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# The Expected Effects of the EU Accession on the Telecommunications and IT Sector in the Slovak Republic

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## **Introduction**

The key priority for candidate countries, also including the Slovak Republic, in the preparation for accession to the European Union, is the real convergence of economy. The identification of the problems of real convergence is usually examined from the standpoint of the achieved level of competitiveness of the economy, which is generally considered to be a fairly exhaustive and functional manifestation of the real economy. Even the Copenhagen criteria, which, inter alia, emphasize the importance of the ability to cope with competitive pressures and market forces within the EU, are based on it. Being a EU membership candidate, the Slovak Republic also faces the task of meeting the above criteria in the information and communication technology (ICT) sector, because the level of competitiveness of the Slovak economy (compared with developed countries) is, as yet, relatively low in general.

The ICT sector (following the structure of EITO publications) is represented by:

- the ICT industry (includes all ICT manufacturing companies),
- IT companies/sector (includes all IT wholesale companies, IT service companies, SW development companies and IT consulting companies),
- IC companies/sector (includes all telecommunication operators).

In this study the IT market in Slovakia represents statistical figures of the ICT industry together with the IT sector. The IC market figures include statistical information of all of the telecom operators. Due to the absence of some detailed statistical data for the ICT sector, the information, statistical and financial data for the following numbers of business companies, were considered for purpose of this study:

- 27 ICT manufacturing companies,
- 70 IT companies,
- 7 telecom operators.

In 2001, the TOP 200 Slovak business companies included three telecom operators (ranked in positions No.7, 16 and 22), seven IT companies (the best ranked position was 39) and three ICT manufacturing companies (28). The best business company in 2001 was Volkswagen Bratislava (e.g. US Steel Kosice was in fourth position).

**Table 1: Ten biggest ICT manufacturing companies in Slovakia (2001)**

<b>10 biggest ICT manufacturing companies in Slovakia (2001)</b>			
Rank	Company Name	Turnover	
		2001 (thous. SKK)	2001/2000 (%)
1.	Sony Slovakia, Trnava	5 866 892	71,1
2.	BSH Drives and Pumps, Michalovce	4 042 463	15,2
3.	Kablo, Bratislava	2 502 000	14,4
4.	Alcatel Slovakia, Liptovský Hradok	2 366 914	31,3
5.	Emerson, Nove Mesto nad Vahom	1 957 392	11,7
6.	Siemens Automotive, Michalovce	1 902 706	12,8
7.	Leoni Autokabel Slovakia, Trenčín	1 899 904	19,6
8.	Osram Slovakia, Nove Zámky	1 519 790	20,7
9.	SEWS Slovakia, Topoľčany	1 423 546	3,4
10.	Leoni Slovakia, Nová Dubnica	1 367 410	-10,1

*Source: TREND Analyses (2002)***Table 2: Ten biggest IT companies in Slovakia (2001)**

<b>10 biggest IT companies in Slovakia (2001)</b>					
Rank	Company Name	Turnover		Value Added	
		2001 (thous. SKK)	2001/2000 (%)	2001 (thous. SKK)	2001/2000 (%)
1.	BGS Distribution, Bratislava	4 596 952	22,3		na
2.	Compaq Computer Slovakia, Bratislava	2 926 000	13,4		na
3.	IBM Slovensko, Bratislava	2 388 000	0		na
4.	Hewlett-Packard Slovakia, Bratislava	1 430 000	na		na
5.	HT Computers, Bratislava	1 140 524	17,2	151 816	12,7
6.	K+K, Zilina	1 092 178	15,9	127 054	3,3
7.	Panasonic Slovakia, Bratislava	1 002 157	2,6		na
8.	I.M. Computer, Bratislava	868 071	21,1	35 508	-4,6
9.	S&T Slovakia, Bratislava	789 994	60,6	73 912	-0,4
10.	Damovo Slovakia, Bratislava	786 789	55,1		na

