-416.050/421.875-426.050 MHz frequency band was developed. All parties interested in providing services in the said frequency band have also been registered.

The publishing of the Rules on the Types of Radio Stations for which the Radio Station License is not Required (*Official Gazette of RS*, no. 26/07), in the bands of 2.4 and 5.5 GHz, made is possible to use these frequencies to provide a access to a non-guaranteed quality of service Internet. Upon the adoption and publication of these Rules, 133 providers were registered as providing this type of service.

With the aim of introducing competition and further liberalization of the telecommunications market in Serbia, upon adopting the Principles of the Conditions for Common Usage of Cable Ducts, apart from the abovementioned Rules that are in the process of being adopted, in 2007 the Agency stated to draft the following:

1. Draft Rules on Terms and Conditions for Public Telecommunication Networks License Issuance and the Content of the License. These Rules define the process and conditions for license issuance by the Republic Telecommunication Agency to all legal entities or natural persons intending to make use of the public telecommunication network which is outside the licensing system,
2. Draft Rules of Procedure on the Terms and Conditions for providing VoIP and the contents of the License. These Rules determine the terms and conditions for using VoIP communication without using numbers from the Numbering Plan.

With the aim of delivering regulations for the use of new technologies in distribution systems, a Public Call for registration was used to register all parties interested in providing DTH (*Direct-To-Home Television*), MMDS (*Multichannel Multipoint Distribution Service*) and LMDS (*Local Multipoint Distribution System*) services. RATEL determined that there were operators providing services using said technologies, but this area is still unregulated, thus the Agency shall devote special attention to the problem in the period to follow. It should be noted that said technologies enable the transfer of voice signals and Internet access, increasing interest for these types of services with users.

The license of the telecommunications company Telekom Srbija, a.d. for building, owning and operating the public fixed telecommunications network and public fixed telecommunications network services provision was replaced.

121 Authorizations for Internet services provision were issued during 2007, along with 32 Authorizations for radio and television program distribution service provision via cable distribution networks. According to data of late 2007, there are 159 ISPs and 79 cable operators with authorizations issued by RATEL.

In 2007 RATEL was given membership in the European Telecommunications Standards Institute (ETSI), enabling the direct application of ETSI standards when creating regulatory provisions.

In the area of standardization, the instructions for the design and the set of technical conditions related to mobile telecommunications systems and assets were adopted. More than 1600 technical certificates were issued, whereas, in 2006 there were 500 technical certificates issued.

More than 1000 approvals for the import of goods were issued, most of them relating to the import of mobile telephones, radio stations, radio broadcasting transmitters, receiver antennae and GPS devices. During 2006, around 800 import approvals were issued.

Broadcasting

With the aim of solving problems related to the limited number of broadcasters and with the intent to significantly increase their numbers, the joint operation of the Ministry of Culture, Ministry of Telecommunications and Information Society, the Republic Broadcasting Agency and the Republic Telecommunication Agency was initiated, in preparing the necessary instruments for commencing digital radio broadcasting operations (DTV – Digital Television) and the necessary regulations for using IPTV technologies (digital television transfer using the Internet).

On the initiative of RATEL, the Republic of Serbia has signed the Final Instrument of the multilateral CEPT (European Conference of Postal and Telecommunications Administrations) meeting MA02revSO07, as well as those of the CEPT T-DAB planning meeting WI95revCO07. With these signatures we have become part of the European agreements on digital radio broadcasting, enabling the use of the 1452-1492 MHz frequency band for digital radio.

The International Telecommunication Union (ITU) organized the World Radiocommunication Conference WRC-07 in late 2007, with 164 Member States of the International Telecommunication Union participating with over 3000 delegates, as well as 101 observers (international and industry organizations).

This was the first World Radiocommunication Conference in which the Republic of Serbia took part as an independent administration. Likewise, this was the first World Conference where RATEL took part as an independent regulatory body for the area of telecommunications in the Republic of Serbia (RATEL is registered as an administration/regulator with the International Telecommunications Union).

The Final Acts of the Conference were signed by 155 countries, including the Republic of Serbia. Discussion on the agenda was related to most terrestrial and space radio services and applications, including future generations of mobile telephone systems, aviation telemetry and remote control systems, satellite services including meteorology applications, the global warning and safety system in naval traffic, digital radio broadcasting, as well as the application of radio for predicting and recognizing natural disasters.

Following the Public Tender of the Republic Broadcasting Agency (RRA) for regional radio and television broadcasters, the issuing of licenses was completed. Based on the tender, 24 licenses were issued to television broadcasters for regional coverage and 21 licenses to radio broadcasters for the FM band with regional coverage. Based on a prior tender in 2006, a license was issued to a radio broadcaster in the FM band covering the Autonomous Province of Vojvodina. In total, over 10,000 radio station licenses were issued in all frequency bands. Around 5,000 licenses were issued during 2006.

In the area of radiocommunication control, daily monitoring of radio stations in the broadcasting frequency bands was performed on fixed locations in the Monitoring Centres "Beograd" and "Niš", along with occasional measurements on the entire territory of the Republic of Serbia from the frequency spectrum monitoring vehicles owned by RATEL. The Republic Telecommunication Agency monitors the use of the radio frequency spectrum. Those activities are mostly related to the area of radio broadcasting where, following the chaotic conditions from previous years, since 2006 the process of introducing order has begun. The collected data is analyzed, and then, if it is determined that there is just cause for taking measures foreseen by the Law, the Agency Management Board is suggested to issuing an adequate decision. The most frequent cases encountered in practice are the following: unlicensed operation of a radio station, a radio station operating contrary to the conditions from the issued license or a radio station causing interference to other radio stations.

RATEL's activities related to radiocommunication monitoring in 2007 are illustrated by the following:

- 7102 control-measurement broadcasting records,
- 280 reports by broadcast control officers on breaches of the Telecommunications Law,
- 16 international reports on harmful interference,
- 23 decisions on measures to be taken against radio station owners,
- 5 conclusions on forceful shutting and

- 2302 radio station technical inspections performed.

Telecom Market Regulation

Telecom market regulation also involves the prevention of abuse of monopoly positions by one or more market operators. It is necessary to detect an operator with a significant market power within a given segment of the market and, using cost accounting models determine service prices and, if necessary, perform a tariff rebalance. The service prices in a market with limited competition, i.e. a market with an SMP operator (or joint domination of several operators) are necessarily under the control of the national regulatory authority, in order to provide a substitute for the competitive character of the national telecommunication market. The prices of such services are primarily formed by applying the cost accounting principle, and not any costs, but the normal and standard costs arrived at by managerial use of information obtained by the application of the cost accounting principle. With multiservice operators, delivering a single or several services on a free competition market, with another or other services delivered on a limited competition market (a market where they have a significant market power), an integral approach to the application of the cost accounting principle is indeed necessary. Such an approach implies:

- reliable and verifiable cost-accounting for the company as a whole, per cost responsibility centre, per internal transfer performance (internal re-allocation of costs) and per final performance (service) of the company for both of the abovementioned markets;
- reliable and verifiable analytical calculation of revenues from the sale of services, expenses of sold services and service profit;
- reliable and verifiable identification of relevant operating funds per type of service;
- a relevant periodical financial reporting system related to the operating and financial results of the company and its parts for the needs of the regulatory body and the operator's management.

Since price control requires the use of the cost accounting model which requires time for implementation and application, RATEL has published the Platform for Drawing Up the Rules on the Application of the Cost-Accounting Principle to a Telecommunications Operator Designated as Having Significant Market Power.

With the aim of protection from monopoly, RATEL has declared "Telekom Srbija", a.d. an SMP operator for public fixed telephone network services, and "Serbia Broadband – Srpske kablovske mreže", d.o.o. (SBB) an SMP operator for the service of radio and television programs distribution via a cable distribution network. Likewise, a tariff rebalance was performed for these two SMP operators, however, not based upon the cost accounting principle but on the benchmarking analysis.

A Brief Overview of the Telecom Market in 2007

The comparative overview of the number of users and the level of penetration of the public fixed telecommunications network, the public mobile telecommunications network, Internet, cable systems, as well as broadband access for the years 2005, 2006 and 2007 is provided in Table 1. This comparative overview undoubtedly shows that there is an increase in the number of users for all telecommunications networks and services, which is certainly also a result of the efforts of the Republic Telecommunication Agency. Two facts are especially interesting. The first regards mobile telephony where that the number of active SIM cards has reached the level of over 8.4 million, which is a direct consequence of introducing competition in this area. The second concerns broadband access, where the number of users increased significantly, which is especially encouraging for the process of creating an information society in the Republic of Serbia.

Table 1. Comparative Overview of the Number of Telecom Service Subscribers in the Last 3 Years

	2005		2006		2007	
	Number of subscribers (thousand)	Penetration (%)	Number of subscribers (thousand)	Penetration (%)	Number of subscribers (thousand)	Penetration (%)
Fixed	2,527.30	33.70	2,719.40	36.30	2,854.50	38.00
Mobile	5,510.70	73.50	6,643.70	88.60	8,452.60	112.70
Internet	756.70	10.00	1,005.00	13.40	1,268.50	16.90
Cable	530.50	7.00	541.90	7.20	774.10	10.30
Broadband	40.50	0.54	121.60	1.62	583.10	7.80

User Protection

With the aim of defining a minimum set of services of the Universal Service to be accessible to all, a contract was signed with the Faculty of Traffic and Transport Engineering in Belgrade for the implementation of the Universal Service project. The first phase, collecting and processing statistical data necessary for the implementation of the Universal Service, showing the requirements and locating the most endangered areas, was completed in 2007.

As part of the process of user protection more than 400 user complaints were processed and the accompanying written documents produced (with numerous, everyday oral communication with dissatisfied telecommunications service users). Most of the complaints were related to the quality of television signals delivered and the frequent price changes with cable operators, followed by poor telephone signal quality of party lines, delays

in solving request for a new extension, charges for using mobile telephones in other operator networks, etc.

At the suggestion and initiative of the non-governmental sector, instructions on the procedure of public consultation for all general bylaws of importance to regulating the relations in the telecommunications area are in place. The consultation process includes a public discussion process, discussions, counselling, seminars, expert workshops, meetings with interested parties, as well as other methods of public consultation. It should be noted that RATEL has always used public consultation to further improve all general bylaws adopted.

Organization and Development of RATEL

Early last year furnished business building was rented to serve as a workplace for RATEL employees, with a usable working area of 1,903.64 m^2, at 8, Višnjićeva St. in Belgrade. The relocation was completed from the prior offices at 2, Palmotićeva St. as well as a change of registered Agency seat.

There were 6 rounds of vacancy announcements for 27 employees and 8 trainees, totalling 80 permanent employees and 4 temporary employees, as of 31. 12. 2007.

Business cooperation was established and maintained with over 10,000 clients, representing a significant increase to 2006 when the number of clients was around 1,000.

The local computer network of the Agency was set up and reorganized. 4 new servers were installed, along with a large number of software packages as part of the infrastructure software, with a document management system set up, as well. During the last year, the control-measurement centres “Beograd” and “Niš” were connected to the local network of the Agency. With adequate training, radio-frequency spectrum control software packages were put to use.

Finally, during 2007 RATEL was successful in financial activities, with a total revenue of nearly RSD722.7 million and total expenditures of RSD490.1 million. Considering the fact that RATEL, in accordance with the Telecommunications Law, operates as a non-profit organization, the surplus of total revenues over the total expenditures, amounting to around 232.6 million, upon completed financial auditing procedures, was paid into the account of the Budget of the Republic of Serbia and the Autonomous Province of Vojvodina.

Cooperation with Other Institutions and Organizations

In performing its main role of creating the necessary conditions for the unhindered development of a telecommunications market in the Republic of Serbia within its competencies, it is necessary for RATEL to cooperate with the relevant state and judicial authorities, operators, providers, distributors, production organizations, science and education institutions and user associations. This cooperation is conducted through:

- Constant contact and consultation with all parties in the telecommunications sector. In this sense, RATEL directly cooperates with operators, providers and end users.

- Organizing public consultations, panel discussions and round tables, in order to reach expert and objective conclusions on specific issues. In 2007 RATEL organized several round tables and discussions on the following issues: disputes resolution between users and telecommunications operators, wide availability of telecommunications services, Internet trade, broadband systems development in Serbia, etc.

The dynamic development of ICTs, i.e. services and equipment, requires continuous monitoring and introduction of new regulations. This demands a developed and direct international cooperation with the NRAs and other international institutions in the area and with EU Member Countries. This cooperation is achieved by organizing bilateral and multilateral meetings with representatives of telecom NRAs in the region. Several meetings with representatives of the regional and European Union countries were held in 2007.

Due to said reasons, active participation in the operation of international organizations is also necessary, as well as cooperation on projects. RATEL is an active participant in the work of the International Telecommunications Union (ITU), the European Telecommunications Standards Institute (ETSI), the European Conference of Postal and Telecommunications Administrations (CEPT) and other international telecommunications institutions.

Executive Director
Republic Telecommunication Agency

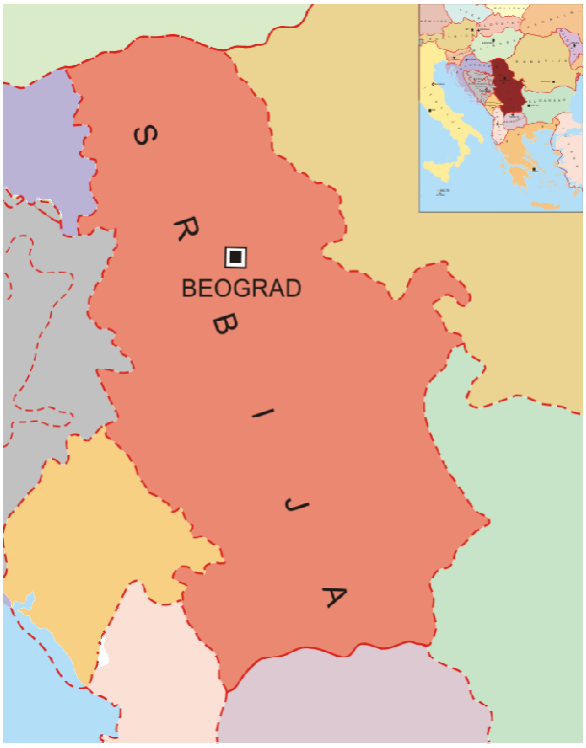
Dr. Milan Janković

2. TELECOM MARKET ANALYSIS

2.1. BASIC CHARACTERISTICS OF THE TELECOM MARKET IN THE REPUBLIC OF SERBIA

Figure 1. Republic of Serbia – Basic Facts

Country Map



Basic Facts

Name	**Republic of Serbia**
Capital	Belgrade
Area	88,361 km²
Population (without AP Kosovo and Metohija)	7,498,001
Country Code:	+381
Internet domain:	.rs
GDP for 2007	RSD 2,489.72 bn (€ 31.13 bn) Real annual growth 7.3%
Average net income in December 2007	RSD 34,612 (€ 435) Annual growth 27.9%
Fixed penetration:	38.59
Mobile penetration:	112.73
ISPs:	159
Network digitalization:	93.31%

Source: Statistical Office of the Republic of Serbia & RATEL

Due to political and economic crisis in the country during the 1990s, the modernization of telecom networks in the Republic of Serbia has proceeded rather slowly. The process of liberalization and demonopolization of the telecom market began with the adoption of the Telecommunications Law in 2003. The Law, based upon the EU 1998 Regulatory Package, was the result of a need to harmonize the legal system with the European legislation in order to get on with an efficient regulation of the telecommunications as soon as possible.

The basic principles laid down in the Telecommunications Law concern rational usage of the radio frequency spectrum, guaranteed quality of telecom services, stimulation of competition, user protection, provision of interconnection under equal terms and observance of the international normative provisions and standards.

According to the division of competence stipulated by the Law, the Government adopts the Policy and the Strategy for the development of telecommunications proposed by the relevant Ministry, whereas the Republic Telecommunications Agency is assigned a regulatory role.

In order to speed up the development of the telecom market, the Government of the Republic of Serbia adopted the Strategy for the Development of Telecommunications in the Republic of Serbia from 2006 until 2010, which defines the legal, institutional, economic and technical aspects of the development. The Strategy intends to stimulate the development of the telecoms infrastructure and services, as well as the harmonization of the sector specific legislative provisions of the Republic of Serbia with the EU regulatory framework.

The document lays down the following principles:

- significant increase of the telecommunications' share in the total gross domestic product;
- attracting foreign and domestic investments, by adopting incentive measures in order to create challenging and favourable business environment;
- full digitalization of the telecommunications infrastructure, as a key prerequisite for building the information society;
- reaching the average European level of development of telecommunications;
- providing that the Internet is available to all, fast, inexpensive and secure;
- promoting the development of web economy;
- increase the participation of domestic industry and knowledge in the development of the telecommunications sector in the Republic of Serbia and ensure its restructuring in order to enter the world market;
- harmonization of the development of telecommunications infrastructure with the requirements set in the strategies for other sectors, in particular with the Strategy for the Development of Information Society;
- ensuring efficient access to information and knowledge;
- increase in the level of knowledge and education through application of the information and communication technology and by building telecommunication infrastructure and information society.

In view of considerable investments made in the building and modernization of telecom facilities and information infrastructure, telecommunications are perceived as an important driver of the economic growth in the developing countries, as may be observed in Table 2, which shows the degree of foreign investments in Serbia in the past year.

Table 2. Leading Investors in 2007

Investor	Industry	Type of investment	Investment value (million euro)
Telenor, Norway	Telecommunications	Privatization	1.602
Phillip Morris, USA	Tobacco	Privatization	611
mobilkom austria, Austria	Telecommunications	Greenfield	570
Banca Intesa, Italy	Banking	Acquisition	508
Stada, Germany	Pharmaceutics	Acquisition	475
InBev, Belgium	Food	Acquisition	462
Embassy group, India	Real-estate	Greenfield	428
NBG, Greece	Banking	Privatization	425
Mercator, Slovenia	Trade	Greenfield	240
Fondiaria-Sai, Italy	Insurance	Privatization	220

Source: SIEPA

Telenor (Norway) retained the leading position among the foreign investors in Serbia since the total investments for the purchase of Mobi 63 amounted to more than 1.6 billion euro, which is the biggest individual investment so far both in Serbia and throughout the South East Europe. The third place goes to Vip Mobile (Austria) with the total investment of 570 million euro, who is also the number one Greenfield investor in Serbia in 2007.

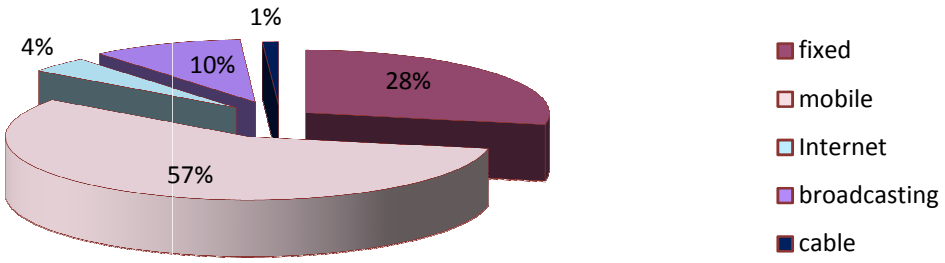
According to the data of the Republic Telecommunication Agency, the revenues from telecom services in 2007 grew by 13% compared with the previous year, amounting to around RSD 117.7 billion or approximately EUR 1.47 billion. The share of telecom revenues in GDP was around 4.7% (cf. 5.6% in 2006).

The available data was gathered by the Agency based upon the reports submitted by the telecom market players. The reports had been received by mid 2008 with balance on 31 December 2007 and have been used in order to depict the situation in the telecom market in the Republic of Serbia.

Revenues from telecom services EUR 1.47 bn. (4.7% of GDP)

Observed by different services, in 2007 the largest share in the total revenues, 57%, goes to the mobile market, whereas cable services are still at the bottom of the scale. The mobile telephony scored an increase in revenue of 44% in 2007, while the growth in the revenues from the Internet services reached around 122%, and those from cable 100% compared with 2006. The revenues from the fixed telephony in 2007 dropped by 2% compared with the previous year.

Figure 2. Allocation of revenues by services in 2007



Source: RATEL

Tables 3. and 4. show telecom service baskets representing monthly expenditure for telecom services in Serbia in 2007 confronted with the 2006 data. The low usage basket shows the average monthly expenditure for basic telecom services, which include television, fixed and mobile phone, whereas the high usage basket shows how much the population spends monthly using also Internet and cable, in addition to basic package. In 2007, the cost of the basic package equalled 4.7% of average monthly salary, and that of the extended package 12.7%. The largest amount was spent on the fixed line in the basic package and on the ADSL in the extended package.

Table 3. Low Usage Basket

Low usage basket	2006		2007	
	Average bill	**% of monthly salary**	**Average bill**	**% of monthly salary**
Fixed	907.32	4.18%	928.88	2.69%
Mobile (prepaid)	488.63	2.25%	351.92	1.02%
TV (national TV subscription)	300.00	1.38%	350.00	1.02%
Total	**1,695.95**	**7.81%**	**1,630.80**	**4.73%**
Average net salary	21,715.11		34,471.00	

Source: RATEL

Table 4. High Usage Basket

High usage basket	2006		2007	
	Average bill	**% of monthly salary**	**Average bill**	**% of monthly salary**
Fixed	907.32	4.18%	928.88	2.69%
Mobile (postpaid)	488.63	2.25%	1,257.15	3.65%
TV (national TV subscription)	300.00	1.38%	350.00	1.02%
ADSL	1,567.40	7.22%	1,309.89	3.80%
Cable	404.73	1.86%	563.04	1.63%
Total	**3,668.08**	**16.90%**	**4,408.96**	**12.79%**
Average net salary	21,705.11		34,471.00	

Source: RATEL

2.2. SOUTH EAST EUROPE COMPARATIVE ANALYSIS

Today, the level of telecommunications and ICT development is crucial for the progress of the national economy and the entire society, and therefore it largely influences the global competitiveness. A great number of European countries adopted plans and policies for the development of electronic communications back in the early 1990s, whereas the first EU telecoms regulatory package was adopted in 1998.

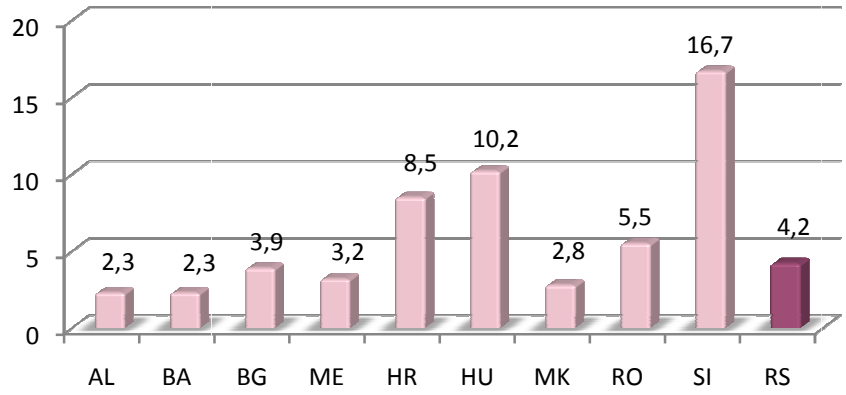
Table 5. Population and GDP per capita

Country	Population (mn)	BDP (€ bn)
Albania	3.60	8.12
Bosnia & Herzegovina	4.55	10.28
Bulgaria	7.32	28.31
Montenegro	0.67	2.15
Croatia	4.49	37.96
Hungary	9.93	101.00
Macedonia	2.06	5.86
Romania	22.25	121.27
Slovenia	2.01	33.54
Serbia	7.40	31.13

Source : ITU / Statistical Office of the Republic of Serbia (estimate)

The SEE countries, which harmonized the respective sector specific legislation somewhat later, are acting on a regional level. They are working on the introduction and development of the ICTs through the e-SEE initiative, in order to address the challenges of the information society development and exploit the potentials offered by the new technologies maximizing the prospects of the national economies for global market integration.

Figure 3. GDP per capita (€ thousands)

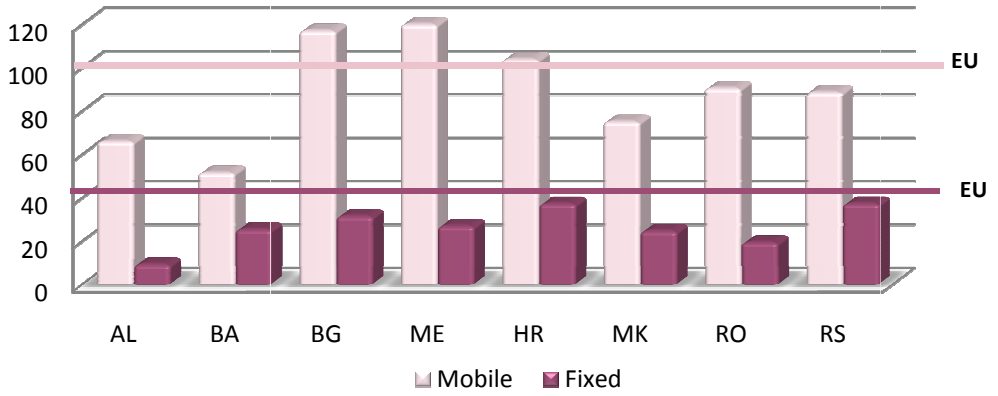


Source: Statistical Office of the Republic of Serbia (estimate)

Increase in pentration Fixed by 4.7%, Mobile by 2.2%

The comparative overview of the fixed and mobile penetration given in Figure 4. shows that all countries in the region still have more mobile than fixed subscribers. Fixed penetration is still low, with 38.1% in 2007. Fixed penetration increased by 4.7% and mobile penetration by 27.2%.

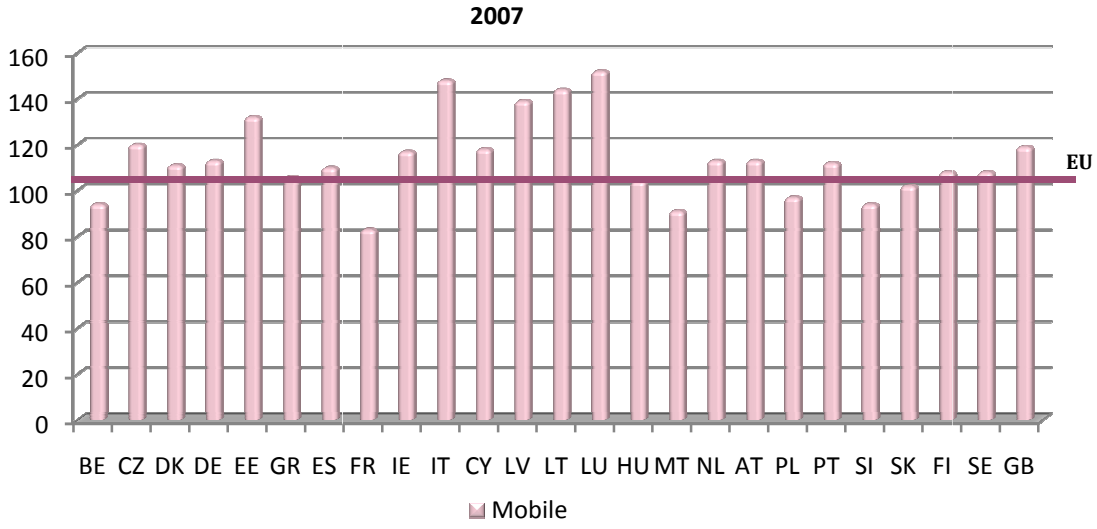
Figure 4. Mobile and Fixed Penetration (Countries in the Region)



Source: Country Comparative Report 4 (Cullen International) on 01.07.2007

Figure 5. indicates the mobile penetration in the EU countries. The countries with the highest penetration are Luxemburg (152%), Italy (148%), Latvia (139%) and Estonia (132%), whereas France (83%) and Malta (91%) are at the bottom of the scale.

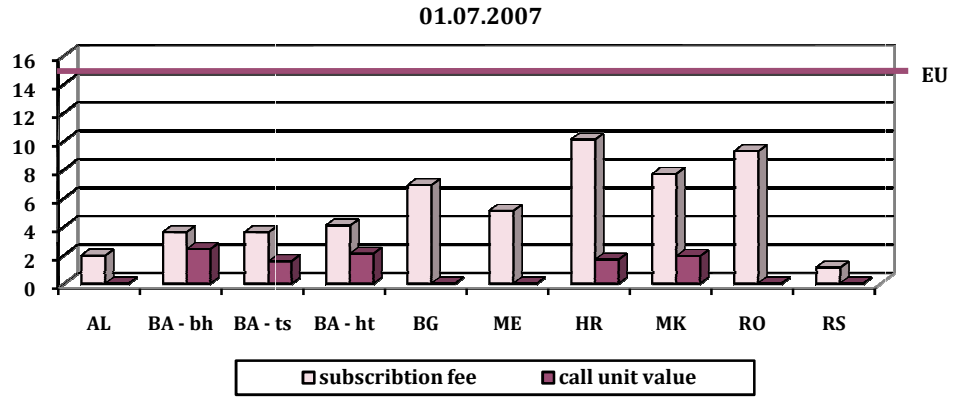
Figure 5. Mobile Penetration (EU)



Source: European Electronic Communication Market 2007 (13th Report)

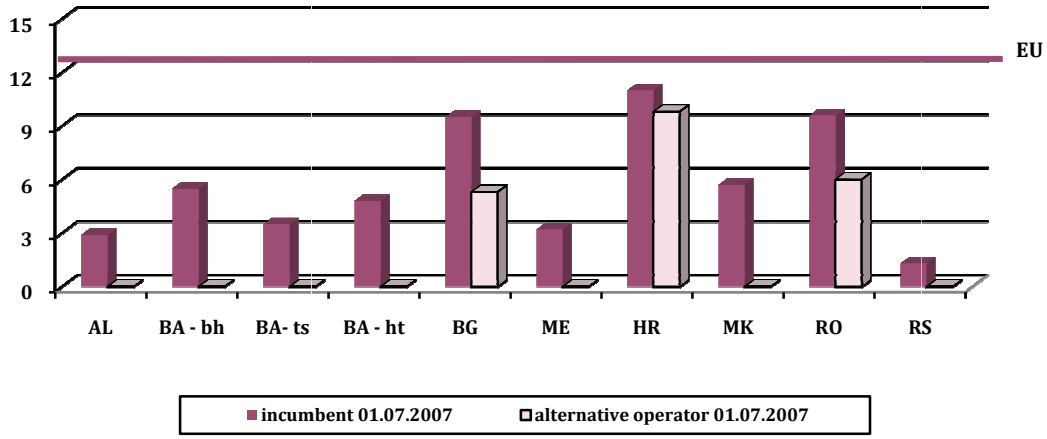
The prices of some fixed line voice services and leased lines charged by the operators in the region and the EU are given below (Figures 6. – 9.) The subscription fee and the price of call unit, as well as the local calls, are still the cheapest in the Republic of Serbia, while the highest prices for these services in the region are found in Croatia and Romania.

Figure 6. Standard Monthly Subscription and the Value of Call Unit for residential users (€)



Source: Country Comparative Report 4 (Cullen International)

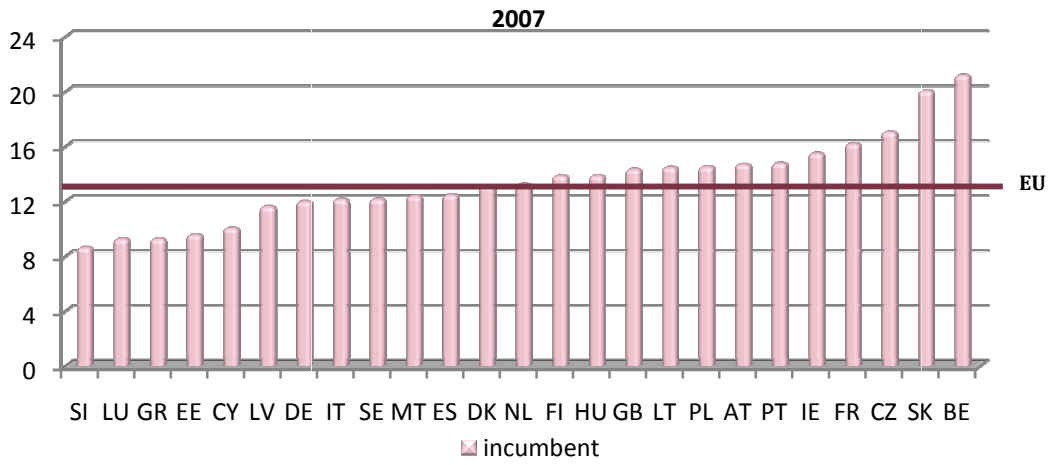
Figure 7. Price of a 3-Minute Local Call in Eurocents



Source: Country Comparative Report 4 (Cullen International)

As for the EU countries, Belgium (€ 0.212) has the highest price of a 3-minute local call and Slovenia (€ 0.864) the lowest (Figure 8.).

Figure 8. Price of a 3-Minute Local Call in Eurocents (EU)

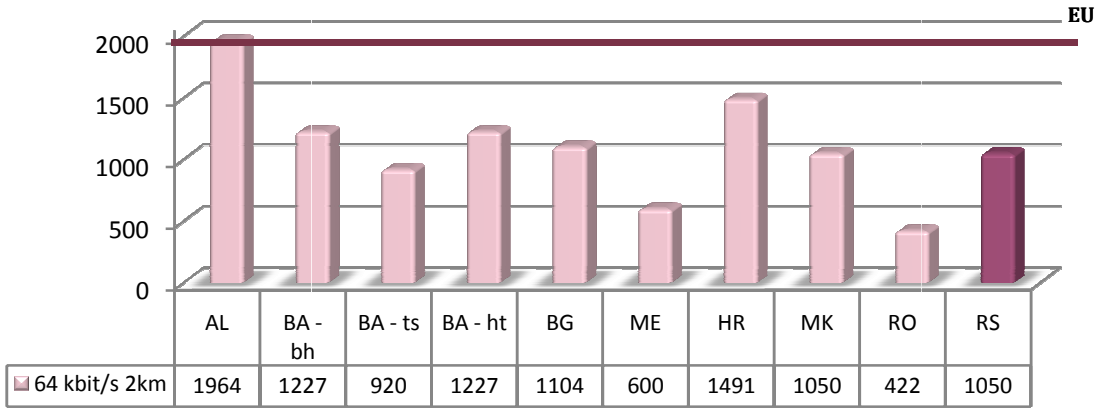


Source: European Electronic Communication Market 2007 (13th Report)

Among the countries in the region, the charges for 2 km of 64 kbit/s leased line are the highest in Albania and Croatia, and the lowest in Romania and Montenegro (Figure 9). In the EU, Slovakia (€ 6 035), has the highest charges for 2 km of 64 kbit/s leased line, while in Poland these are charged the least (€ 716) (Figure 10.).

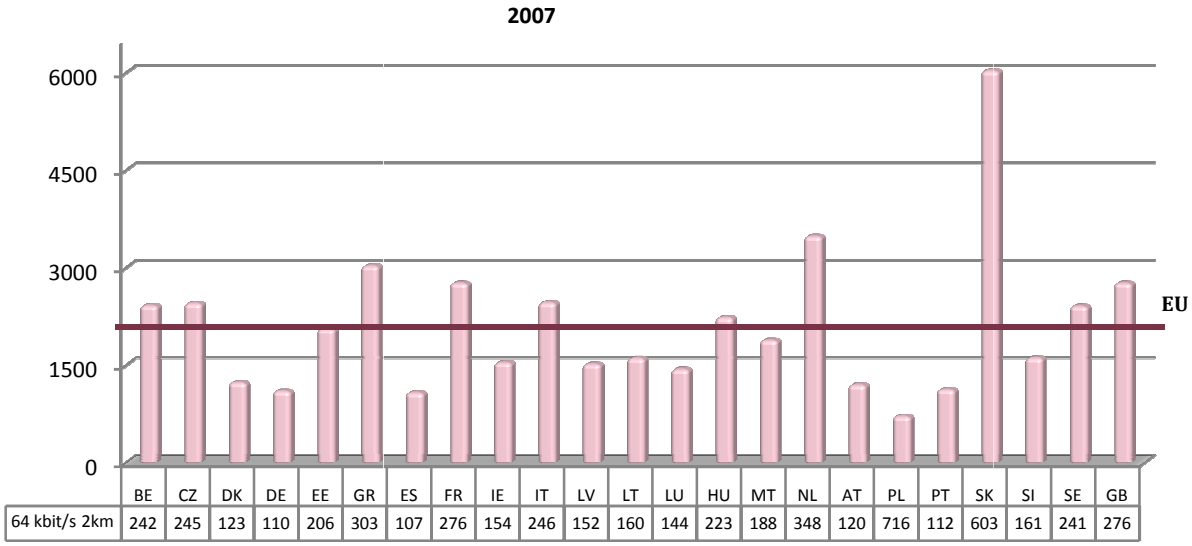
Figure 9. Annual Charges for 2 km of National 64 kbit /s Leased Lines (€)

01.07.2007.



Source: Country Comparative Report 4 (Cullen International)

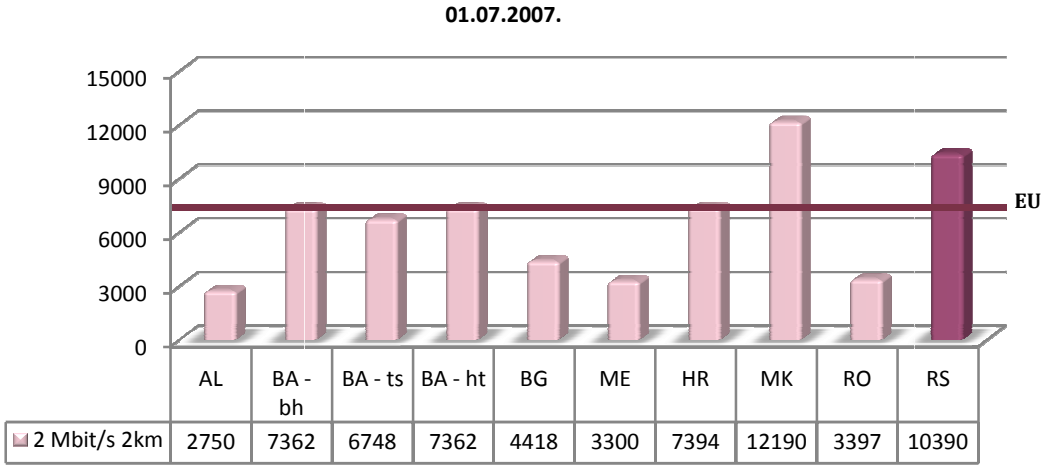
Figure 10. Annual Charges for 2 km of National 64 kbit /s Leased Lines (€) (EU)



Source: European Electronic Communication Market 2007 (13th Report)

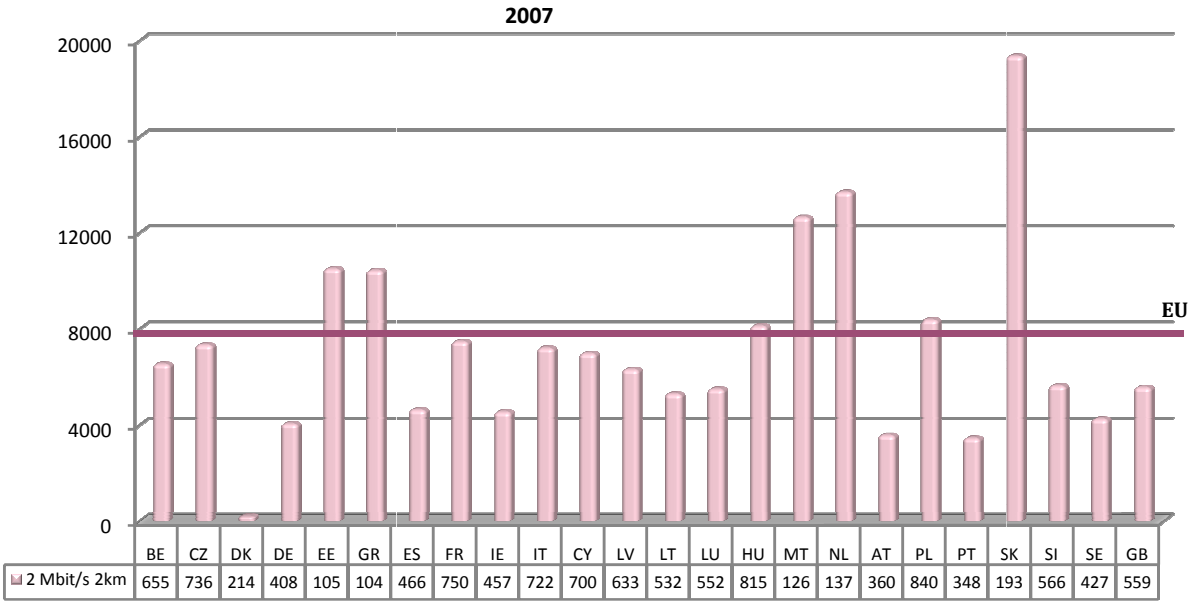
As for the charges for 2 km of 2 Mbit/s leased line, among the countries in the region, they are the highest in Macedonia and Serbia and the lowest in Albania, Montenegro and Romania (Figure 11). In the EU, Slovakia (€19385) has the highest charges, while Denmark has the lowest charges (€214) (Figure 12.).

Figure 11. Annual Charges for 2 km of National 2 Mbit/s Leased Lines (€)



Source: Country Comparative Report 4 (Cullen International)

Figure 12. Annual Charges for 2 km of National 2 Mbit/s Leased Lines (€) (EU)



Source: European Electronic Communication Market 2007 (13th Report)

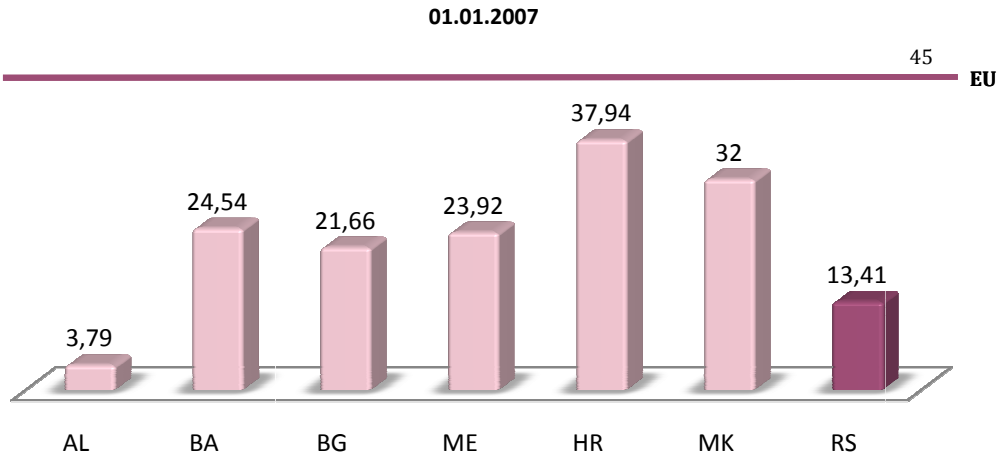
There has been a considerable increase in the number of Internet users in Serbia in the past years, so that, in early 2007, Serbia was the third country in the region in terms of number of users. Table 6. below shows the number of Internet subscribers in the region in the period 2005 - 2007.