*Source: TREND Analyses (2002)*

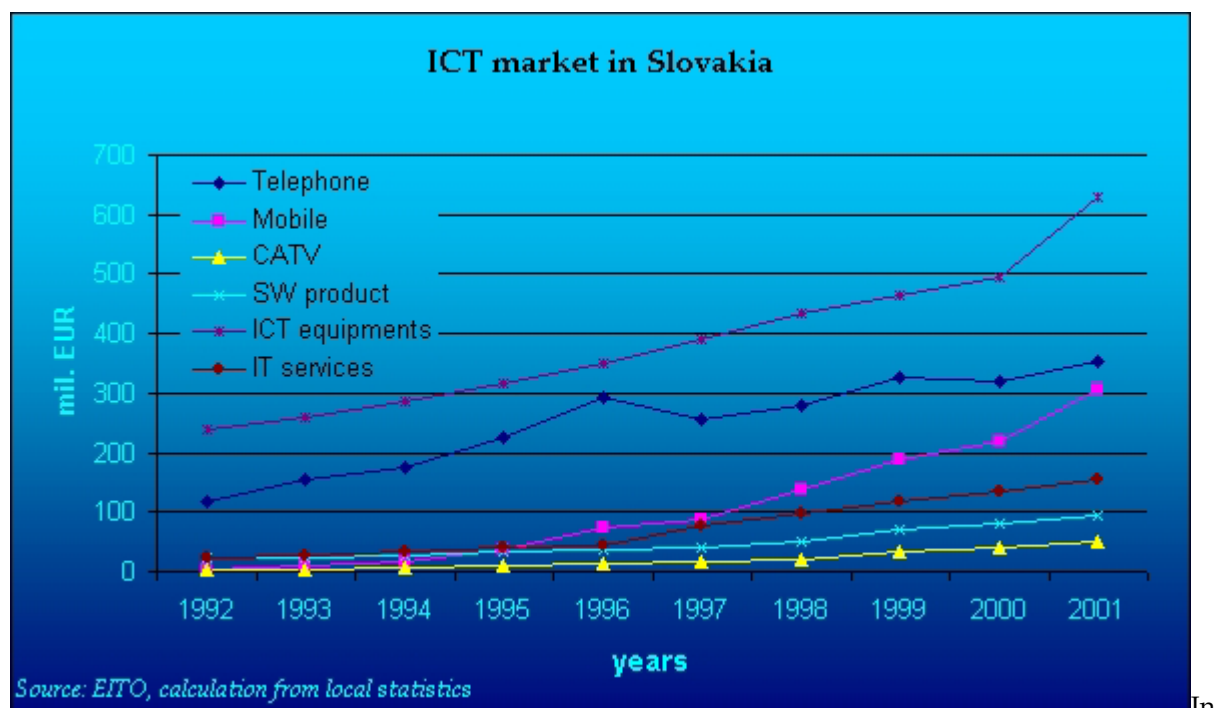
**Table 3: Seven biggest IC operators in Slovakia (2001)**

Rank	Company Name	Turnover	
		2001 (thous. SKK)	2001/2000 (%)
1.	Slovak Telecom, Bratislava	20 219 988	9,8
2.	Orange Slovensko, Bratislava	10 172 363	34,9
3.	EuroTel Bratislava, Bratislava	7 988 790	33,1
4.	Nextra, Bratislava	220 145	56,8
5.	ViaPVT, Bratislava	138 217	37,8
6.	Slovanet, Trencin	130 604	78,1
7.	eTel Slovensko, Bratislava	95 310	n.a.

Source: TREND Analyses (2002)

In 2001, total amount of the ICT market in Slovakia was € 1,640 mil. (in comparison with € 393 mil. in 1992).

**Fig.1: ICT market in Slovakia (1992 – 2001)**



Slovakia, the ICT sector is, at governmental level, under the competencies of:

- the Ministry of Transport, Post and Telecommunications (mainly for the IC sector)
- the Ministry of Economy (ICT manufacturing).

Relevant regulatory bodies related to the ICT sector in Slovakia are as follows:

- the Telecommunication Office (IC sector),
- the Antimonopoly Office (competitiveness)
- the Broadcast and Retransmission Board (only CATV services)
- the National Security Office (digital signature).

This study is based on a bibliographical and statistical review (from national, EU and international sources) as well as Internet searches, articles, study reviews and finally on interviews with ICT experts, economists, academics, government representatives and journalists. For a comparison of ICT specific indicators in Slovakia the same indicators were selected as from other Visegrad group (V4) countries or by the EU average, Greek and Austrian indicators.

The first section opens discussion on present trends and expected growth effects in the ICT sector in Slovakia by the entry of Slovakia to the EU (including comparison with the EU, Greece and Austria).

The second section includes analyses on the current status and the expected effects of EU accession on foreign trade and evolution of net exports in the ICT sector in Slovakia.

The third section analyses current trends and the expected effects of accession on foreign direct investments in the ICT sector in Slovakia (including comparison specific FDI impacts with the Czech Republic and Hungary during the 1990s).

The fourth section analyses current trends and the expected effects of accession on the labour market in the ICT sector in Slovakia and compares indicators with the V4 countries or other selected countries.

The fifth section is oriented towards the present status and expected accession effects on the regulatory framework in the ICT sector in Slovakia, within the context of new EU regulatory reform in electronic communications.

The sixth section analyses current trends and the expected effects of EU accession on the market structure in the ICT sector in Slovakia, with comparisons of selected significant indicators with the EU, Greece and Austria.

The seventh section concludes this document with a survey of significant short-term challenges, which await the decisions of policy makers and corporations in the Slovak Republic. Challenges are closely related to the period before entry and the few years following the entry of Slovakia to the European Union. Recommendations are aimed at helping the ICT sector in Slovakia to be ready for the full implementation of EU standards and rules in daily practice, immediately upon the moment of entry to the European Union.

# **1. Growth effects of EU accession**

## **1.1 General trend**

The ICT sector has a profound impact on the potential for economic growth – it has become one of the main sources of competitiveness and increases in income. As a result, it has moved to the centre of the policy debate. The Lisbon summit (March 2000) set the ambitious target of becoming the world's most “competitive and dynamic knowledge-based economy” within ten years; it recognized that the achievement of this goal depended on making the best possible use of ICT. Later, the correction of excessive stock market valuations and the consolidation phase taking place within the ICT sector, eliminated most of the exaggeration that has clouded the debate in the past. Statistical evidence has allowed the emergence of a broad consensus that ICT is, indeed, increasing the rate of growth of productivity. Finally, the way in which ICT is changing the lives of enterprises, workers, public administrations and citizens in general, is becoming more widely understood.

During the second half of the 1990s, several countries have recorded a resurgence of economic growth and productivity, steady or declining inflation and diminishing unemployment. Developments have been reflected in the economy through the ICT sector. The wide application of ICT has led to a rapid decline in prices and costs in the areas of computing and telecommunications, with positive repercussions for a variety of other products, including for production (aircraft, automobiles, scientific instruments). In turn, the sharp decline of the level of ICT investment into enterprises in 2001, in the US and then in Europe, had a negative impact on the prospects for economic growth.

In Slovakia, in the course of 2001 as well as during the first half of 2002, the pace of GDP growth was gradually speeding up. The dynamics of real economic growth were, in 2001, again comparable with the results of economic growth in the V4 countries (the Czech Republic 3.5%, Hungary 4.0% and Poland 1.5%) after a two-year attenuation (1999 to 2000). GDP growth in the first quarter was even the highest amongst the V4 countries. Real GDP growth (3.3%) was the result of the negative benefit of net exports to GDP (-4.0 percent) and the positive benefit of domestic demand (7.3 percent). The negative balance of net exports achieved -8.7% of GDP at current prices. This means a considerable year-on-year impairment of the development of net exports.

## **1.2 ICT sector in Slovakia**

In 2001, in the industrial structure of GDP creation, variation was manifested by a more distinct GDP growth in:

- industrial production (10.2%),
- transport (14.7%)
- and posts and telecommunications (9.9%).