Table 6. Number of Internet Subscribers

Country	Number of Internet subscribers (31.12.2005)	Number of Internet subscribers (01.07.2006.)	Number of Internet subscribers (01.01.2007.)
Albania	40,000	40,000	120,000
Bosnia & Herzegovina	805,185	900,000	950,000
Bulgaria	2,200,000	1,721,298	1,663,437
Montenegro	120,000	140,000	150,000
Croatia	1,303,000	1,537,220	1,684,600
Macedonia	392,671	201,924	651,800
Serbia	756,675	756,675	1,005,161

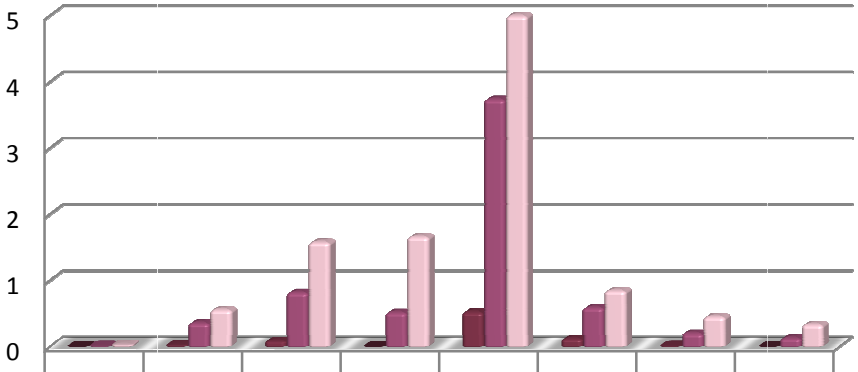
Source: Country Comparative Report 4 (Cullen International)

Figure 13. Internet Penetration



Source: Country Comparative Report 4 (Cullen International)

Figure 14. xDSL per 100 Users



	AL	BA	BG	ME	HR	MK	RO	RS
01.01.2005.	0	0,024	0,086	0	0,527	0,122	0,01	0
01.07.2006.	0,011	0,36	0,822	0,519	3,738	0,593	0,205	0,131
01.01.2007.	0,034	0,56	1,58	1,663	5,175	0,849	0,456	0,338

Source: Country Comparative Report 4 (Cullen International)

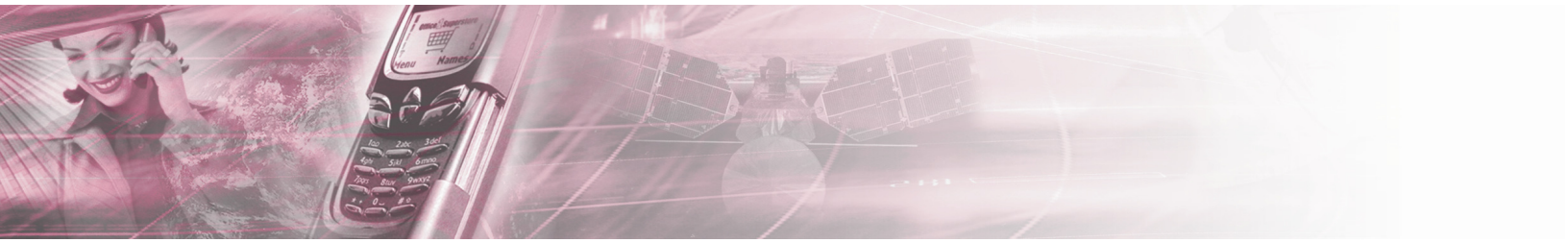


Table 7. Country Codes

Country	Code	Country	Code
Albania	AL	Italy	IT
Austria	AT	Lithuania	LT
Belgium	BE	Luxemburg	LU
Bulgaria	BG	Latvia	LV
Bosnia & Herzegovina	BA	Macedonia	MK
Cyprus	CY	Montenegro	ME
Czech Republic	CZ	Malta	MT
Germany	DE	Netherlands	NL
Denmark	DK	Poland	PL
Estonia	EE	Portugal	PT
Greece	GR	Romania	RO
Spain	ES	Sweden	SE
Finland	FI	Slovenia	SI
France	FR	Slovakia	SK
Croatia	HR	Serbia	RS
Hungary	HU	United Kingdom	GB
Ireland	IE		

2.3. ICT ACCESS INDICES

The International Telecommunication Union (ITU) has so far published over 80 different indicators of usage and accessibility of ICTs. These indicators are grouped into different indices used to assess the development of ICTs in all the UN Member Countries. Table 4 gives a chronological list of indices that emerged in the last years, used to measure the development of ICTs. Indices DAI and DOI have been defined by the ITU, whereas the last index on the list has been obtained by merging the Digital Access Index (DAI) and Orbicom's InfoState Index. Since all have at different times been adopted and/or used by ITU, there is a similar core focus, which is to measure access to ICTs and to help understand differences between countries. This is further grounded in the availability of data collected – since these indices are all based primarily on ITU data. However, there is also an institutional focus on infrastructure and its effective deployment, as a precursor to other forms of social and economic development.

Of all the ITU indices, the ICT-OI has the most explicit, detailed and complex conceptual framework. This framework is based on the perspective that ICTs have a dual

nature, being both a consumable and a productive asset and hence the framework is grounded in economic theory.

The focus of the ICT-OI on the conceptual framework does not imply that the other ITU indices have produced unreliable results. In fact, there is very little variance in the rankings between the ICT-OI and the DOI. This is particularly notable, because the two indices measure different aspects of progress towards information societies. As is discussed further, they also have different intentions, with the ICT-OI focussed on growth of ICT stocks (with ranking being only a by-product of this process) and the relative evolution of the digital divide over time, while the DOI is more focussed on countries' absolute Index value and ranking. Clearly, transparency, clarity and a solid theoretical framework are critical for the use of the indicator to inform policy processes and for explaining results.

Because the different indices are designed to shed light on different angles of the digital divide and ICT diffusion, a certain divergence between them is to be expected. The high correlation between the DOI and ICT-OI is explained in the 2007 WISR as arising "because both indices are, in turn, related to underlying variations in wealth and income" (WISR/ITU 2007: 17). This correlation also holds true for the DAI and DOI which use similar methodologies. There are two overarching methodological strategies employed across the indices being considered here.

There are two overarching methodological strategies employed across the indices being considered here. The DOI and DAI[1] use a similar system of establishing goal posts, with the indicators expressing progress towards meeting these goals.

The variables are made comparable before they are combined – for instance by dividing them by population, by the number of households or, in the case of tariff measures, by expressing them in terms of GNI per capita, with a reciprocal then being used. They are then 'normalised' into a value between 'goalposts' (minimum and maximum values that may be achieved – such as 100 percent mobile density). If the goalpost is surpassed (such as mobile density surpassing 100 percent – as is happening in certain countries), the value of the upper goalpost (1) is assigned, as it might be assumed that universal service has been achieved for this particular variable. If, for any reason, the theoretical basis for a particular goalpost has to be changed, previous years' data would have to be recalculated incorporating the new value for the goalpost to allow for changes over time. However, this has not happened to-date in the development of the DOI.

[1] Each variable in the DAI is converted to a variable index with a value between zero and one by dividing it by a maximum value or "goalpost". Each variable index is then weighted within its category to give the category index. The DAI is obtained by averaging the category indices (DAI).

Tabela 8. ICT Access Indices

Digital Access Index - DAI **The DAI is the ITU's precursor to the DOI and was used in conjunction with the Orbicom InfoStates index to devise the ICT-OI.** **Launched at the 2003 WSIS.**	The Digital Access Index (DAI) measures the overall ability of individuals in a country to access and use Information and Communication Technology.[2]
Orbicom InfoStates **Developed by Orbicom; also used by UNCTAD** **Launched at the 2003 WSIS.**	Makes possible the systematic measurement of the state and the evolution of the Digital Divide internationally. Monitors the Digital Divide across economies at a given point in time; and within economies over time. Places emphasis on developing economies; relies on a modelling approach that yields policy-relevant results; focuses on ICT, but is broader in scope than pure connectivity measures.
Digital Opportunity Index - DOI **Follows a similar methodology as used in the DAI.** **First published in 2005.**	The Digital Opportunity Index (DOI) is a composite index that measures "digital opportunity", or the possibility for the citizens of a particular country to benefit from access to information that is "universal, ubiquitous, equitable and affordable" (WSIS Tunis Commitment, para 10). As such, it is a measure of each countries' performance and prospects for progress in building an Information Society (DOP 2006:7).[3]
ICT Opportunity Index (ICT-OI) **The result of the merger of the Digital Access Index (DAI) and Orbicom's InfoState conceptual framework and model.** **First published in 2005**	in its inclusive sense. The fundamental principle has been to interpret the notion of ICT access and usage within the context of a global Information Society, thus recognizing ICT opportunities as an important part of social development. (ITU, WISR 2007, p. 120). The prime objective of the ICT-OI is to identify the digital divide and to help understand how it has evolved since the beginning of this century. To adequately measure differences among economies with highly developed ICT levels, more precise and qualitative indicators would be needed. (ITU, WISR 2007, p. 130).

Source: ITU

In contrast, the ICT-OI methodology takes an open-ended approach, which makes possible the expression of continued growth from one year to the next. This allows for comparisons to be made of real progress, as well as relative progress over time.

The ICT-OI value for each country is calculated based on the overall average (of all countries considered) of the indicator value for the ICT-OI reference year (2001 – the earliest year for which there is sufficient data for most countries). This reference year and value provide the benchmark to quantify and monitor changes in the digital divide in a systematic manner over time and between countries. The reference value will change if the Index is

[2] http://www.itu.int/newsarchive/press_release/2003/30.html
[3] Digital Opportunity Platform (DOP) (2006) Digital Opportunity Index: A User's Guide. Seoul: DOP. p.7.
ITU's DOI FAQ: http://www.itu.int/osg/spu/publications/worldinformationsociety/2006/faq.html.

restricted to a specific subgroup of countries, since the average for the entire group will change.

Table 9. Comparison of the Indicators Included in the DOI and the ICT-OI

Digital Opportunity Index (DOI)
Opportunity
1. Percentage of population covered by mobile telephony (A7) **2. Internet access tariffs as a percentage of per capita income (A8)** **3. Mobile cellular tariffs as a percentage of per capita income (A9)**
Infrastructure
4. Proportion of households with a fixed-line telephone 5. Proportion of households with a computer 6. Proportion of households with Internet access at home **7. Mobile cellular subscribers per 100 inhabitants (A2)** 8. Mobile Internet subscribers per 100 inhabitants
Utilisation
9. Proportion of individuals that have used the Internet **10. Ratio of fixed broadband subscribers to total Internet subscribers (A5:A4)** **11. Ratio of mobile broadband subscribers to total mobile subscribers**

ICT Opportunity Index (ICT-OI)
Infodensity: Networks
1. Main telephone lines per 100 inhabitants (A1) **2. Mobile cellular subscribers per 100 inhabitants (A2)** **3. International Internet bandwidth (kbit/s per inhabitant) (A6)**
Infodensity: Skills
4. Adult literacy rates 5. Gross enrolment rates (primary, secondary and tertiary)
Info-use: Uptake
6. Internet users per 100 inhabitants **7. Proportion of households with a TV (A11)** **8. Computers per 100 inhabitants (A3)**
Info-use: Intensity
9. Total broadband Internet subscribers per 100 inhabitants (A5) 10. International outgoing international traffic (minutes) per capita

Source: ITU 2007.

This reflects the idea that the digital divide is a relative concept and whether a country is making progress or not, depends on what other country (or group of countries, regions etc) it is compared to. In some senses, both of the methodologies used are relatively complex and somewhat difficult to replicate. Users wishing to analyze the data will need to unbundle the different categories and understand their implicit weighting systems. The ICT-OI is perhaps even more difficult to reproduce and understand because a country's ICT-OI value is calculated based on the average of all values that it should be compared to, and because of the use of the reference value, reference year, and the use of the geometric mean. Like the arithmetic mean and the median, the geometric mean is another form of averaging results. In the same way that the median favours the very middle value in the spread, the geometric mean favours balance between the different values. For example, an average of two values,

say, mobile and Internet subscribers will be higher with a geometric mean if the values being averaged are in balance. For example, if one country had 20% Internet subscribers and 40% mobile subscribers, the arithmetic mean would be 30, but the geometric mean would be 28, while for a country with 10% Internet subscribers and 50% mobile subscribers, the arithmetic mean would still be 30 but the geometric mean would be 22.

Table 9 below shows which of the Indicators used in the DOI and the ICT-OI are part of the Partnerships' agreed list of twelve basic indicators (A1-A12, marked in bold). As can be seen, the two indices use roughly half each of the Partnership indicators (5 vs 6, respectively).

3. PUBLIC FIXED TELECOMMUNICATIONS NETWORKS AND SERVICES

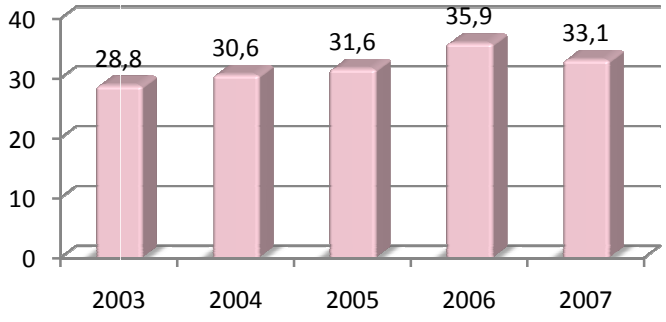
Telekom Srbija a.d. is the only public fixed telecommunication service operator. Since 2003, Telekom Srbija a.d. has been in the ownership of two shareholders, Public Company of PTT traffic "Srbija" (80%) and OTE, Greece (20%).

Since Telekom Srbija is the only public fixed telecommunication service operator, on 24 March 2006, pursuant to the Telecommunications Law, the Republic Telecommunication Agency declared Telekom Srbija an SMP. In this regard, the process of drafting a cost-based accounting system for SMP operators was initiated.

Income from fixed telephone service – €414 mn

The total revenue from fixed telephone service in 2007 amounted to RSD33.1 bn, 7% less compared with the previous year revenues of RSD35.9 bn (Figure 15). The largest share in the total revenues still goes to revenues from traffic, amounting to RSD25.2 bn or 76% of the total revenues, whereas the smallest share - and therefore the least impact on the total revenue flow - is that of the public payphones - 0.06%. The revenues from the subscription fees increased its share from 5.6% in 2006 to 9.9% in 2007, while the share of the revenues from one-off connection fee, leased lines, interconnection and other (cumulatively) decreased.

Figure 15. Growth tendency of total revenue from fixed telephone services (RSD mn)

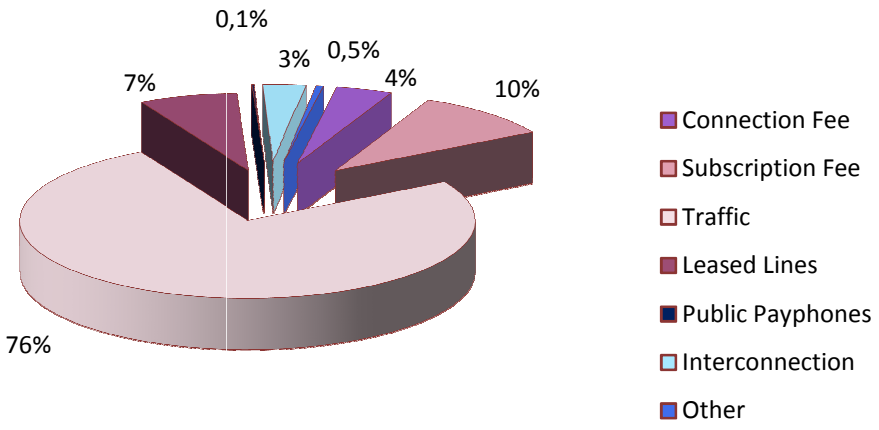


Source: RATEL

Distribution of revenue from fixed telephone services (Figure 16) was such that only subscription fee saw an increase of almost 60% compared with the previous year, amounting to approximately RSD3.2 billion, whereas other elements of revenues dropped which lead to an overall decrease in revenues. The sharp rise of the revenues from the subscription fee is the consequence of the increase in prices of the monthly fee to RSD74.75 (without VAT) as of 1 November 2006), but it is also owed to an increase of the number of subscribers of 5%. The revenues from the one-off connection fee dropped by 11% which is explained by the price cut by 15% for both residential and business users. The revenues from public payphones also saw a sharp drop in 2007 by as much as 95% compared with 2006, yet this had no significant impact on the overall revenues from the fixed network considering the insignificant share of this service. The revenues from leased lines, interconnection and other fixed network services (jointly) also decreased significantly by 40%, while the revenues from the traffic were almost 2% smaller compared with 2006. In view of the aforesaid and the fact that the revenues are determined by the prices and number of users, the drop in the overall revenues can be accounted for by the price cut for all fixed telephone services since the number of subscribers is still growing.

Potential fixed telephony market involves over 3.2 million users and the expected growth rate by the end of 2010 is 5%. Introduction of cost-based accounting model and tariff rebalance which should contribute to more stable prices and revenues. Planned annual investments amount to €350 million.

Figure 16. Distribution of Revenues from Fixed Telephone Services in 2007

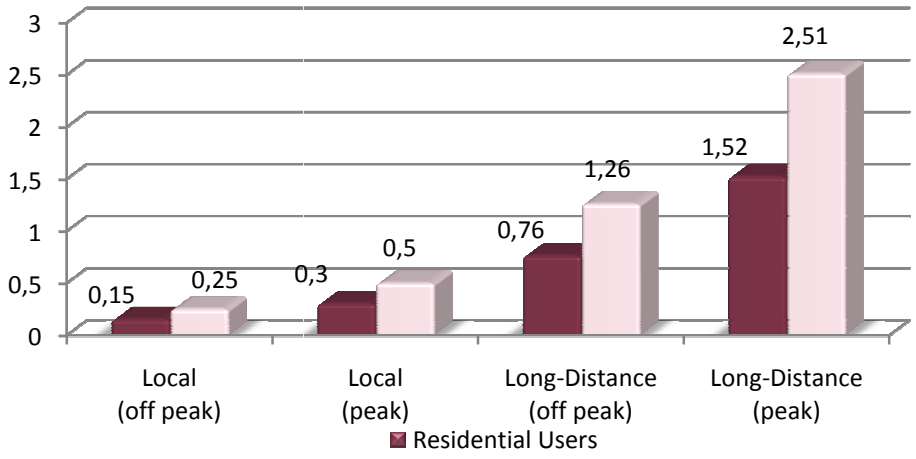


Source: RATEL

Based upon the Decision adopted by RATEL on request made by Telekom Srbija, on 1 November 2006 the monthly charge for analogue telephone extension was raised to RSD74.75 (VAT excluded) for both residential and business subscribers. In 2007, the price for 1 minute

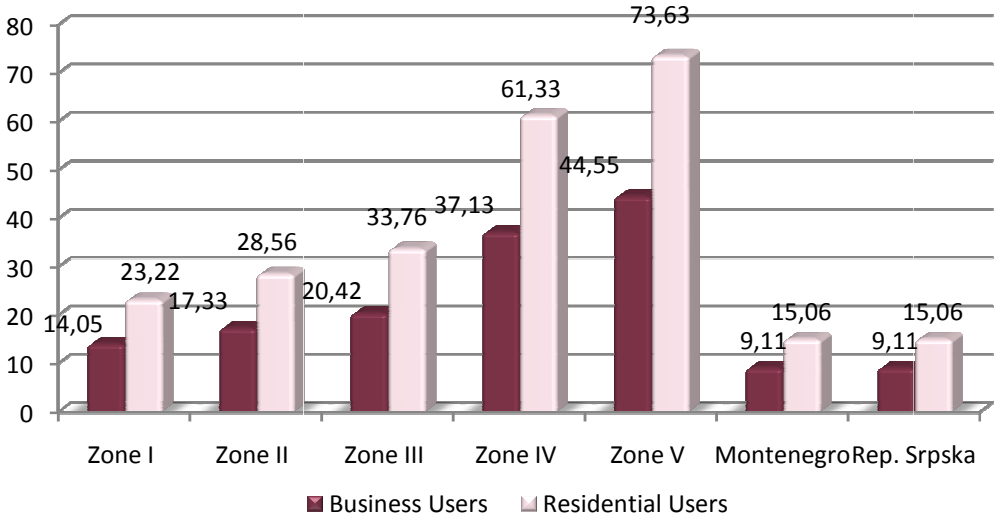
of local, national and international traffic were cut down by approximately 15% and once-off connection fee amounted to RSD 5,000.00 for residential users and RSD 10,000.00 for business users, (VAT excluded).

Figure 17. Prices of Local and Long-Distance Telephone Services, VAT Excluded (RSD/min)



Source: RATEL

Figure 18. Prices of International Telephone Services, VAT Excluded (RSD/min)

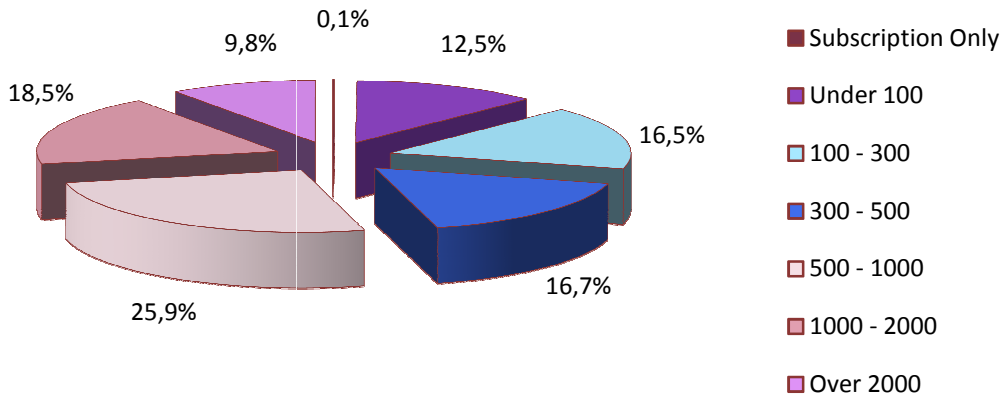


Source: RATEL

Compared with the previous year, there were fewer residential users paying only the monthly subscription fee (only 0.1% of the total users). There were approximately 18.5% of

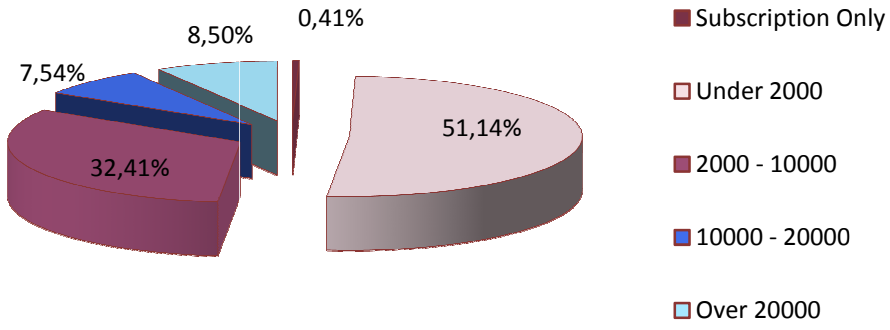
users with monthly bills between RSD1000 and 2000, while most of them (25.9%) were paying between RSD500 and 1000 a month for fixed telephone services. (Figure 19.). As for the business users, as much as 51% of users were spending over RSD20,000 for fixed telephony services, while no more than 0.4% paid were paying for the subscription fee only (Figure 20.).

Figure 19. Distribution of Residential Subscribers According to Monthly Bill (RSD)



Source: RATEL

Figure 20. Distribution of Business Subscribers According to Monthly Bill (RSD)



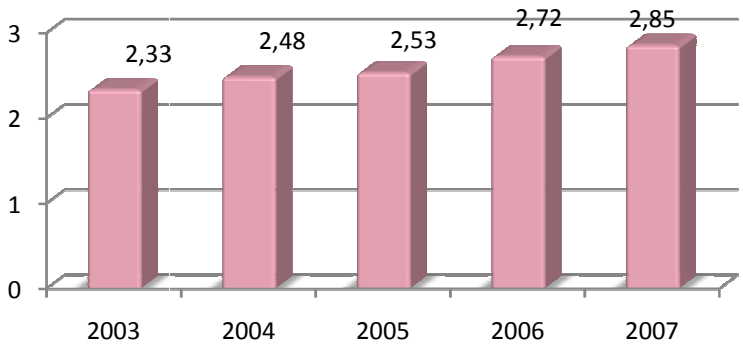
Source: RATEL

The number of subscribers is growing year after year, thus in 2007 there was an increase of 5% or 2.85 million and more than 88% of the subscribers are natural persons. The

2.85 million subscribers

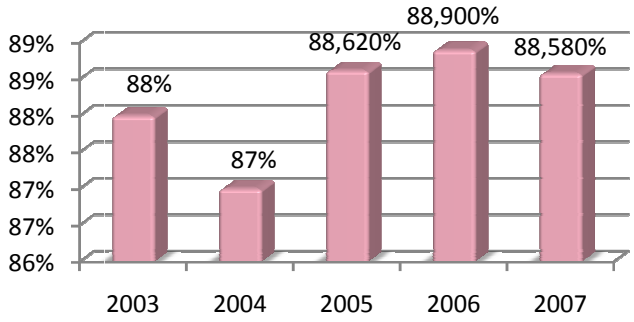
number of party lines was reduced by 25%. Digitalization rate achieved the amount of 93.31%. Mean value of direct line percentage in urban areas was 32.85%.

Figure 21. Number of Subsribers (mn)



Source: RATEL

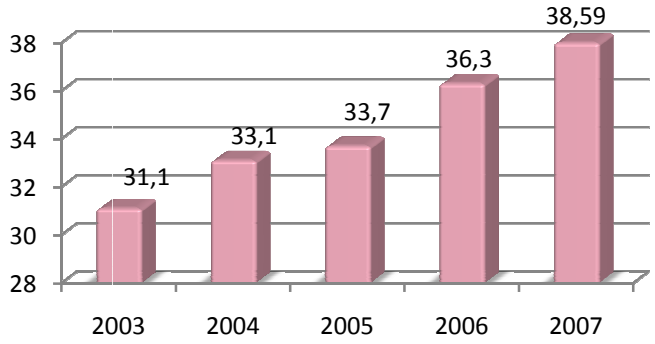
Figure 22. Share of Residential Users in the Total Number of Subscribers



Source: RATEL

Penetration is higher compared with the previous year reaching 38.59% which is within the regional average.

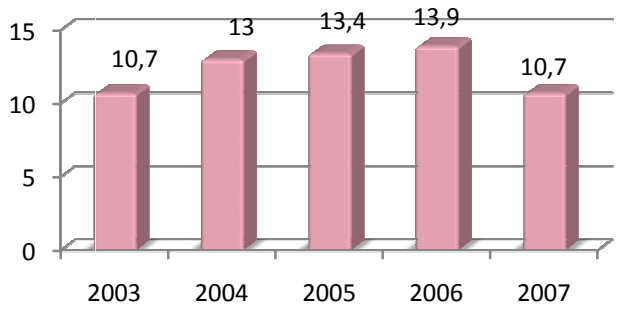
Figure 23. Fixed Penetration (%)



Source: RATEL

In 2007, the number of public payphones was reduced from 13.9 to 10.7 thousand as given in Figure 24. Consequently, the revenues from the payphones dropped representing mere 0.1% of the total fixed network revenues. It is evident that the public payphones ceased to be profitable for telecom operators, who are losing the interest to invest further in this service. Therefore, it is necessary to give support to those operators interested in providing these services of particular importance for the underdeveloped area of Serbia, through universal service.

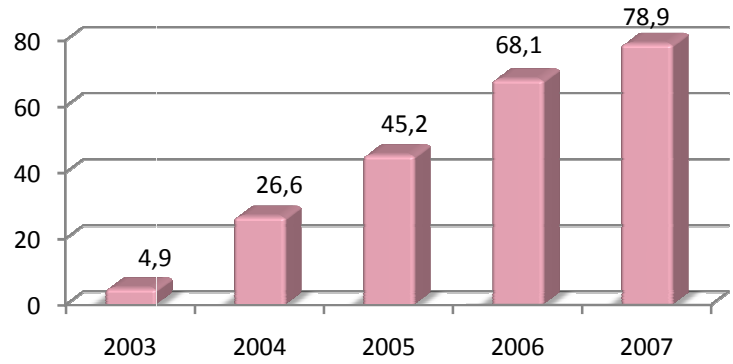
Figure 24. Public Payphones (thousands)



Source: RATEL

Figure 26. shows a growth trend in ISDN connections in the period 2003-2007. In 2007 there were 78.9 thousand of subscribers, which is an increase of 15.8%. More than 97% of subscribers have a basic rate access, whereas the other users have primary rate access.

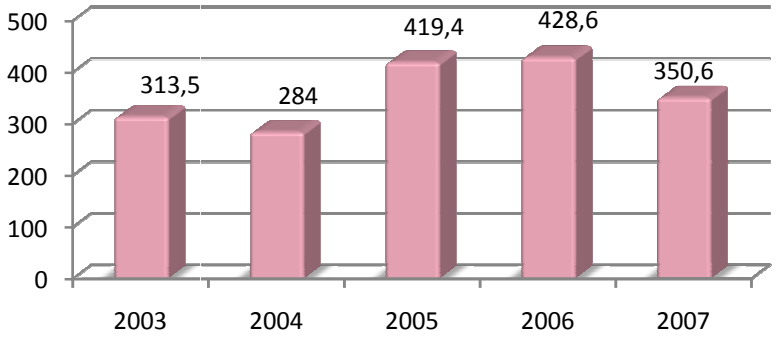
Figure 25. Total Number of ISDN Subscribers (thousands)



Source: RATEL

In 2007, the number of unsolved requests for new fixed lines was around 350 thousand, this being a decrease of 18% compared with 2006. The number of malfunctions was also cut down to 48.7 per 100 lines, and the percentage of malfunctions repaired within 24 hours was 75%.

Figure 26. Number of Requests for New Telephone Lines (thousands)

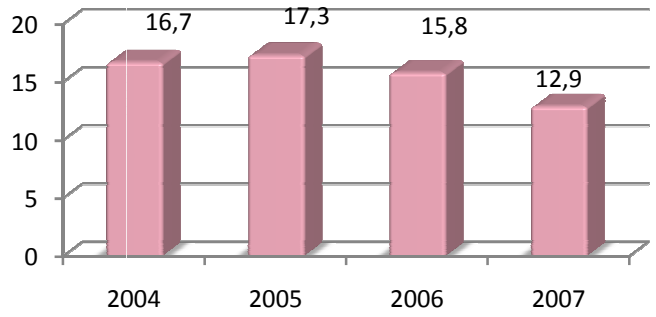


Source: RATEL

The total fixed network traffic continued to decrease in 2007 and is estimated to 12.9 billion minutes (18% less compared with the previous year - Figure 27.). The increase of the number of fixed line users indicates that the interest for this kind of service is not declining, yet the apparent drop in the traffic in the last two years shows that the subscribers are using the POT less and less, switching part of the traffic to other services. This mainly refers to mobile networks but also to electronic massages or VoIP. One of the results of such trend is the drop in revenues from fixed network.

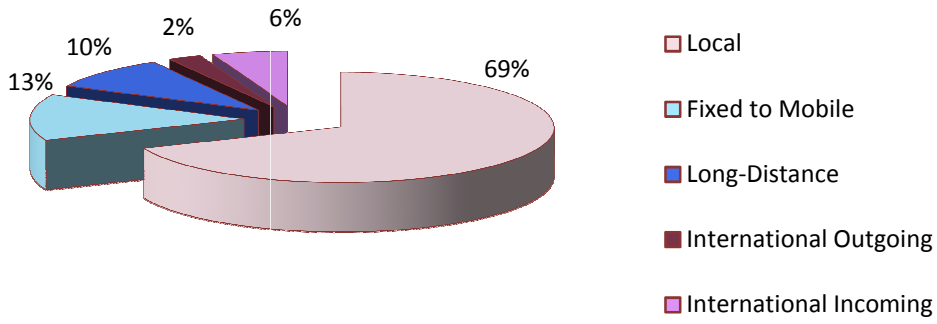
The total number of minutes of fixed network traffic is estimated on the basis of data from the exchanges where it is possible to register the consumed call units or minutes. Such data are extrapolated according to the total number of users in the network. 69% of total traffic was local traffic, and only 2% international outgoing traffic. (Figure 27.).

Figure 27. Total Traffic (billion of minutes)



Source: RATEL

Figure 28. Distribution of Fixed Network Traffic in 2007



Source: RATEL

4. PUBLIC MOBILE TELECOMMUNICATIONS AND SERVICES

During 2007, there was a significant increase in the total number of mobile subscribers compared with 2006, with an increse in penetration 100%.

	2005	2006	2007
Number of subscribers	5,510,690	6,643,700	8,452,642
Penetration (%)	73.50	88.60	112.73

Source: RATEL

There are three mobile operators present in the Serbian market:

- **Telecommunications company Telekom Srbija a.d. - Mobilna telefonija Srbije MTS**, owned by Public company for PTT traffic Srbija (80%) and OTE, Greece (20%) (license replaced on 01.08.2006)
- **Telenor d.o.o. Belgrade**, 100% owned by Sonofon A/S, Denmark, owned by Telenor ASA, Norway (license issued on 01.09.2006)
- **Vip mobile d.o.o.** (member of mobilkom austria Group), owned by Telekom Austria Group, Austria (license issued on 01.12.2006).

All three operators were granted a license for public mobile telecommunications network and public mobile telecommunications network services in accordance with GSM/GSM1800 and UMTS/IMT-2000 standards, issued by the Republic Telecommunication Agency. The licenses were issued for the territory of the Republic of Serbia, for a period of 10 years, which can be extended upon the expiration for another 10 years without a special request from the operator, provided the requirements under the License are fulfilled. Vip Mobile d.o.o. was granted a license on 01.12.2006, but began operating in July 2007.

Figure 29. Mobile Operators - Telenor

Coverage Map

Area covered by signal.

Official Data

Name	**Telenor d.o.o.**
Head office	Beograd
Founded	1994
Ownership	100% Sonofon A/S
Number of employees	1196
Percentage of territory coverage (without K&M)	81%
Percentage of population coverage	92%
Number of base stations	1280

Source: Telenor Srbija

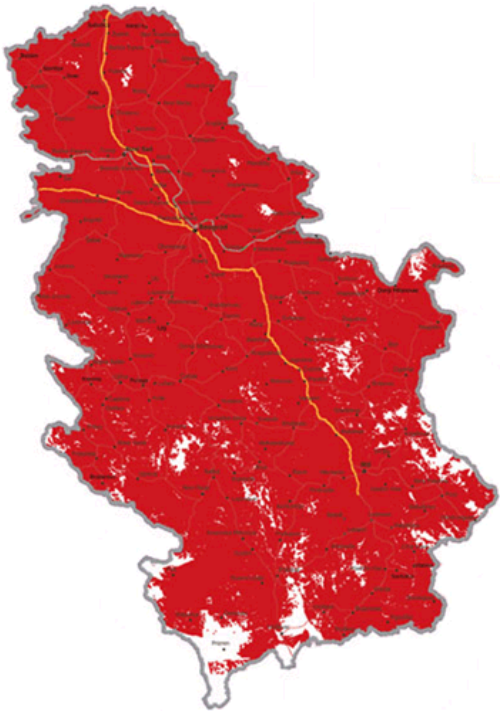
The Norwegian company Telenor entered Serbian mobile market by purchasing the company. Telenor d.o.o. is the twelfth company in the Telenor group, which also includes some of the operators in the region, such Panon in Hungary and Promonte in Montenegro. This is also the biggest investment in Serbia (€1.5bn)

Compared with 2006, Telenor increased its area coverage by 6% having built 401 new base stations (Figure 29.). In 2007, 3G service was introduced, thus enabling a wider range of services.

Figure 30. Mobile Operators – Telekom Srbija

Coverage Map

Area covered by signal.



Official Data

Name	**Telekom Srbija a.d.**
Head office	Belgrade
Founded	1997
Ownership	80% JP PTT "Srbija" 20% OTE, Grčka
Number of employees	1328
Percentage of territory coverage (without K&M)	91.31%
Percentage of population coverage	97%
Number of base stations	1274

Source: Telekom Srbija

In 2007, Telekom Srbija built 189 new base stations and increased the area coverage by 0.53% compared with the previous year (Figure 30). The usage of 3G network, which allows real time video calls and additional services based on faster data flow, has been intensified.

In the first half of 2007, Telekom Srbija extended its business to the neighbouring countries by obtaining mobile licenses in Republika Srpska and Montenegro.

Figure 31. Mobile Operators – Vip Mobile

Official Data

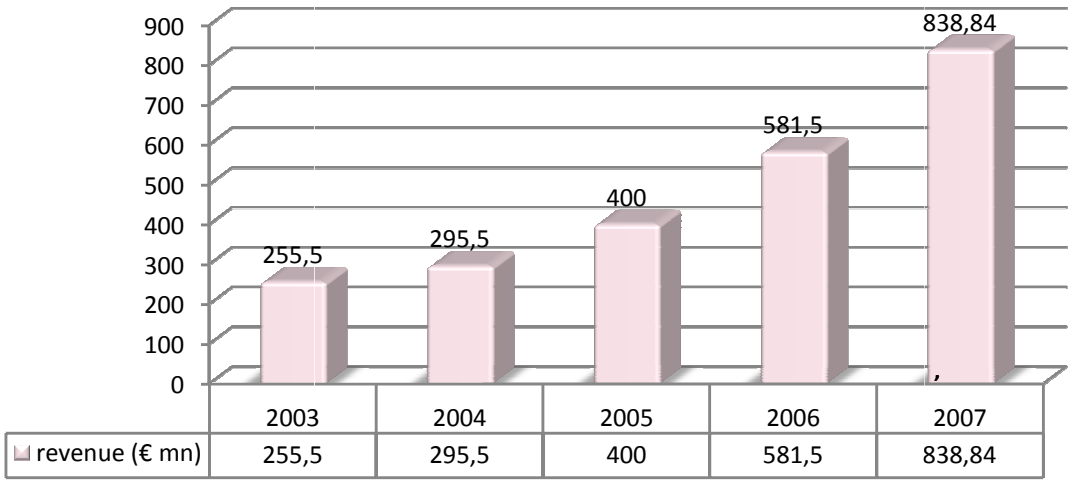
Name	**Vip Mobile d.o.o**
Head office	Beograd
Founded	1997
Ownership	100% mobilkom austria
Number of employees	445
Percentage of territory coverage (without K&M)	18%
Percentage of population coverage	40%
Number of base stations	173

Source: VIP

On 1 December 2006 Vip Mobile d.o.o. became the holder of the third mobile license in Serbia. Vip Mobile is a member of mobilkom austria group and it is present as mobile operator in eight countries, which include some of the neighbouring countries such as Croatia, Bulgaria and Macedonia. Vip Mobile began its business operations in the Serbian market on 1 June 2007, achieving the market share of 6.0% by the end of the year.

In addition to the €320 million license fee, mobilkom austria is under obligation to invest another €250 million in the infrastructure development, which makes it the biggest Greenfield investment in Serbia in 2007.

Figure 32. Increase in Total Revenue from Mobile Telephony (€ mn)



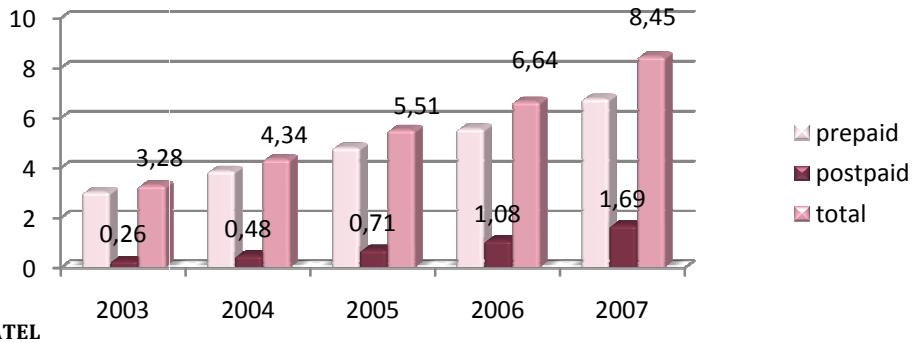
Source: RATEL
*** estimated value**

6.64 million users

At the end of 2007, the total number of mobile users amounted to 8,452,642, which is an increase of 27.2% compared with the previous year, thus continuing the growing trend. Also, this is was the first time the number of users exceeded the number of inhabitants.

The share of postpaid users in the total number was 16.3%, and the number of potspaid users was increased by 80% compared with the previous year, amounting to 1.69 million.

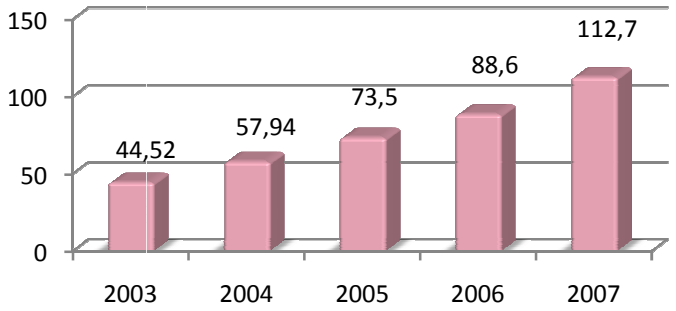
Figure 33. Number of Mobile Users (mn)



Source: RATEL

In 2007, the total the number of mobile users exceeded the number of inhabitants, amounting to 112,7 per 100 inhabitants, thus reaching the EU average (Figure 34).