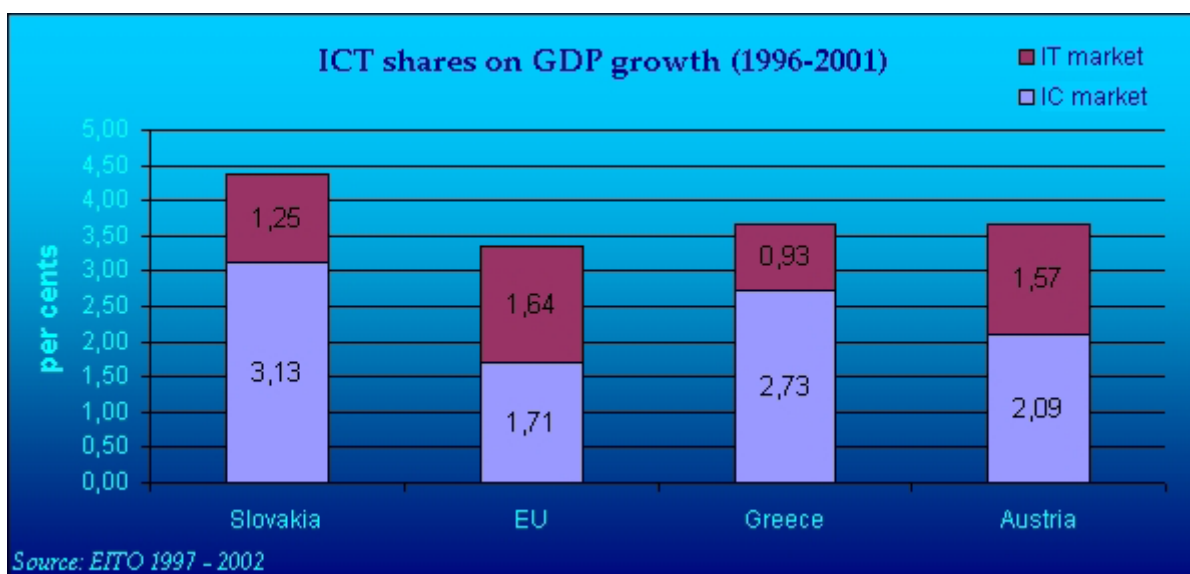
In the first half of 2002, economic growth kept speeding up, the pace of real year-on-year GDP growth attained 3.9%. Economic growth in the Slovak Republic in the first half-year of 2002 was substantially faster than in the OECD countries (1.1%) or the EU countries (0.6%). This result was especially caused by a strong growth in private consumption (5.6%) as well as a year-on-year improvement of the development of net exports. The result of net exports continues being negative (-6.5% of GDP), being slightly more favourable than in 2001 (-7.1%). The performance of the economy of the Slovak Republic, measured in GDP per capita in PPP, attained 12,050 USD in that period – this being 48% of the OECD average. The proportion towards



the OECD average has not been changed in a more distinct way, oscillating in the range from 46% to 50% in the period of 1997 to 2000. From among the V4 countries, Hungary (54%) and the Czech Republic (59%) have a more favourable result, while Poland (41%) is less favourable in comparison to the Slovak Republic.

During the period 1996–2001, the share of the ICT market on GDP growth had a higher value (4.38%) than the EU average (3.35%) or in Greece and Austria (both 3.66%). After detailed analyses of the structure of the ICT market, it is possible to conclude that this situation is mainly created by a very high value of the IC market share in GDP growth (3.13%). Because of telecommunication tariffs in Slovakia that are very similar to the EU average (for details see chapter 5), this indicator (in comparison with the same indicators for the EU, GR and A) mainly reflects the situation in Slovakia, where the development and impact on GDP of sectors of the economy other than telecommunications, is much lower than in the EU countries. In Slovakia, the IT sector (including ICT manufacturing) plays a more important role in contribution to the GDP growth (Fig.2.) than in Greece.

**Fig. 2: ICT shares on GDP growth (1996-2001)**



After detailed analyses of the results of Slovak ICT sector companies in 2001, it is possible to present the following trends:

- ICT sector companies play an important role in the impact on GDP growth (12% of the TOP 60 business companies belong to the ICT sector),
- all three main telecom operators are involved in the best 23 business companies (Slovak Telecom – ranked in 4<sup>th</sup> position, Orange – 10<sup>th</sup> and Eurotel – 23<sup>rd</sup> position),
- four ICT industry companies are involved in the best 60 business companies,
- all three main telecom operators, together with three IT companies and seven ICT industry companies, have increased their ranked positions (in comparison with 2000),
- only one IT company, together with two ICT industry companies (TV sets and automotive cable components), have decreased their ranked position in 2001, in comparison with 2000.

The structure and development of the ICT market value in Slovakia during period 1992 – 2001, is included in Fig.1 and in Tab. 4. All specific ICT markets (in local currency) have gradually increasing trends of development.

**Table 4: ICT market value in Slovakia (1994-2001)**

<b>Market value</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
ICT market (€, mil. )	393	533	640	900	1 060	1 242	1 342	1 640
IC market (€, mil. )	205	290	390	582	744	827	882	1 104
IT market (€, mil. )	188	243	250	319	315	415	460	536

Source: EITO

The influence of ICT investments on GDP growth in Slovakia is difficult to discuss because there is a lack of specific statistical information. Nevertheless, the highest investments among the ICT sector companies are represented by all the main telecommunication operators (in 2002, three main telecom operators spent the amount of € 370 mil. on investments – which represents the same value of investments by Slovak Telecom during the period 1992–1995). During the period 1998-2001 (Table 5), investments in the ICT industry had slowly increasing trends in the manufacture of office machinery and computers and a more or less stable level in the manufacture of radio, television and communications. ICT industry sector investments did not play a significant role in the level of total investments in the industry during the last few years (max. 8.8% in 2000).