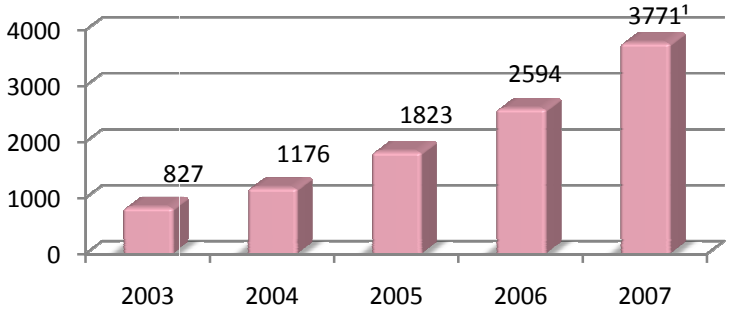
Figure 34. Mobile Penetration



Source: RATEL

Together with the increase in number of users there was also an increase in traffic, so that the consumed minutes amounted to 3.8 billion, which is an increase of 46%. Such growth is partly owed to a more attractive offer present in the market, and partly to the shift of fixed to mobile traffic. The annual average in 2007 was approximately 475 minutes per user, which is an increase of 21.8% compared 2006 average of 390 minutes of outgoing traffic per user in.

Figure 35. Total Outgoing Traffic (mn min.)



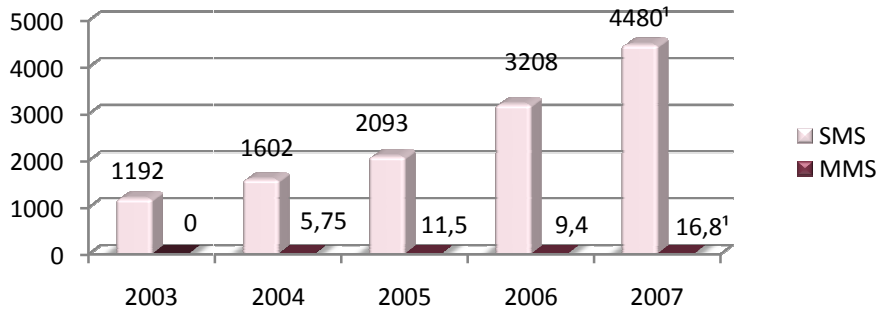
[1] total outgoing traffic without the data for Vip Mobile

Source: RATEL

The number of SMSs and MMSs is constantly growing, arriving at 4.4 billion SMSs or 564 text massages per user a year, which is an increase of 17.5% compared with 2006. The number of MMSs, after a slight decline in 2006, showed a growth tendency in 2007, arriving at 16.8 million.

The total GPRS traffic was increased by nearly 102.4%, with over 16.6 Tbit/s for the whole year.

Figure 36. Sent SMS/MMS (mn)



¹ total outgoing traffic without the data for Vip Mobile

Source: RATEL

The operators provide a wide range of additional services to users, such as: voice mail, call divert, call waiting, conference call, sending and receiving of short messages (SMS), data transfer, fax, incoming call identification, hidden identification, itemised monthly bills, disconnection on request, connection on request, change of tariff package, replacement of damaged or lost SIM card, WAP, multimedia messages transfer (MMS), etc. With the introduction 3G network, new services emerged as well: real-time video calls, video streaming, cinema clip, etc.

Figures 37. - 40. below show the market share of all three mobile operators in terms of the number of users, and their share in total revenues from mobile networks and in total traffic. Figures 41. and 42. do not contain complete data on Vip Mobile since this operator began its work on 1 June 2007.

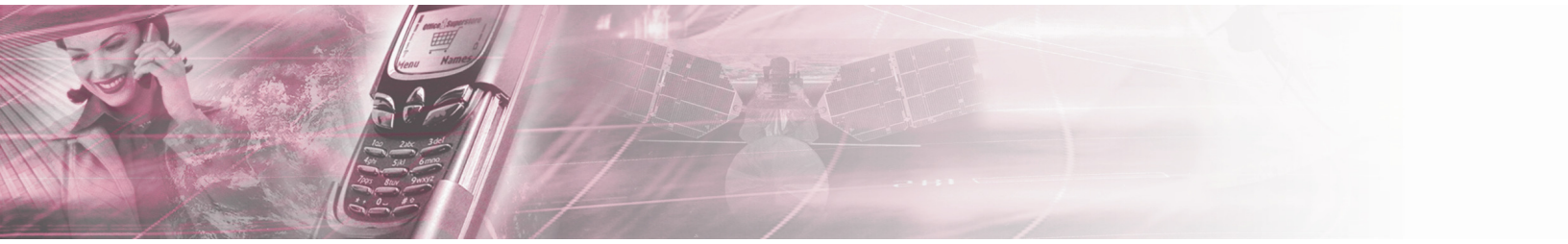
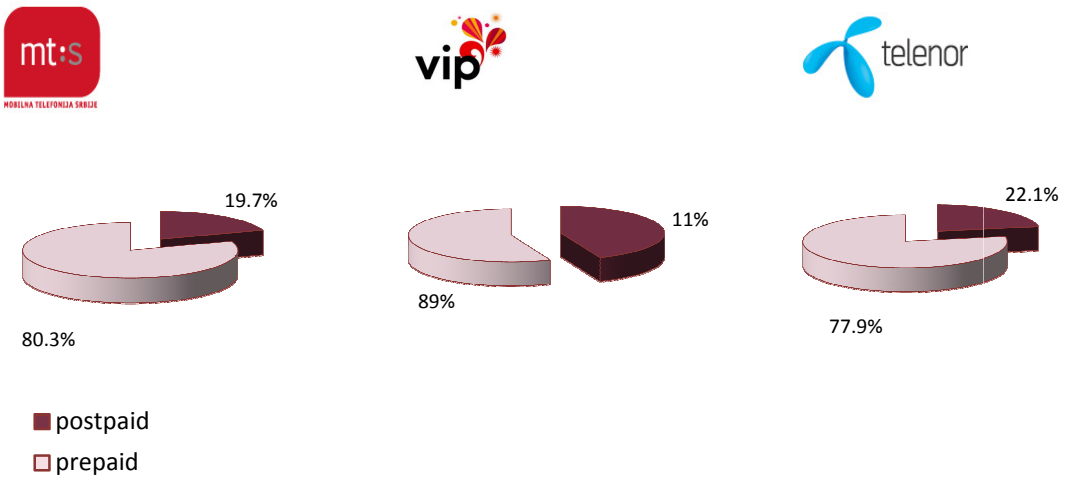
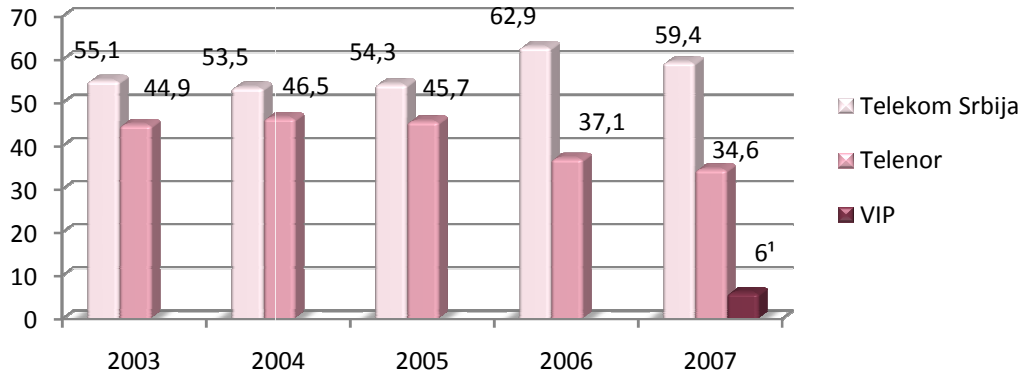


Figure 37. Distribution of Prepaid/Postpaid Users among the Operators



Source: RATEL

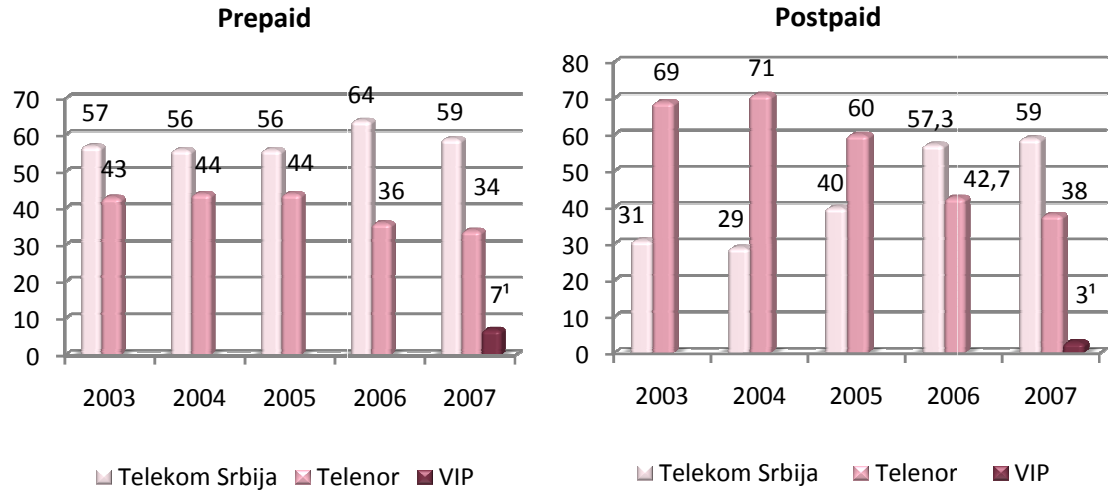
Figure 38. Market Share – Total Number of Users (%)



¹ Operator Vip began to work in June 2007.

Source: RATEL

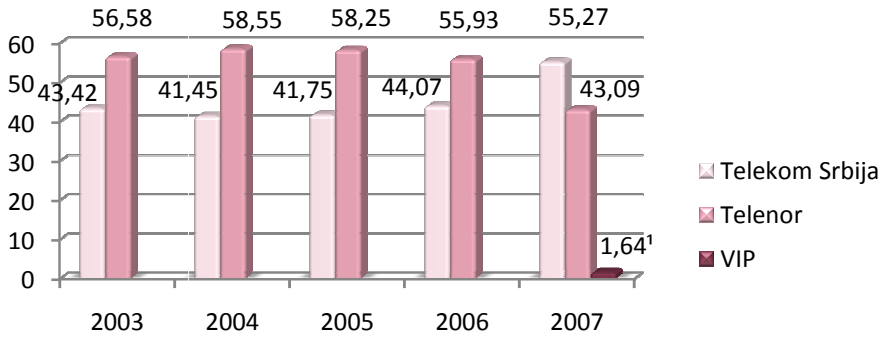
Figure 39. Market Share – Number of Prepaid/Postpaid Users (%)



¹ **Operator Vip began to work in June 2007.**

Source: RATEL

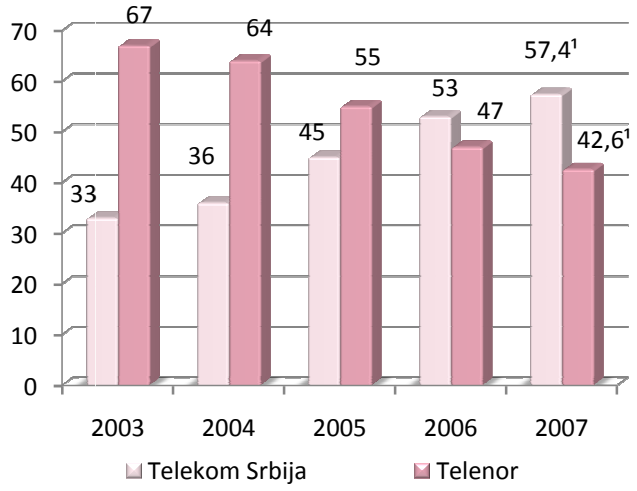
Figure 40. Market Share – Revenue (%)



¹ **Operator Vip began to work in June 2007.**

Source: RATEL

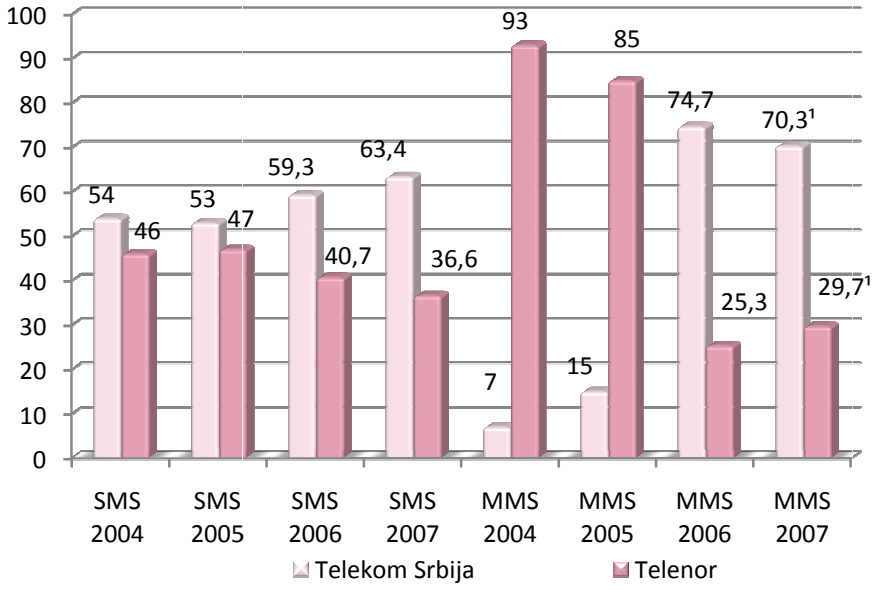
Figure 41. Market Share – Outgoing Traffic (%)



¹ total outgoing traffic without data for Vip Mobile

Source: RATEL

Figure 42. Outgoing Traffic/ SMS-MMS (%)



Source: RATEL

¹ total outgoing traffic without data for Vip Mobile

Mobile market competition in Serbia has been measured applying the Herfindahl-Hirschman Index (HHI).

HHI is an indicator used to determine the degree of concentration of a given market and it is defined as the sum of the squares of the market shares of each individual market share (pursuant to the Telecommunications Law, *Official Gazette of RS,* nos. 44/03 and 36/06, the market share of the operators shall be identified by the number of users).

The range of this index can be from 1 to 10,000, where decrease in the index generally indicates an increase in competition. In the relevant market, in 2006 HHI Index was 5332, dropping to 4759 in 2007. Such decrease in the index indicates a loss of market power and therefore an increase in competition among the operators, which is the result of having a new entrant in the market.

As a result of the increase in the number of operators in the Serbian telecom market and a greater competition, there was a considerable increase in the investments made by the operators in marketing and advertising. In 2006, the resources spent on advertising amounted to RSD1.3 million, while the amount spent in 2007 was RSD1.5 billion (Source: Ekonomist). In telecom sector in Serbia, most investments in advertising are made by the mobile operators. Also, there is a positive impact on the productivity of workers owed to mobile communications, which enable a faster exchange of data, shorten work time per task, and allow for more flexibility. It is estimated that using mobile communications for business improves the productivity of each individual worker by 7% (Source: Deloitte). This percentage in 2007 equals to an increase of RSD32 billion, or 1.28% of GDP. On the other hand, the economic element of mobile sector in 2007 is estimated to RSD104 billion or 4.1% of GDP (Source: Deloitte). Mobile sector employs over 33,000 people, with around 2,700 employees directly employed by mobile operators, while the rest concerns the accompanying activities such as retail (mobile handsets, SIM, cards, refills), equipment and service suppliers.

Greater competition leads to an increase in the number of users, larger investments, higher penetration rate and wider range of services offered. This has a positive impact on end user through price cut and possibility to access a variety of services and packages.

5. INTERNET SERVICES

The rate of Internet service usage largely depends on the level of development of the access infrastructure and technology. Judging from the number of users, the dial-up access remains the most common one, also which is realized via ISDN PRI interface or Telekom Srbija's SMIN (Serbian Multiservice Internet Network) in addition to the conventional way. Also, Telekom Srbija provided broadband access through its network infrastructure, through ADSL modems placed with the end-user. In addition to these technologies, Internet access is also possible through cable (through a network developed by a cable operator), wireless and UMTS (3G) of the mobile operators.

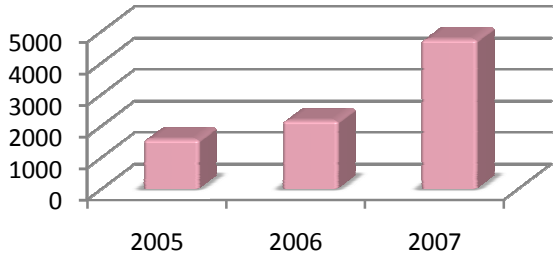
Table 10. Number of Providers According to the Access Technology

Number of providers according to access	2005	2006	2007
Dial-up	34	51	60
Cable modem	5	9	14
Optical cable	0	0	/
Wireless access	38	75	118
xDSL	12	16	23
Total	66	109	159

Source: RATEL

In 2007, the total revenue from Internet service increased by 118% compared with the previous year, which suggests there is a great potential for the development of the Internet, which is an inseparable part of the modern ICTs in Serbia. In view of the planned investments by the operators and the regulatory activities of the Agency in the following period, a positive development and progress of information society in Serbia cab be expected.

Figure 43. Revenues from the Internet in RSD million

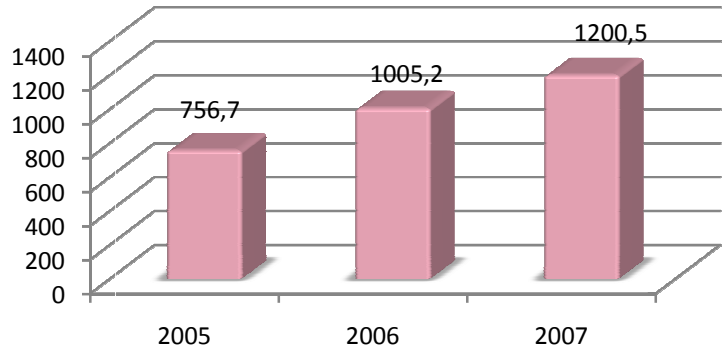


Source: RATEL

The total number of the Internet users in 2007 amounted to around 1.2 million, which is an increase of 19% (Figure 44.). As for the technologies, the dial-up access still prevails with slightly over 50% of the total number of users. Nevertheless, it should be noted that the number of dial-up users decreased by one fifth compared with the previous year, whereas the number of broadband Internet marked a considerable increase. Such trend is expected to continue making broadband access a dominant one , in view of an increasing demand for as faster Internet of a higher quality.

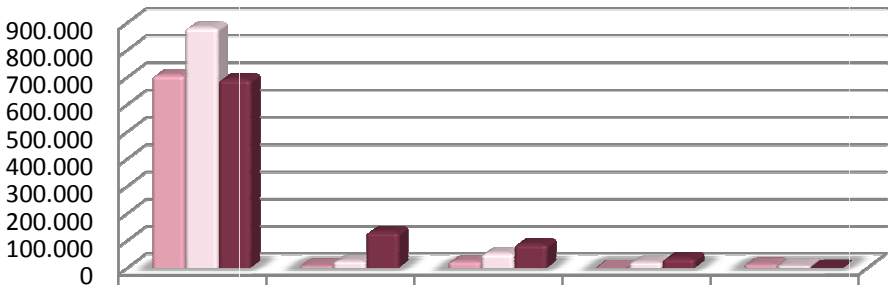
1.2 million users

Figure 44. Number fo Internet users in Thousands



Source: RATEL

Figure 45. Number of Users according to Access Technology



	Dial-up	ADSL	Cable	Wireless	Other
2005	708.226	9.530	23.956	1.049	13.914
2006	882.611	26.126	54.598	21.968	10.210
2007	692.905	132.359	87.731	36.059	2.276

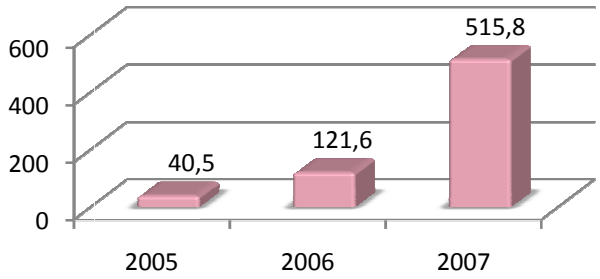
Source: RATEL

A rapid development of ICTs and a constant demand for faster and better service, together with the price cut brought about an increase in the number of broadband Internet users in 2007 four times higher compared with the previous year.

The greatest increase in the number of subscribers was seen with ADSL, which was five times higher compared with 2006. Also, there has been a constant growth (with a constant growth rate) in the number of cable modem Internet customers in the past three years. However, a sharp rise in the number of broadband users is a result of the introduced 3G technology in mobile networks in Serbia, enabling the end-user to have a broadband access to the Internet via cellular phones and data cards.

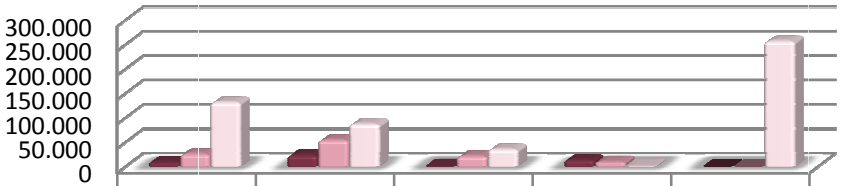
Such positive growth trend in terms of the number of users and QoS is of strategic importance for the development of telecommunications.

Figure 46. Number of Broadband Users in Thousands



Source: RATEL

Figure 47. Number of Broadband Users according to Technology

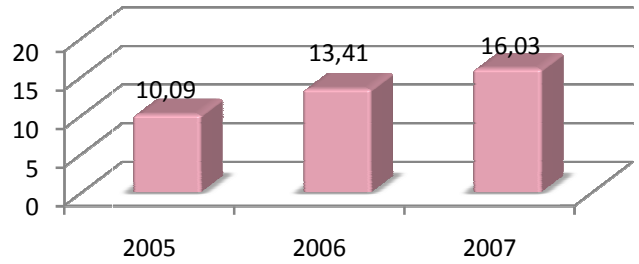


	ADSL	KDS	Bežični pristup	Ostalo	UMTS (3G)
2005	9.530	23.956	1.049	13.914	0
2006	26.126	54.598	21.968	10.210	0
2007	132.359	87.731	36.059	2.276	257.379

Source: RATEL

There was an increase in the penetration rate, which amounted to 16%, which is still below the EU average of 19%. However, a positive growth trend seen in the past three years, together with the constant development of the technology and QoS, are expected to narrow the gap in the years to come.

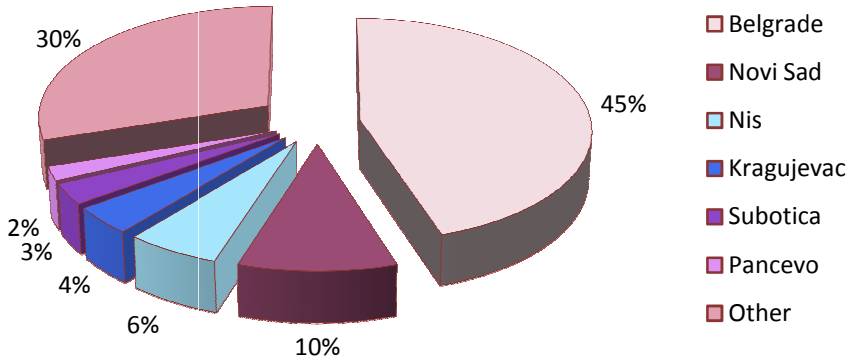
Figure 48. Internet Penetration (%)



Source: RATEL

Geographic distribution of the ISPs in Serbia is rather even – less than half operate in Belgrade, while around 20% operate in other large towns and 40% in the rest of Serbia.

Figure 49. Geographic Distribution of the ISPs



Source: RATEL

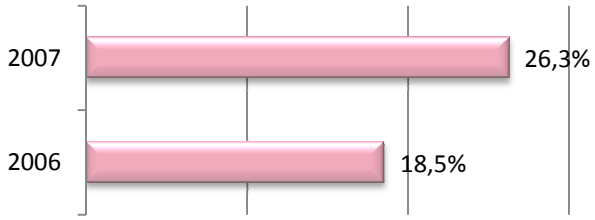
According to price lists published on ISPs' websites, it can be observed that a great variety of packages is offered, which provide different flows and different access technology to end-user.

6. USAGE OF ICTs IN SERBIA

The Statistical Office of the Republic of Serbia conducted a survey on the use of information-communication technologies by individuals, households and companies in Serbia in 2006 and 2007. The survey was conducted by telephone on a sample of 2000 individuals, 2000 households and 1000 companies.

According to the published survey results, 26.3% of the households own an Internet connection, representing an increase to 2006 when Internet access was present in 18.5% of the households. Households with Internet connections are irregularly distributed by regions, with Belgrade taking the lead with 39.1% of households with Internet access, followed by Vojvodina with 29.2% and Central Serbia with 16.5% of households.

Figure 50. Households with Internet Access

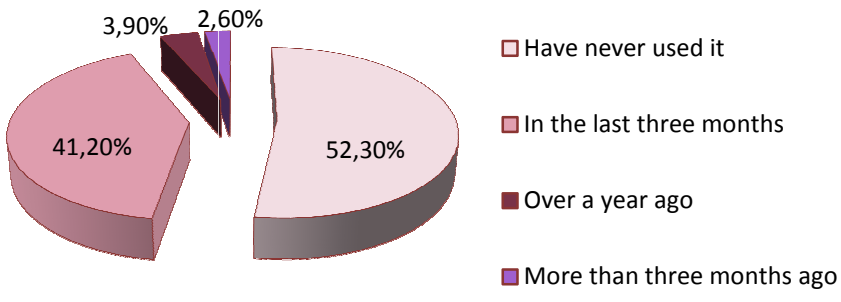


Source: Statistical Office of the Republic of Serbia

Based on the Statistical Office survey over 52% of the population have never used a computer, while over 1.5 million individuals use a computer every or almost every day.

1.5 million people use a computer every day

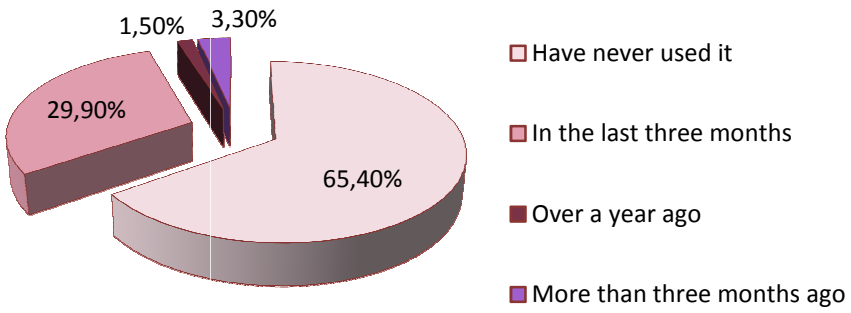
Figure 51. Individual Computer Use



Source: Statistical Office of the Republic of Serbia

This survey also shows that 65.4% of the respondents have never used the Internet, whereas 29.9% have used the Internet in the last three months. The results have shown that in Serbia over 850 thousand individuals use the Internet every day, which is most certainly an insufficient number. This indicates a need for the State to exert additional efforts in order for the Republic of Serbia to attain the level necessary for the successful implementation of the Information Society, i.e. Society of Knowledge project. Working with computers every day would simplify individual everyday activities and is, along with the Internet use, considered to be the modern form of literacy and a basic prerequisite for the further economic and social development of Serbia. The improvement of data previously shown requires a synchronized approach to this problem by a multitude of government bodies, as well as other organizations and educational institutions helping Serbia attain a level that can, without doubt, be called a knowledge society, i.e. a society where the application of ICTs will represent an irreplaceable daily activity.

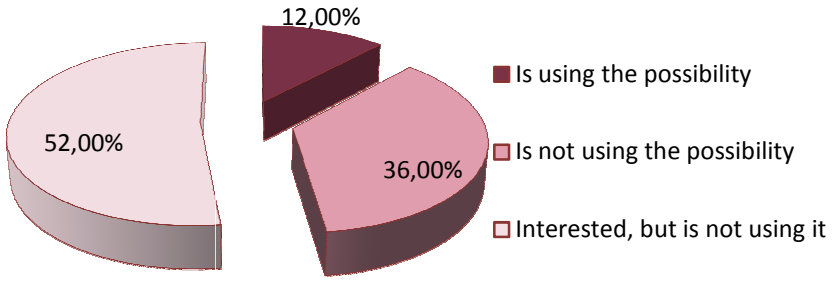
Figure 52. Individual Internet Use



Source: Statistical Office of the Republic of Serbia

Responding to the question of whether they would be interested in using public administration Internet services instead of making personal contact, 36% of the respondents answered in the negative, while 52% expressed interest, even though they are not using this option. This shows that a considerable number of people would like to use public administration services, but are insufficiently informed on the advantages of those services and ways in which they can use them.

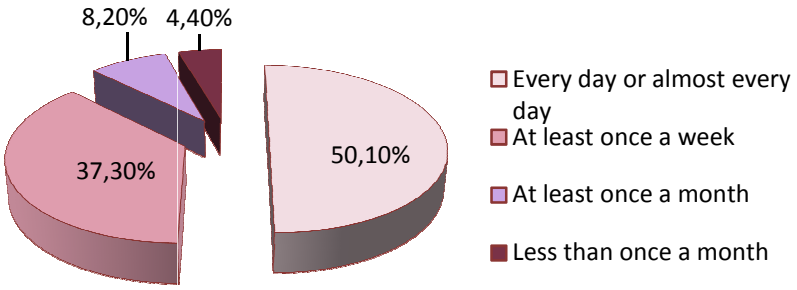
Figure 53. Public Administration Internet Service Use as Opposed to Personal Contact



Source: Statistical Office of the Republic of Serbia

Of the total number of respondents, over 50% of them have used the Internet every day in the last three months, 37% have used the Internet at least once a week, while the remaining 13% of the participants have used the Internet once a month or less.

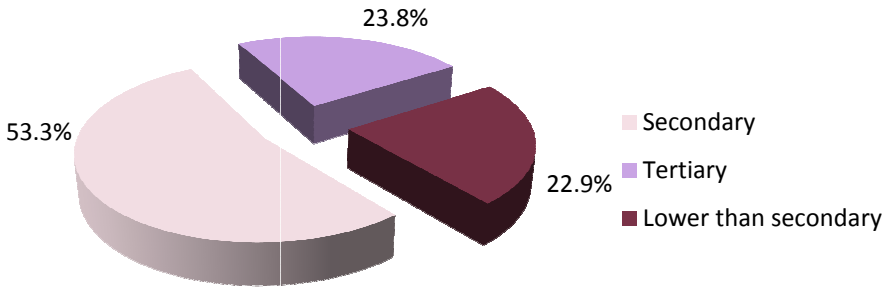
Figure 54. Intensity of Individual Internet Use



Source: Statistical Office of the Republic of Serbia

Among the Internet users, most individuals have secondary education (53.3%), followed by users with a university degree (23.8%), with the remaining users having a below secondary education.

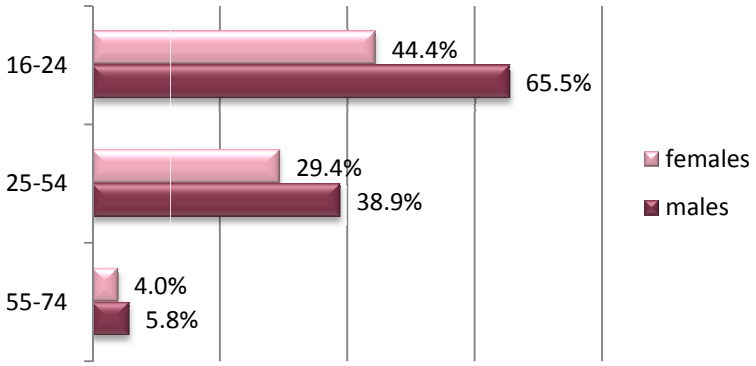
Figure 55. Structure of the Level of Education of the Internet Users



Source: Statistical Office of the Republic of Serbia

With all ages, the highest percentage of the Internet users are male, with the difference between male and female Internet users being the greatest in the 16-24 age group. When observing the over 24 population, the difference decreases.

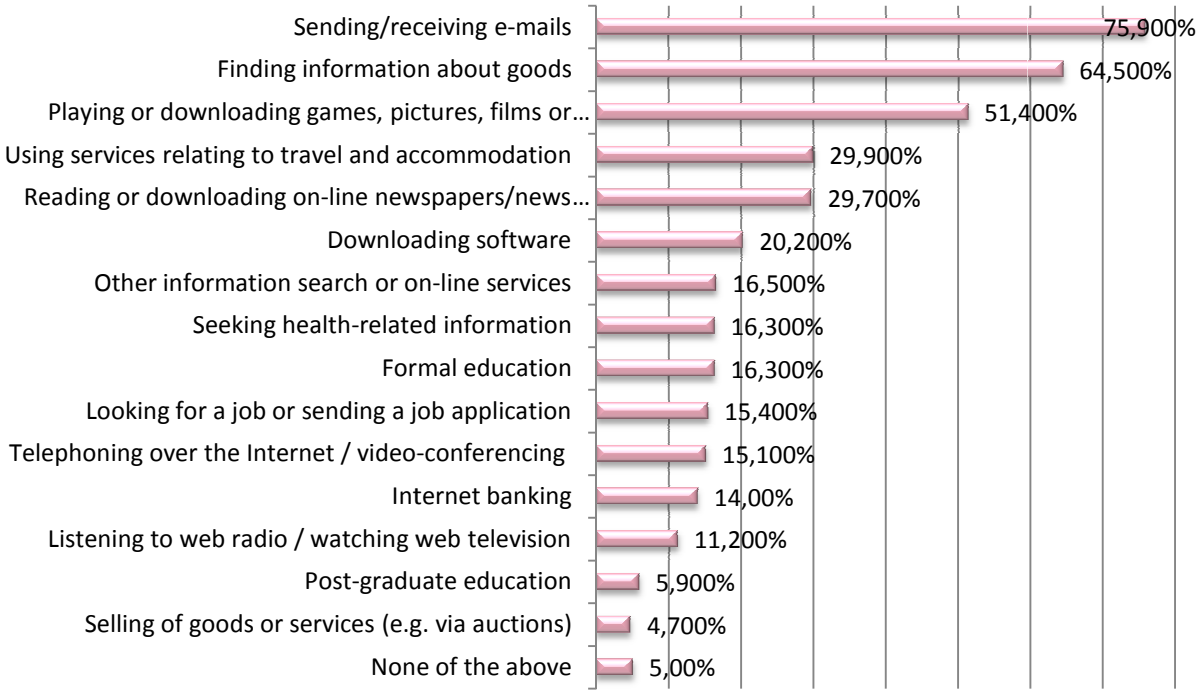
Figure 56. Internet Use by Gender and Age



Source: Statistical Office of the Republic of Serbia

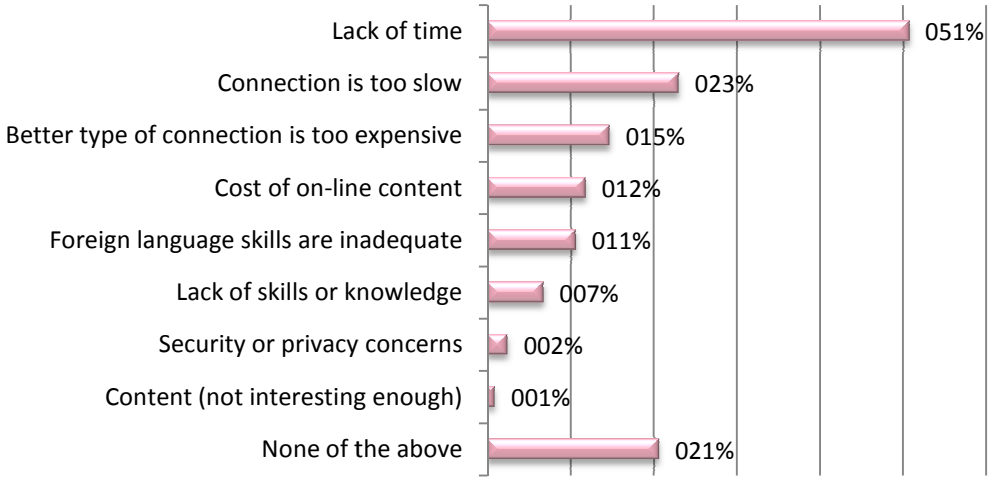
In 2007 the Internet was mostly used for e-mail activities (75% of users), obtaining information on various products and services (64% of users), as well as for downloading games, music and images (51% of users), while the least number of respondents used the Internet for post-educational advancement (around 6%) or for selling goods and services (around 5%).

Figure 57. Private Internet Use



Source: Statistical Office of the Republic of Serbia

Figure 58. Reasons for not Using the Internet More Frequently

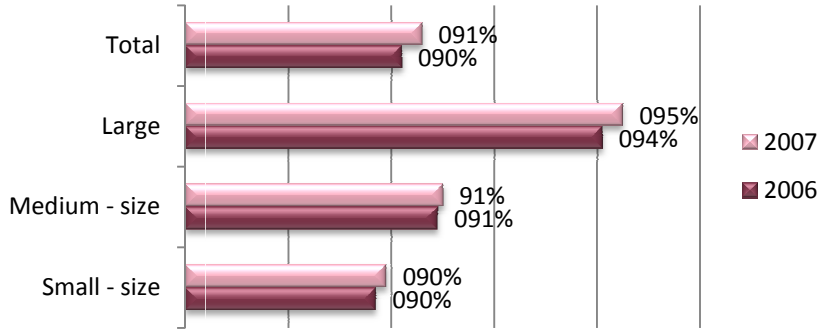


Source: Statistical Office of the Republic of Serbia

Over 50% of users list lack of time as the basic reason for not using the Internet more often, while 23% of them listed Internet access prices, i.e. the high prices of broadband connections (over 14%). It is interesting to note that only 0.9% of the users consider Internet content not to be sufficiently interesting.

In 2007, 90.6% of the companies have had Internet access, of which 94.5% are large companies, 91% are medium and 89.9% are small. The number of companies with Internet access has not grown significantly as of 2006.

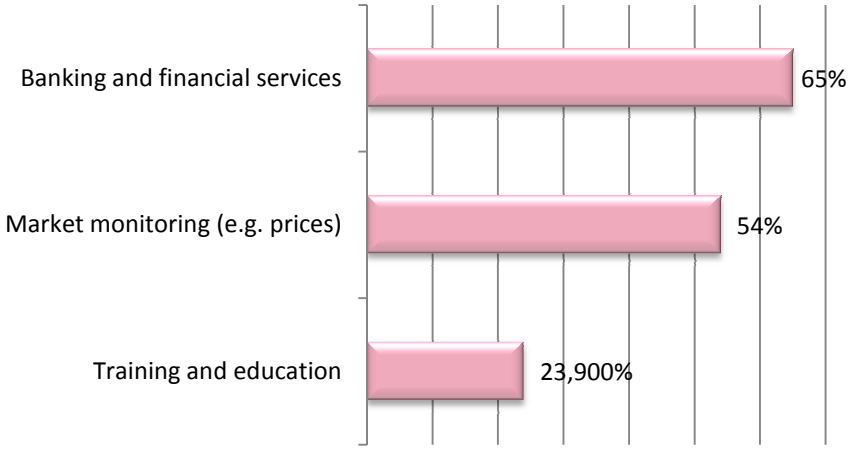
Figure 59. Internet Access by Company Number and Size



Source: Statistical Office of the Republic of Serbia

Companies are primarily using the Internet to conduct financial transactions with banks, track market parameter flow and, to a lesser extent, further employee education.

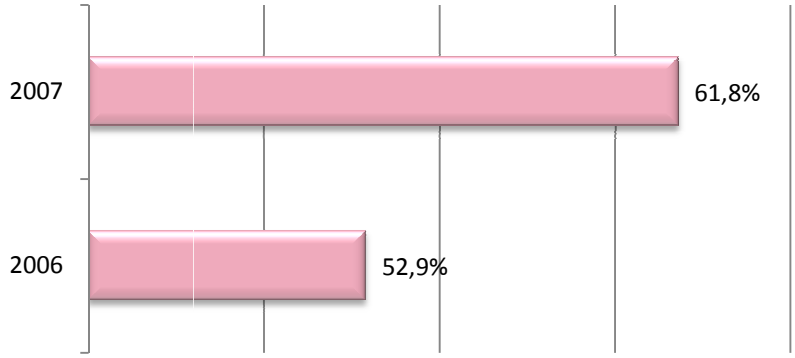
Figure 60. Purpose of Internet Use in Companies



Source: Statistical Office of the Republic of Serbia

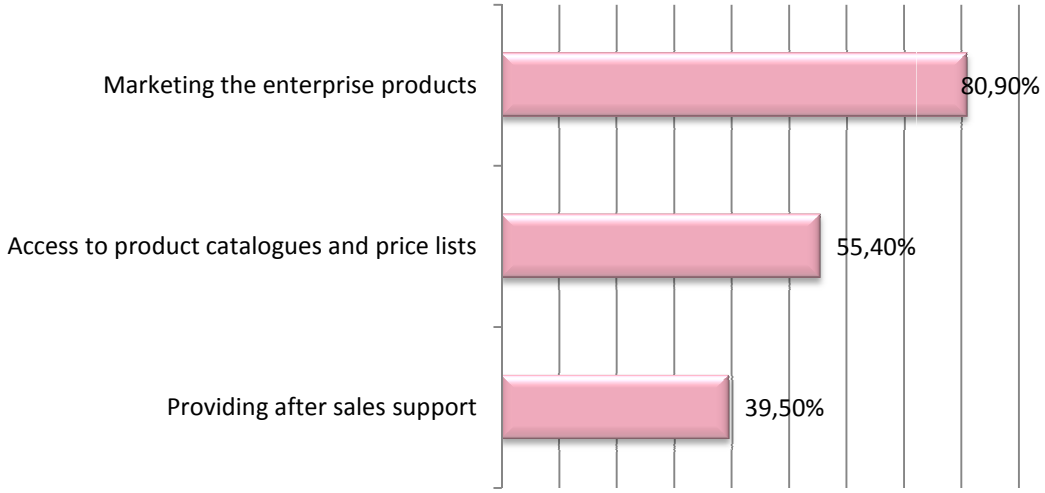
In 2007, an increase was noted in the number of companies representing themselves through websites from 52.9% in 2006 to 61.8% in 2007. Companies are introducing their own web sites for marketing, to provide users with information on products, prices and post-sales services.