**Table 5: Investments in ICT-manufacturing during 1998-2001**

<b>Investments in ICT-manufacturing (in thous. SKK)</b>					
<b>NACE Category</b>		<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
10-41	Industry in total	111 606 738	85 702 607	75 143 419	96 475 659
15-36	Total manufacturing	69 507 922	69 800 118	42 033 312	70 936 870
30	Manufacture of office machinery and computers	3 551 510	3 364 831	4 281 011	4 903 622
32	Manufacture of radio, television and communication	2 258 849	2 190 569	2 326 694	2 137 090

Source: Yearbook of Industry (2001, 2002), Slovak Statistical Office

### 1.3 Expected effects of EU Accession

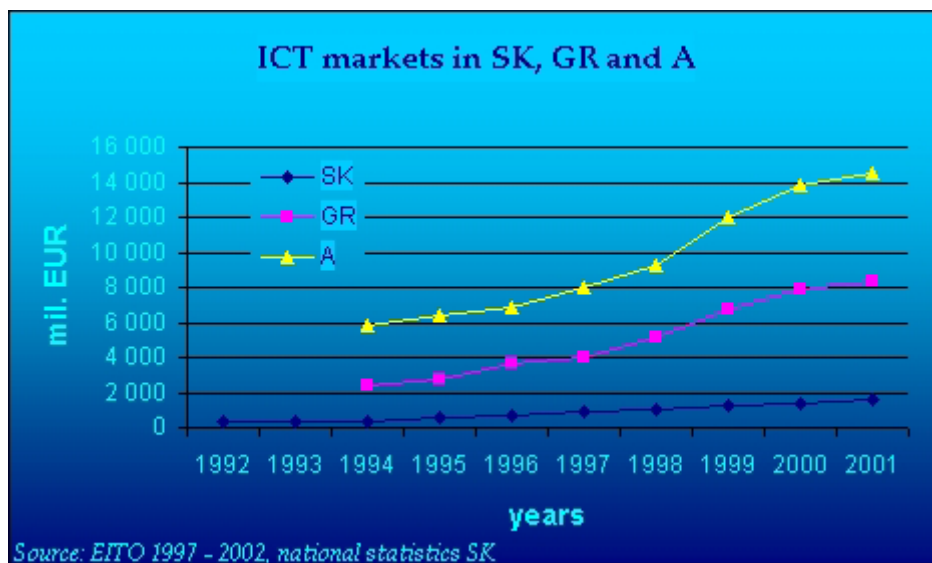
SAV in its study<sup>1</sup> expects that, for the sectoral structure of the economy, although the effects of Slovakia's integration into the EU in the period before 2008 should be reflected in increased added value based on a further increase in the primary sector's productivity, it will also result in a decrease in its share in the Slovak economy's total added value. On the other hand, the overall share of the secondary sector in the total added value could rise, especially due to a substantial increase in the added value from gross production based on the high effectiveness of investments. This applies above all to manufacturing. The rise in the secondary sector's share should leave the share of the service sector basically unchanged, even though the rate of added value and labour productivity might substantially increase here. Sectors such as the manufacture of machinery, electrical and transport equipment, as well as the manufacture of chemical and pulp-paper products, should gain a greater importance in the structure of manufacturing. The rubber industry, manufacture of non-metallic mineral products and the food industry, will probably retain their current share. The share of metal, textile, clothing, and leather production as well as simple wood processing in the

<sup>1</sup> Economic and Social Contexts of Slovakia's Accession to the EU - benefits and risks (Summary) Written by: Ing. Richard Outrata, CSc. et al., Institute of Slovak and World Economy of the Slovak Academy of Sciences

total added value, will probably decrease (even though it will continue to grow in absolute terms). The revenue and expenditure effects, related to the adoption of the principles of EU budgetary policy and implementation of the acquis, will add around 1% to GDP growth. However, if accession takes place in 2004, the overall real growth of the Slovak economy in 2004-2006 could reach 4.8% annually (only 3.7% if accession takes place later) and as much as 5% in 2004-2008 (4.1% if accession takes place later). Slovak Academy of Science's model calculations show that inflation will be maintained at the level of around 6.7% in 2004-2006 and should, after 2006, gradually fall to a level typical for developed economies.