Figure 61. Number of Companies With Websites



Source: Statistical Office of the Republic of Serbia

Figure 62. Type of Services Provided by the Company through the Website



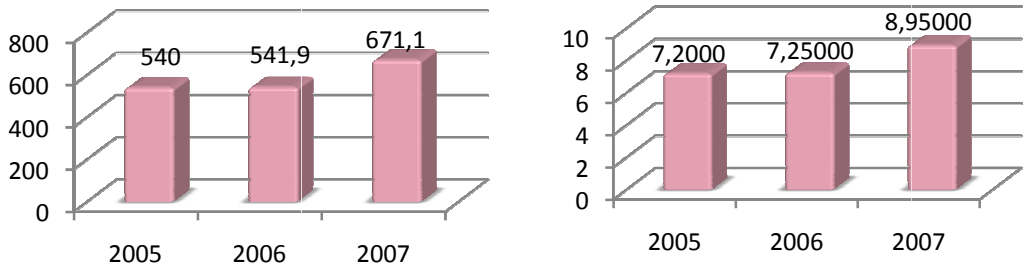
Source: Statistical Office of the Republic of Serbia

7. CABLE SYSTEMS

The largest cable system operator in the Republic of Serbia, in terms of the number of customers, is Serbia Broadband – Srpske kablovske mreže (SBB) with 55% of the market share. Therefore, pursuant to the Telecommunications Law (*Official Gazette of RS,* nos. 44/03 and 36/06) and the Statutes of the Republic Telecommunication Agency ((*Official Gazette of RS,* no. 75/05), RATEL's Managing Board, in its session of 16 February 2007 adopted a Decision on declaring a public telecommunications operator with significant market power for the service of radio and television programs distribution via cable distribution network, whereby the company Serbia Broadband – Srpske kablovske mreže (SBB) was declared an SMP operator. Along with SBB, significant players in the market of RTV program distribution via cable distribution network are also PE PTT KDS and IKOM d.o.o.

Unlike the previous year, in 2007 most of the subscribers were connected to HFC network. In this way, along with the radio and TV program distribution, the end user has also been given a possibility of broadband Internet access.

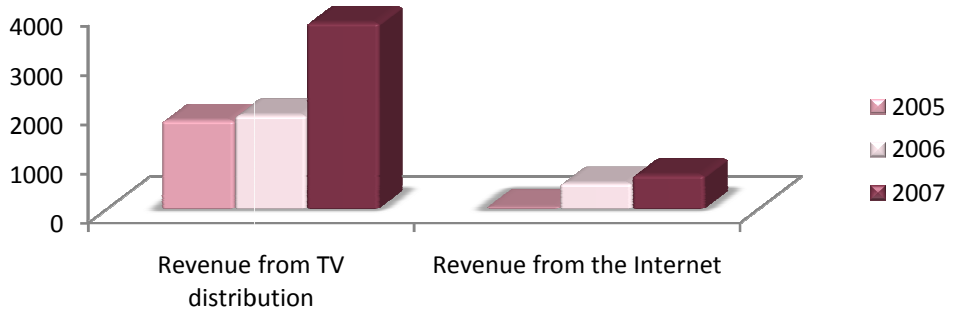
Figure 63. Total Number of Users (thousands)/Number of Users per 100 Inhabitants



Source: RATEL

The total number of cable operators has doubled. This growth tendency is mainly explained by the increase in the number of customers of the TV and Internet distribution services, but also by the increase in the prices of the radio and TV program distribution.

Figure 64. Increase in Cable Operators Revenue (RSD mn)

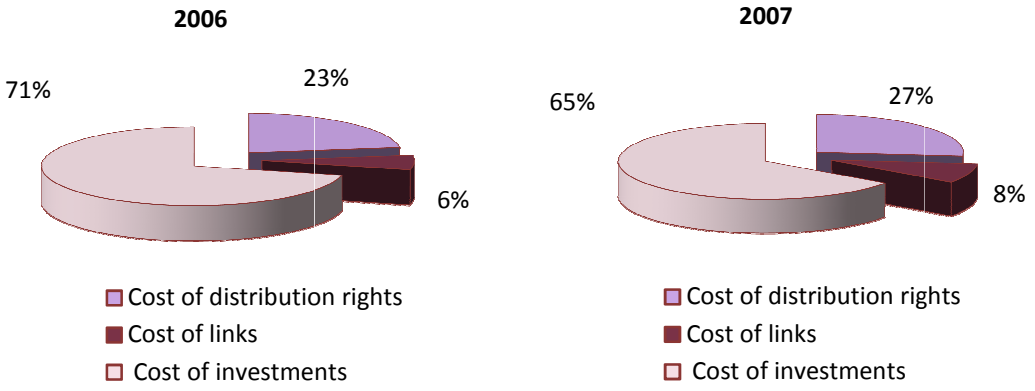


Source: RATEL

The total costs of distribution rights and lease of transmission capacities amount to approximately €13 million, which is an increase of over 100% compared with the previous year. If we consider the total costs of the cable operators, most was spent on investments, which were increased by 40% in 2007, amounting to €24.5 million.

This growth trend of the development and investments has a considerable impact on the development of the ICTs in Serbia.

Figure 65. Costs Allocation(RSD mn)

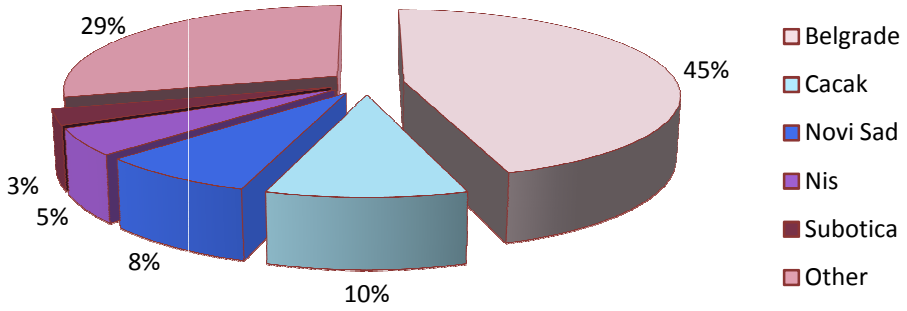


Source: RATEL

As for the geographic distribution of cable customers in Serbia, most of them are in Belgrade, 45%. Other towns, such as Čačak, Novi Sad, Niš and Subotica, have around 26% of

the total number of subscribers, while the remaining 29% go to the rest of Serbia 1/6 in other large towns and 40% in the rest of Serbia. Such distribution is not surprising, considering the number of inhabitants and the development level of these areas.

Figure 66. Geographic Distribution of Cable Customers



Source: RATEL

8. BROADCASTING

Based upon the public tenders and decisions made by the Council of the Republic Broadcasting Agency regarding the license issuance for television and radio program broadcasting, the Republic Telecommunication Agency issued licenses for broadcasting stations to the following broadcasters:

For TV signal coverage – Public National Broadcasting Service (two networks):

- ***Broadcasting Enterprise of Serbia – Radio Television Serbia***

  - 20 licenses for broadcasting transmitters

For radio signal coverage – Public National Broadcasting Service (two networks):

- ***Broadcasting Enterprise of Serbia – Radio Television Serbia***

  - 30 licenses for broadcasting transmitters

For FM signal coverage – 1 commercial network for the area of the Province:

- ***NS-As d.o.o. – Production, Trade and Sales, Novi Sad***

  - 14 licenses for broadcasting transmitters
  - 14 licenses for FM signal transmission

For TV signal coverage – regional coverage:

- ***Public Enterprise "TELEVIZIJA PIROT", Pirot***

  - 6 licenses for broadcasting transmitters
  - 8 licenses for TV signal transmission

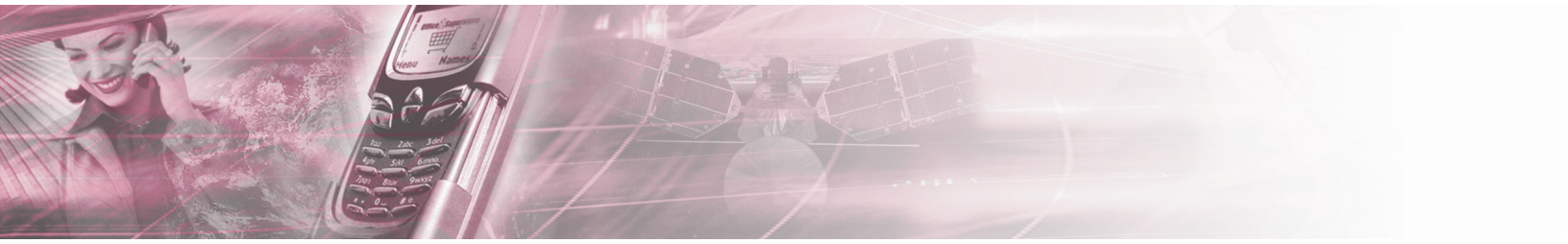
- ***Radio Television "BELLE AMIE" D.O.O, Niš***

  - 8 licenses for broadcasting transmitters
  - 6 licenses for TV signal transmission

- ***Public Enterprise RADIO-TELEVIZIJA VRANJE PO, Vranje***

  - 6 licenses for broadcasting transmitters
  - 14 licenses for TV signal transmission

- ***RADIO TELEVIZIJA ZONA D.O.O, Niš***
  - 9 licenses for broadcasting transmitters
  - 20 licenses for TV signal transmission
- ***Information Public Enterprise "NOVI PAZAR", Novi Pazar***
  - 5 licenses for broadcasting transmitters
  - 12 licenses for TV signal transmission
- ***Public Enterprise Radio Station "RADIO RAŠKA", Raška***
  - 4 licenses for broadcasting transmitters
  - 8 licenses for TV signal transmission
- ***Joint Stock Co. for Graphic Services "JEDINSTVO", Novi Pazar***
  - 3 licenses for broadcasting transmitters
  - 4 licenses for TV signal transmission
- ***Public Enterprise "RADIO-TELEVIZIJA ZAJEČAR", Zaječar***
  - 5 licenses for broadcasting transmitters
  - 14 licenses for TV signal transmission
- ***Public Enterprise "ŠTAMPA, RADIO I FILM", Bor***
  - 6 licenses for broadcasting transmitters
  - 16 licenses for TV signal transmission
- ***Autotransport Company "PALMA" export-import D.O.O, Jagodina***
  - 1 license for broadcasting transmitters
  - 2 licenses for TV signal transmission
- ***D.O.O. "Televizija kanal 9", Kragujevac***
  - 3 licenses for broadcasting transmitters
  - 6 licenses for TV signal transmission
- ***Public Enterprise "RADIO TELEVIZIJA KRUŠEVAC", Kruševac***
  - 3 licenses for broadcasting transmitters
  - 6 licenses for TV signal transmission
- ***Information Public Enterprise "IBARSKE NOVOSTI" JP, Kraljevo***
  - 4 licenses for broadcasting transmitters



- 8 licenses for TV signal transmission

- ***D.O.O. "SAT-TV COMMUNICATIONS" P.O, Požarevac***

  -3 licenses for broadcasting transmitters

  - 4 licenses for TV signal transmission

- ***Information Public Enterprise "TV ČAČAK", Čačak***

  -5 licenses for broadcasting transmitters

  -10 licenses for TV signal transmission

- ***RTV ENIGMA D.O.O, Prijepolje***

  -3 licenses for broadcasting transmitters

  - 8 licenses for TV signal transmission

- "***VUJIĆ –TELEVIZIJA" D.O.O, Valjevo***

  - 1 licenses for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise "Radio-televizija Šabac", Šabac***

  -1 licenses for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***"TV BANAT" D.O.O. for production and broadcasting of radio and television program, Vršac***

  -2 licenses for broadcasting transmitters

  - 6 licenses for TV signal transmission

- ***"SANTOS-COMERCE" D.O.O. for radio television activities, imort-export and marketing services, Zrenjanin***

  -2 licenses for broadcasting transmitters

  - 4 licenses for TV signal transmission

- ***"RTV-PANONIJA" D.O.O. for radio and TV broadcasting, Novi Sad***

  -3 licenses for broadcasting transmitters

  - 10 licenses for TV signal transmission

- ***"TV MOST" D.O.O. for informative and publishing business, Novi Sad***

  -3 licenses for broadcasting transmitters

  - 12 licenses for TV signal transmission

- ***"FIJENS" D.O.O. for production, trade and services, Novi Sad***

  -3 licenses for broadcasting transmitters

  - 8 licenses for TV signal transmission

- ***SREMSKA TELEVIZIJA D.O.O, Šid***

  -1 license for broadcasting transmitters

  - 4 licenses for TV signal transmission

For Radio Signal Coverage– Regional Coverage:

- ***Joint Stock Co. Radio Television "KRAJINA", Negotin***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise RADIO-TELEVIZIJA VRANJE PO, Vranje***

  - 1 license for broadcasting transmitters

- ***Radio Television "BELLE AMIE" D.O.O, Niš***

  - 2 licenses for broadcasting transmitter

- ***"BETA PRES" D.O.O. PJ BETA RADIO, Novi Pazar***

  - 1 license for broadcasting transmitters

  - 4 licenses for TV signal transmission

- ***Public Enterprise "RADIO-TELEVIZIJA ZAJEČAR", Zaječar***

  - 1 license for broadcasting transmitters

- ***Public Enterprise "ŠTAMPA, RADIO I FILM", Bor***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise "RADIO TELEVIZIJA KRUŠEVAC", Kruševac***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Information Public Enterprise "ŠUMADIJA", Aranđelovac***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Information Public Enterprise "NOVI PUT", Jagodina***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Information and Marketing Centre "LUNA PRESS" D.O.O, Užice***

  - 2 licenses for broadcasting transmitter

  - 4 licenses for TV signal transmission

- ***Information Enterprise "CENTAR" D.O.O, Valjevo***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Broadcasting Society "Radio-Televizija AS" D.O.O, Šabac***

  - 4 license for broadcasting transmitters

  - 10 licenses for TV signal transmission

- ***"JET COMPANY" D.O.O, Kikinda***

  - 1 dozvola za radiodifuzni predajnik

- ***Public Broadcasting Company Regional Radio television Station "RTV PANČEVO", Pančevo***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise "RADIO ZRENJANIN", Zrenjanin***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***"RTD" D.O.O. company for production and services, Novi Sad***

  - 1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Fond "Panonija", Subotica***

  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise "RADIO SOMBOR", Sombor***

  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Joint Stock Co. "RADIO SREM", Ruma***

  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Information Public Enterprise "VRBAS", Vrbas***

  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***MEDIA CENTRE "BLUE" D.O.O, ODŽACI, "AVALON" D.O.O, ODŽACI***

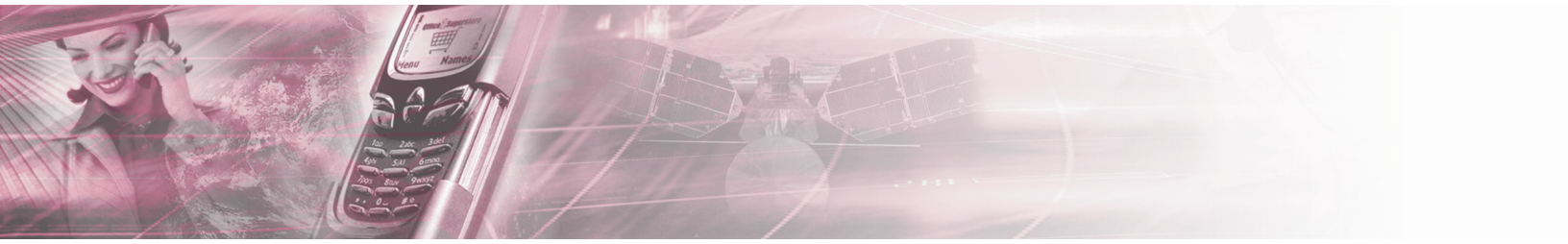
  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission

- ***Public Enterprise for broadcasting, newspaper and publishing business "RADIO ŠID", Šid***

  -1 license for broadcasting transmitters

  - 2 licenses for TV signal transmission



9. TELECOMMUNICATION NETWORKS OF THE PUBLIC ENTERPRISES

Information-communication technology utilization in large public systems such as the Electric Power Industry of Serbia (EPS), Serbian Railways (ŽTP) and the Petroleum Industry of Serbia (NIS) represents a precondition for their modern development and improvement. Likewise, European market and business demands are forcing constant modernization and introduction of new technologies in their communication networks. An overview of the existing state of telecommunication systems in said public systems and plans for their further development follow.[4]

9.1. „SERBIAN RAILWAYS“, PE (JP „ŽELEZNICE SRBIJE“)

Current State

The „Serbian Railways“ PE (JPŽS) telecommunications networks utilize the following types of transfer media:

- aerial cable transfer
- copper and optic cable transfer
- high-frequency transfer (HF)
- radio transfer.

Aerial cables are still utilized on JPŽS railroads as a transfer medium, although their use was considerably reduced. Aerial cable transfer is only in place along non-electrified railroads.

The transfer of telecommunication, signal and stable electric traction facility information along electrified railroads is mostly conducted along the railroad signals-telecommunications STA cables (with no coaxial tubes) and STKA cables (with coaxial tubes). The purpose and construction of signals-telecommunications cables is determined by the type of messages and frequency range required by said systems.

Optical cables have been laid in the Belgrade railway junction (business facilities at Nemanjina 6 – Belgrade Travel – Belgrade Centre) and on the sections Belgrade Centre –

[4] The texts in this Chapter were received by courtesy of the responsible departments of the Serbian Railways, Petroleum Industry of Serbia and Electric Power Industry of Serbia.

Pančevo Main and Požega – Čačak, with a total of 55km of cables laid. Said optical cables have a capacity of 8, 10 and 12 fibers.

HF transfer along main routes is implemented using three-hundred-channel systems. Along side routes HF transfer is implemented using twelve-channel systems, whereas on non-electrified railroads it is performed using twelve-channel systems for aerial line operation and three-channel systems. All transfer systems have been implemented using analogue technologies with vacuum tubes and transistors as their base components.

The radio communications systems represent a singular technical-technological unit as regards their operation and use. Radio communications are showing an increasing use in railways precisely due to their flexibility, availability and service quality, all important for railroad operations. SR uses the following radio systems:

-analogue radio dispatcher system in the 450MHz range for communication with moving trains, built based on UIC (International Union of Railways) recommendations and in operation along all main railroads,

-technological UHF networks for operations in larger railway distribution and jumper stations for manoeuvring operations, train inventory and common operations coordination,

-VHF range traffic control radio networks designated for railway traffic built along railroads where aerial lines were stolen,

-maintenance service radio networks.

In radio systems used on railroads a wide array of devices are present, starting from the oldest transistor-based generations up to the latest microprocessor-based radio devices.

Investment Development Plan

The „Serbian Railways“ PE has employed the SI „CIP“ during 2007 to design the General Project of an Integrated JPŽS Telecommunications System. Guidelines for the development of the company telecommunications system were provided.

The investment development plan deals with main railroads only. For side railroads the continuity of the telecommunications system shall be established along certain sections, depending on the technical requirements of the Traffic Department and financial means available, either by setting up radio stations at important locations or by cable. The investment development plan is broken down by subsystems.

Cables. For main railroads lacking copper cables (Niš - Dimitrovgrad and Belgrade – Vršac) the investment work plan envisages laying down STA-PV1 4x4x1,2NF+12x4x0,9NF copper cables and optic cables, mostly with 48 optic fibers, by laying them in the ground. Along other main lines where copper and STKA and STA copper signals-telecommunications cables are utilized (Belgrade-Šid, Inđija-Subotica, Belgrade-Niš-Preševo Belgrade-Mala Krsna-Velika Plana, Belgrade-Bar) either pylon contact networks will be set up, or 48 fibre optic cables shall be laid in the ground. The plan envisages optic cables to be laid down with a total length of around 1500 km.

Transfer systems are based on a synchronous network with an SDH platform. The full network architecture shall be comprised of three layers:

- main layer, responsible for the transfer of STM-N signals,
- distribution layer, responsible for combination and distribution services on various plesiochronous and synchronous speeds, and
- access layer, responsible for combination and distribution services at low access speeds.

Nodes shall be split into two layers. Higher level nodes shall be those points where more traffic is to be generated that will be linked to same level nodes by systems with a greater capacity (STM-4, STM-16), nodes that are to be regional centres within the matching systems or system routes (telephone network, IP network, GSM-R switches, etc.) and nodes that represent geographical crossroads (Stalać, Rakovica, etc.). Lower level nodes shall be connected to their higher level regional centre (telephone communications) and with other nodes of a same or higher level that they need to communicate with (IP network, radio, etc.).

The following total transfers are planned for the main railroads:

- STM-1 (Novi Sad-Zrenjanin-Subotica, Subotica-Horgoš, Pančevo-Zrenjanin, Kikinda-Banatsko Miloševo Subotica-Sombor-Vrbas, Šid-Sombor , Ruma-Zvornik, Mala Krsna - Bor –Zaječar-Niš, Prahovo-Vražogrnac, Lapovo-Kragujevac-Kraljevo, Kraljevo-Lešak)
- STM-4 (Belgrade-Bar, Novi Sad-Subotica, Inđija-Šid, Belgrade-Vršac, Rakovica-Mala Krsna-Velika Plana, Stalać-Kraljevo-Požega, Niš-Dimitrovgrad, Niš- Preševo, Belgrade Railroad Junction, Niš Railroad Junction)
- STM-16 (Belgrade-Niš, Belgrade - Novi Sad)

Switched voice transfer network. The telephone network shall operate as a network with three layers. It shall be comprised of the transit layer, the regional layer and the local layer.

The nodes of the transit layer are partially networked and are mostly located in the headquarters of railroad organization units. All of the calls between them are routed in accordance with a non-hierarchical alternative principle. The transit nodes are equipped with special hardware and software modules used for monitoring and system maintenance and housing system backups.