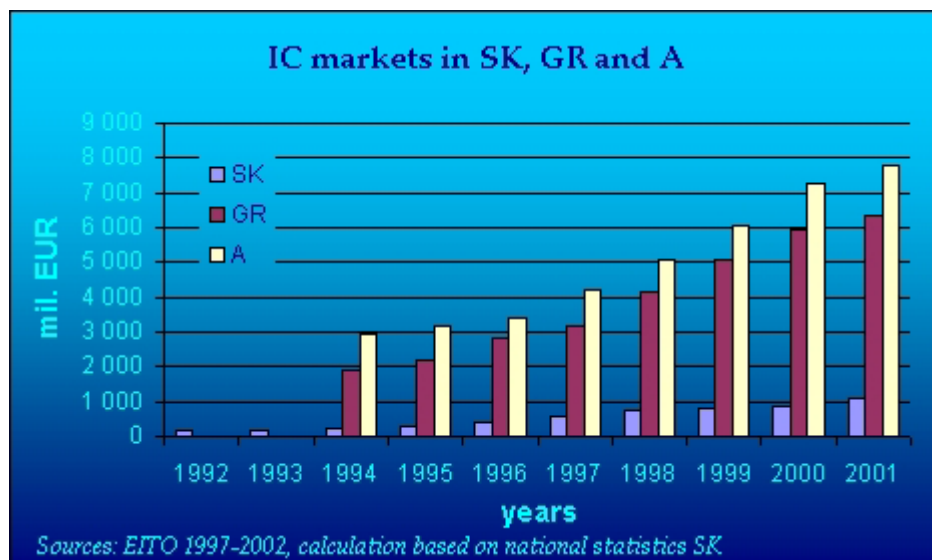
Since there has long been a very high level of competitiveness in the SW sector, its role in the new single "EU 25" market can only be expected to increase.

Fig.3: ICT market values in SK, GR and A



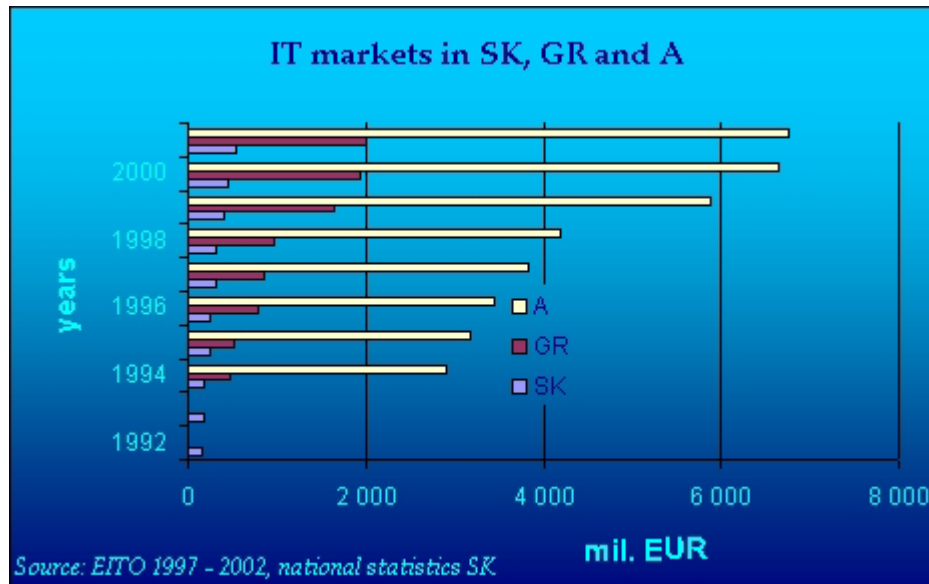
There is also the possible expectation of the further rise of ICT market shares on GDP growth in Slovakia during 2004-2006, because of the expectation of a higher development and acceleration of the telecom sector (depends mainly on starting real competition also in fixed networks/services) than the expectation of stabilization or an increasing role of sectors other than ICT.

Fig.4: IC market values in SK, GR and A



In Slovakia, similar positive development trends can be expected to present themselves in the IC sector, by the acceleration of the total value of the markets regarding comparison with the development trends of the same sectors in Austria (EU membership since 1995, opened the telecom market in 1998), or Greece (EU membership since 1981, but only opened the telecom market in 2001) – Fig.3 and Fig.4.

**Fig.5: IT market values in SK, GR and A**



In Slovakia, positive development trends can also be expected to present themselves in the IT sector, by the acceleration of IT companies revenues (mainly by IT wholesalers and SW companies). The ICT industry market value should also be developed. But the speed of acceleration of the development of the ICT industry in Slovakia is more questionable, because this part of industry (oriented mainly on ICT components) depends very closely on global ICT development.

## 1.4 SWOT analyses

STRENGTHS	WEAKNESSES
development of economy during last few years	relative low standard of living
growing penetration of mobile communications	high prices for PCs
	high telephone and internet prices
	main ICT industry products oriented on components only
	high level of VAT for IC services (since 1998)
	limited local applied research (ICT industry)
OPPORTUNITIES	THREATS
fully liberalization of telecommunication market	negative economic development
SW sector competitiveness	regional development disparity
gradual decreasing of VAT for ICT products and services	
“discovering” of the country by new investors	
low level of internet penetration (households)	

## 1.5 Conclusion

The European Commission makes a note<sup>2</sup> that, “Slovakia has made significant progress in the field of institutional and legislative improvements of the business environment. However, a big effort is still needed in addressing shortcomings such as corruption, excessive bureaucracy and inconsistency in legislation. Further improvements are also needed concerning bankruptcy and insolvency procedures, to enhance the role of creditors, improve the quality of trustees and expand the capacity of the judicial system to implement bankruptcy legislation in a fully effective manner ... It should be noted that an important element of any industrial policy is the control of state aid and the compatibility of support schemes with EC rules.”. In another part of the document<sup>3</sup>, the EC also underlines that, “the most important issues affecting the Slovak business environment have been identified and addressed and the business environment has improved overall as a result of measures introduced mainly in 2000 and 2001.”.

Slovakia can still be characterized as not yet fully developed for ICT and its use. Therefore there will still be a high demand for the further development of new goods, services, etc.

Finally, in Slovakia it is realistic to expect positive impacts on the growth of GDP, investments and exports by the development of the ICT sector in the new “EU 25” market. The main risk can be expected only in the case of negative changes in the level of the domestic or European economies.

<sup>2</sup> European Commission: Regular report on Slovakia’s progress towards accession, Chapter 15 - Industrial policy (2002).

<sup>3</sup> European Commission: Regular report on Slovakia’s progress towards accession, Chapter 16 – SMEs (2002)

## **2. The EFFECTS OF accession on foreign trade and THE evolution of net exports**

### **2.1 General trend**

In Slovakia, results of a comparison of exports from the perspective of applying production within the period, indicate a persistence of negative tendencies in the structure of export production. According to the Ministry of Economy, imports intended for production interim consumption in 2001 (12.8%), increased in a more distinct way, representing almost 50% of total exports. On the contrary, investment exports increased only by 6.2% (down to 17.5% - a difference of -1%). Exports for final consumption have a one-third share (growth +12.1%) in total exports. More than 90% of the exports of goods are provided for by industry.

In the structure of exporting products, industries with a low rate of added value dominate. A stable integral part of Slovakia's exports is in the category of machinery and electrical devices for voice recording and reproduction (13% of total exports in 1999 to 2000, 14% in 2001). A negative point is also the fact that, except for some final products (e.g. washing machines, machines for automatic data processing, TV sets etc.), products intended for interim consumption start more and more to dominate (parts, shafts, bearings, pumps, compressors, cables, circuits). Cables themselves constituted almost 33% of this sub-group.

Another dynamically developing part of the electro-technical industry, with production almost exclusively intended for export, is printed circuit boards. Again, it is an operation that is demanding of manual labour. In Slovakia, there are several foreign investors in this area (Matsushita, Punch, Semecs). Other foreign investors also extend their activities to final products (Matsushita to video-recorders and hi-fi sets, Alcatel to PBX - private branch exchange); the matter is, in production, pursuant on foreign sources and does not tie up any domestic development capacity.