Every regional node is running local software enabling autonomous control and full call processing for all its users.

Local layer nodes would mostly be located along the railroads in smaller offices. They would be implemented as remote stages, concentrators or a LAN network.

Connections with other railroad networks would only be made from the Belgrade transit switch, while access to the public network would most likely be established through the transit layer, although the option of access from certain regional nodes should also be planned for.

An open numbering system is planned for the network. Each transit node has its call number and every user at that switch can be called directly by dialling the user number. Each regional node has a numeration that is part of the numeration of their transit switch.

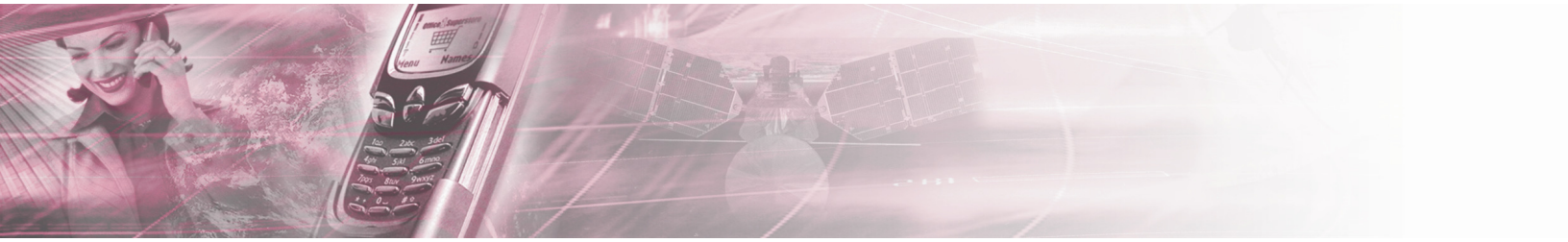
Railroad devices. The investment work plan envisages the setting up of multifunctional communications devices in primary level stations. In other, smaller stations concentrators for station and railroad connections would be set up, being connected to said multifunctional communications devices by multiplexers on copper cables. The multifunctional communications devices are to be interconnected by optic fibers. At the input and output signals, railway crossings and railroad telephones, intercommunication system telephones should be set up.

Radio systems. Further consideration for the radio dispatch systems includes digital radios based on GSM-R networks.

As per the cellular section, the full rolling stock is to be fitted with locomotive radio stations, but employing only dual mode stations supporting both analog operations at 450MHz, along with the GSM-R network.

Based on the volume of traffic and the complexity of the technical procedures, the fitting of larger stations and expanding the existing networks in the 450MHz range should be considered for local networks. Setting up radio networks for traffic control shall be performed on railroads where a higher level of telecommunications is not required at this time.

In situations where a fixed telecommunications infrastructure cannot be provided for connecting telephone switches (the area of Vojvodina, Zaječar region, Podrinje region), the



implementation of digital mid-range RRU's is planned. Another purpose of the digital RRU's is providing a protective ring for main telecommunications routes.

9.2. "PETROLEUM INDUSTRY OF SERBIA", PE (JP „NAFTNA INDUSTRIJA SRBIJE")

Automated Telephone Service

The NIS a.d. Novi Sad Company does not have their own private telecommunications network, instead owning sections of a private automated telephone network (the oil refineries Pančevo and Novi Sad). The ATE and DATE are connected to the public automated telephone network in the access network using the cable infrastructure of the Telekom Srbija Company.

The establishment of a unified telecommunications infrastructure, i.e. a private telecommunications network, is under way in certain branches of the company. Within the private network the users of the automated telephone service in NIS a.d. communicate using installed ATE and DATE interconnected using the infrastructure of the public telephone network of Telekom Srbija a.d.

The home ATE and certain DATE in NIS a.d. branches are dated and worn-out, representing a serious impediment and bottleneck for quality communication, especially in the cases of the processing and transportation facilities (Novi Sad Refinery, sections of Naftagas, NAP and Jugopetrol).

A full digitalization of the network and the systems is envisaged as part of the modernization process of the NIS a.d. telecommunications system currently under way, using IP/ISDN technologies.

Interconnection between the major telecommunications systems is achieved using lines leased from Telekom Srbija, in most cases using SDH, Frame Relay or VPN communications access, whereas with smaller systems 2 Mbit/s access (PRA, HDSL), base BRA, analog transmitters and radio-relay links are in use.

The automated telephone service telecommunications system of NIS a.d. has been designed in three layers:

- TRANSIT
- REGIONAL
- LOCAL

The TRANSIT LAYER includes the transit of telephone communications in the Private Network from the Local DATE to the Transit DATE in all three transit areas.

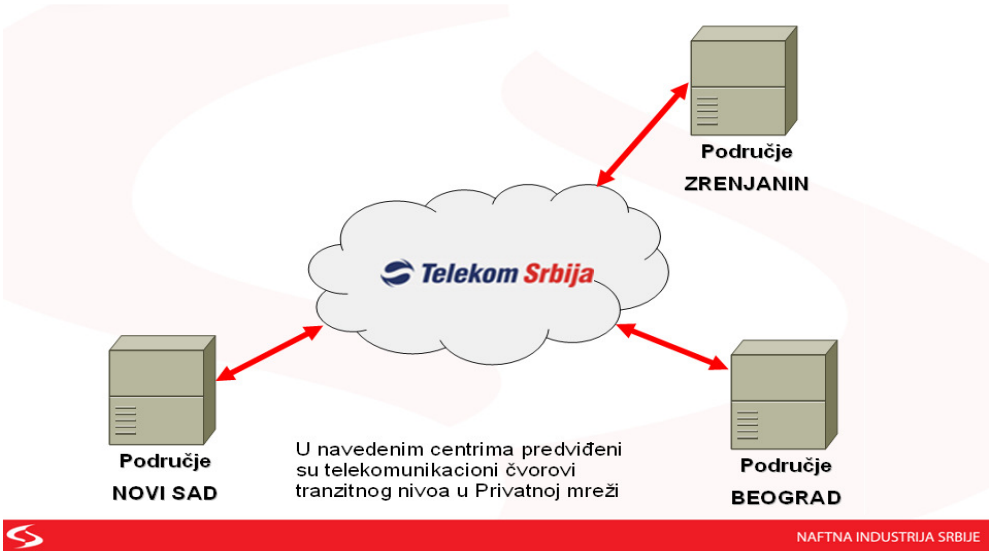
The global distribution of infrastructure facilities of NIS a.d. in the Republic of Serbia may be represented within three territorial areas, those being Novi Sad (Bačka and Srem), Belgrade (with all business organizations south of Sava and Dunav) and Zrenjanin (Banat). Telecommunications nodes of the transit layer in the Private Network are envisaged in those centers.

The transit centers are envisaged to be mutually interconnected using the optic backbone of Telekom Srbija with adequate capacities and redundancies provided.

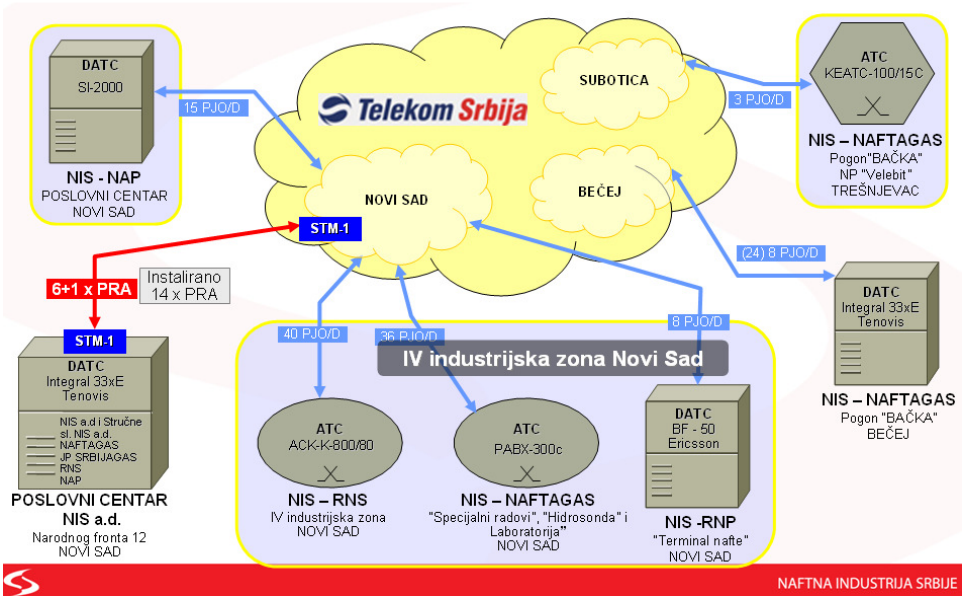
NIS a.d. does not own their own telecommunications link lines from transit centers to remote local layer locations.

The mid-term development plan for the Private Automated Telephone Service envisages the full digitalization of the local telephone service and its integration into the public communications systems (fixed and mobile telephone service, as well as the private radio-network).

Figure 67. Global Distribution of NIS a.d. Infrastructure Facilities in the Republic of Serbia on the Three Territorial Areas in Novi Sad, Belgrade and Zrenjanin



Source: NIS



Source: NIS

Mobile Radio-communication

Radio-networks

The Ministry of Telecommunications has approved the 2m and 0.7m wavelength frequencies for use in the NIS a.d. Novi Sad radio networks. The organizational units within NIS a.d. using radio networks are:

NIS-Naftagas

The analog radio communications system of NIS-Naftagas is comprised of two duplex radio systems covering the territory of the province of Vojvodina and part of central Serbia, five half-duplex networks with centers in the plant management facilities covering plant activities and several simplex radio networks for communication between handheld and mobile radio stations. Territorial coverage is present across the area of Vojvodina.

NIS-Jugopetrol

The 2m wavelength radio-network is organized in three layers, those being: core, regional and local. All three layers of the radio-network are interconnected and provide communication in a transparent manner from the local to the core level. Jugopetrol covers the territory of the Republic of Serbia south of the rivers Sava and Danube.

NIS-RNP

The NIS-RNP radio-connections operate in accordance with an organized local network plan on the territory of the Pančevo refinery.

NIS-RNS

The NIS-RNS radio-connections operate in accordance with an organized local network plan on the territory of the Novi Sad refinery.

The appropriate measures have been taken to bring the NIS a.d. Radio-Communications System up to a state of full technical and operational functionality, along with providing its continued operation at the approved frequencies, in accordance with the Law on Telecommunications of the Republic of Serbia.

Radio-communications of certain sections of NIS a.d. are utilizing home ATE and DATE, establishing communication based on the principle of "mediation".

The long-term plan envisages the introduction of radio-communications systems based on the TETRA standard, especially for the refineries in Novi Sad and Pančevo, where an integration of radio-communications and home DATE would be achieved using primary access.

Figure 69. Radio-Channel Coverage at the Regional and Local Level at the Wavelength of λ=2m in NIS-Jugopetrol

Source: NIS

Mobile Telephone Service

NIS a.d. is using the mobile telephone service of the MTS, Telekom Srbija mobile operator as an additional means of communications, utilizing the BizNet package.

An integration of the fixed and mobile telephone connections between NIS a.d. business facilities has been achieved using GSM Gateway and Direct-Link connections.

9.3. ELECTRIC POWER INDUSTRY OF SERBIA, PE (JP „ELEKTROPRIVREDA SRBIJE)

The efficient operation of our national electrical energy system, comprised of the Electric Power Industry of Serbia (EPS) and the Electric Power Grid of Serbia, is fully dependent on the existence of a modern telecommunications system used for the transfer of technical and business data. The project of building a new telecommunications network is in its final phase in the Electrical Power Industry of Serbia, with the latest telecommunications technologies used in electric power companies of developed countries being used in the implementation. The basis of the new system is comprised of a main route telecommunications transfer network layer based on the use of optic fibers set up within protective cables on pylons (0PGW cables). The optical network is implemented on all power lines with a voltage level of 400 and 220 kV, as well as a portion of the 110 kV voltage lines. The optical network thus covers nearly the full territory of the country, reaching all important power generation facilities, extending to over 3000 km. With the implementation currently under way, it will reach a length of 3600 km by end 2008.

A 48 fiber optic cable was used on all sections of the new telecommunications network of EPS, other than the initial segment of Belgrade – Bajina Bašta, where a 24 fiber cable was used. The structure of 0PGW cables with 48 fibers is twofold: 24 fibers are of the type ITU– T G.652, whereas the other 24 fibers are of the type ITU – T G.655. The cables were procured from renowned international suppliers, with optical properties that have thus far shown good results and which are regularly being controlled. This makes it clear that these are large and high-quality transfer capacities.

The new telecommunications network of the Electric Power Industry of Serbia is primarily designed and implemented for the needs of the electric power system with a high reliability rate (0.99999), not typical for other telecommunications networks, providing added value. Nearly all objects were connected using closed optic loops, meeting the level two connectivity requirements. **Thanks to the large transfer capacities, all company requirements can be met with less than 50% utilization, thus leaving the extra transfer capacity to be offered on the free telecommunications market.**

Part of the new optical network has been in use for several years, used for dispatcher control and connections with electrical power systems of neighboring countries, with relatively small capacities. These connections are currently operating perfectly, to the satisfaction of all users, even though the terminal equipment was mounted temporarily, before being fully installed as the Project envisages.

The projected terminal devices are reaching the final phase of installation and their initial test operations are expected to commence by end 2008. SDH technology has been utilized, being dominant in electrical power systems of developed countries. The equipment applied along the main links has an STM - 16 (2.488 Gb/s) capacity. Depending on the importance of certain lines, lesser capacities are also used, like STM – 4. New terminal

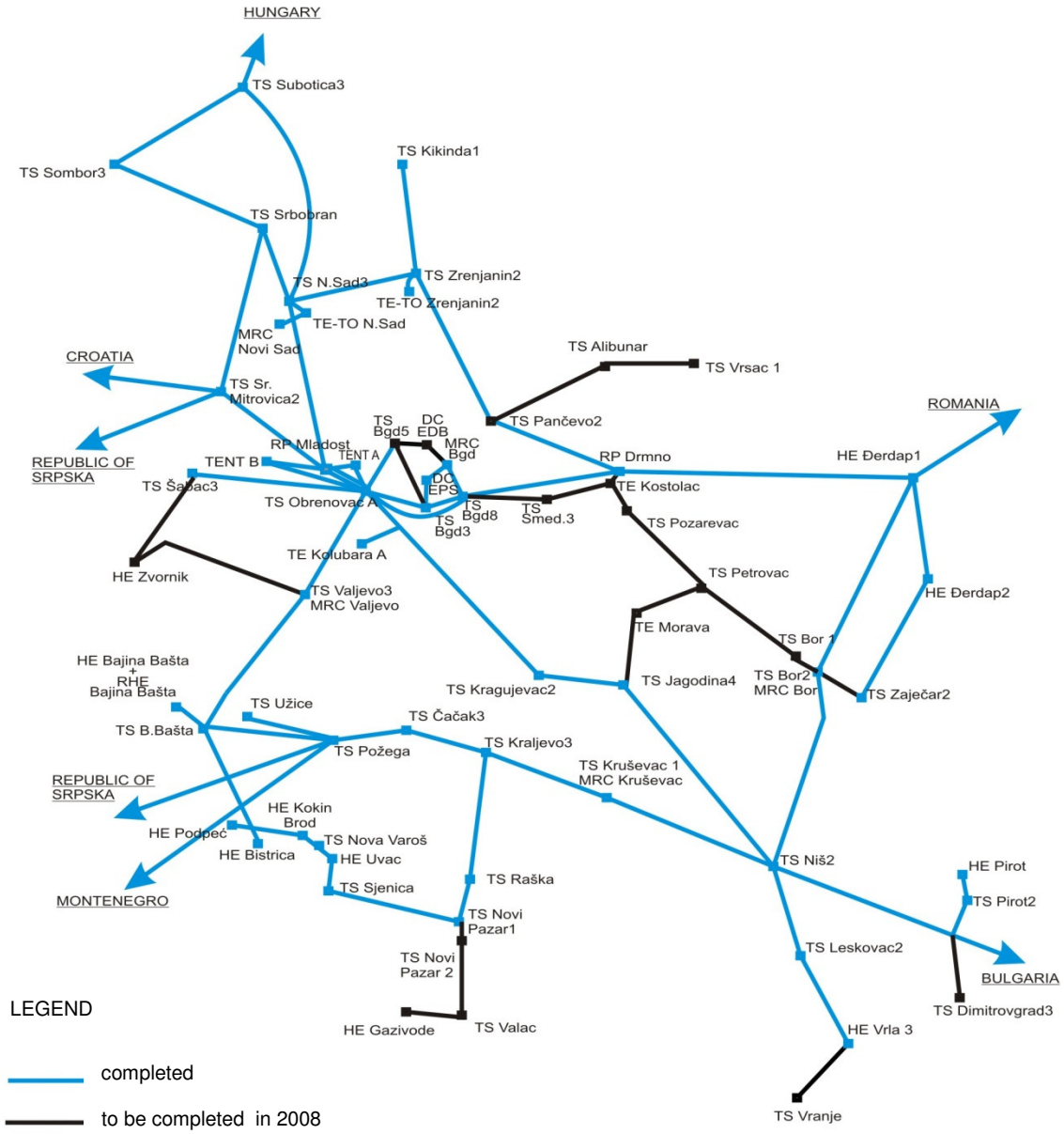
equipment is being installed and put into operation in nearly 70 of the more important facilities of the Electric Power Industry and Electric Power Grid of Serbia.

Upon finalizing the evaluation of offers currently under way, the delivery and installation of equipment for creating a private package network of the electric power industry should be agreed upon in 2008. It will represent an infrastructure network for introducing package telephony, i.e. it will allow for a gradual transfer from the existing classic telephone network to an IP-based network. The contract shall encompass the building of the network axis (five network nodes) transferring the package traffic of all functional electric power industry networks, while the access layer envisages the acquisition of 19 IP telephone switches for the electric power facilities of the Electric Power Industry and Electric Power Grid of Serbia. SDH device capacities will be used in the new transfer network to connect the axis routers and the access layer telephone equipment.

The implementation of this complex network is slowly being finalized and some of its functions are already in use. All current users consider its introduction to represent a revolution in the area, because the quality and reliability are far beyond previous experiences with old systems. Likewise, its use offers the ability to introduce many new services in the technical and business management of the companies in the electric power system of Serbia. The surplus of transfer capacities, offered on the free telecommunications market, shall have the same properties and will be an even competitor.

Figure 70. shows the new optical telecommunications network of the Electric Power Industry of Serbia. Considerable expansions of this network are expected in the following period through the implementation of regional and local layers.

Figure 70. New Optical Telecommunications Network od the Electric Power Industry of Serbia



Source: EPS

LIST OF VALID RULES ADOPTED BY THE REPUBLIC TELECOMMUNICATION AGENCY

- Rules on form for radio-station licence (*Official Gazette of RS*, no. 100/05)
- Rules on procedure for radio-station licence issuance and on data and documentation to be submitted together with radio-station licence request (*Official Gazette of RS*, no. 100/05)
- Rules on form for telecommunications and radio-broadcasting controllers' identification cards (*Official Gazette of RS*, no. 111/05)
- Rules on fees for radio-frequency usage (*Official Gazette of RS*, no. 08/06)
- Rules on costs for radio-station licence issuance (*Official Gazette of RS*, no. 08/06)
- Rules on form contents for radio-broadcasting controllers' report (adopted by the RATEL's Managing Board on 10.02.2006, available on www.ratel.org.rs)
- Rules on determining types of public telecommunications services for which licence is required (*Official Gazette of RS*, no. 29/06)
- Rules on compliance control of telecommunications networks, systems and facilities with prescribed standards and regulations (*Official Gazette of RS*, no. 29/06)
- Rules on procedures for the issuance of licence for public telecommunications networks and public telecommunications services and on register keeping (*Official Gazette of RS*, no. 29/06)
- Rules on form and contents of the form for the report on radio station technical inspection and of the form for the report on telecom networks, systems and facilities technical inspection (*Official Gazette of RS*, no. 34/06)
- Rules on technical permits – certificate issuance (*Official Gazette of RS*, no. 34/06)
- Rules on technical inspection procedure in the field of telecommunications (*Official Gazette of RS*, no. 34/06)
- Rules on costs for technical permits – certificate issuance and for technical inspection of radio stations, telecom networks, systems and facilities (*Official Gazette of RS*, no. 41/06)
- Rules on fees and costs for licence and authorization issuance (*Official Gazette of RS*, no. 58/06)
- Rules on public telecommunications networks and public telecommunications services for which authorization is required (*Official Gazette of RS*, no. 60/06)
- Rules on terms and conditions for Internet service provision and on contents of authorization (*Official Gazette of RS*, no. 60/06)
- Rules on terms and conditions for radio and television program distribution service provision via cable network and on the form and contents of the authorization (*Official Gazette of RS*, no. 95/06)
- Rules on conditions for the work of amateur radio stations (*Official Gazette of RS*, no. 06/07)
- Rules on classes of radio-stations for which radio-station licence is not required (*Official Gazette of RS*, no. 26/07)
- Rules on Administering the Numbering Plan for Telecommunications Networks (*Official Gazette of RS, n*o. 87/07)
- Rules on general terms and conditions for interconnection of public telecommunications networks (*Official Gazette of RS*, no. 53/08)
- Numbering Plan of the Republic of Serbia for Telecommunications Networks (*Official Gazette of RS*, nos. 57/08 and 77/08)