In 2002, year-on-year growth in exports increased by 6.5%, to 651.3 billion SKK (15.3 billion €). In relation to the most significant trade partners, exports to Germany were higher by 2.2%; to Italy by 29.4%; to Austria by 0.8%; to Hungary by 8.1%; to France by 12.9%; to the Netherlands by 15.1% and to the United Kingdom by 2.8%. Exports to the Czech Republic were reduced by 2.5%; to Poland by 2.4% and to Belgium by 7.9%.

From the point of view of major economic groupings, exports to EU countries increased by 7.7% (creating 60.5% of the total exports of the Slovak Republic); to OECD countries by 6.5% (sharing in the total exports of the Slovak Republic with 91.5%) and to CEFTA countries by 0.4% (creating 28.3% of the total exports of the Slovak Republic).

The National Bank of Slovakia notes that global exports from Slovakia very closely depend on the export activities of a few of the biggest companies.

### **2.2 ICT sector in Slovakia**

In Slovakia, the total amount of exports in the electro-technical industry (SKK 63.9 Bil.) have been increased 2.4-times during the period 1997-2001. The highest increase was made by NACE 30 (3.9-times) and NACE 32 (2.9-times). The total amount of imports in the electro-technical industry (SKK 101,6 Bil.), has been increased by 1.8-times. The negative balance in the electro-technical industry reached SKK 37.7 Bil. during the period 1997-2001. The main reason for such a result was mainly the import of high-tech technologies (telecommunications and PCs), which are influencing the majority of development activities in the country. The highest shares in foreign trade were made by NACE 31, followed by NACE 32. In the electro-technical industry, the total amount of exports reached 63% of the total amount of imports.

**Table 6: Composition of ICT manufacturing exports (2000)**

	<b>ISIC 32 - Radio, TV &amp; communication equipment</b>	<b>ISIC 30 - Office &amp; computing machinery</b>	<b>ISIC 313 - Insulated wire and cable</b>	<b>ISIC 3312+3313 - ICT scientific instruments</b>
Finland	90	4	2	5
Sweden	85	4	4	7
Portugal	78	4	14	4
Poland	71	6	18	5
Korea	66	32	1	1
Turkey	66	4	27	3
Canada	66	24	3	8
Austria	65	19	5	12
Japan	63	27	2	8
France	60	27	3	10
Mexico	58	29	8	5
New Zealand	58	18	8	16
Czech Republic	58	21	14	7
Greece	57	16	20	7
Denmark	57	23	3	17
Slovak Republic	56	23	12	9
Italy	55	24	7	14
United States	55	31	2	13
Belgium	54	36	4	6
Spain	53	27	10	10
Germany	51	28	3	18
United Kingdom	50	37	2	11
Hungary	44	47	6	2
Norway	41	28	10	21
Australia	40	37	4	19
Netherlands	37	56	2	6
Switzerland	32	25	6	37
Ireland	30	68	1	1
Iceland	20	20	0	60

Source: OECD, *International Trade in Commodity Statistics (ITCS) and Structural Analysis (STAN) databases*, August 2002.

The most important export partners are Germany (33.4% of total exports in 2001, doubly increased during the period 1997-2001), the Czech Republic (20.4% of total exports in 1997, more-or-less stable trend during 1997-2001) and Austria (8.2% of total exports in 2001, increased 3-times during the period 1997-2001).

**Table 7: Exports of ICT manufacturing products from Slovakia during 2000-2001**

<b>Exports of ICT-manufacturing products (in million €)</b>				
<b>NACE</b>	<b>Category</b>	<b>2000</b>	<b>2001</b>	<b>2001/2000</b>
3001	Office machinery and parts thereof	13,633	14,472	6,2%
3002	Computers and information processing equipment	111,207	90,804	-18,3%
3130	Insulated wire and cable	64,508	74,216	15,1%
3210	Electronic valves and tubes and other electronic components	114,409	155,947	36,3%
3220	TV and radio transmitters; telegraphy apparatus	42,124	49,158	16,7%
3230	TV and radio receivers; sound or video recording	148,897	248,773	67,1%
3320	Instruments and appliances for measuring, checking, testing	47,567	60,518	27,2%

*Source: Yearbook of Industry (2001, 2002), Slovak Statistical Office*

After detailed analyses of the structure of the 60 biggest exporters in Slovakia in 2001, from the ICT sector there were included:

- seven ICT manufacturing companies,
- but no IT company (data on exports for the SW sector were not included).

In the case of these ICT industry companies, their increasing of the export values were in the range 3% to 72% (in comparison with 2000), e.g. for Alcatel Slovakia, a main telecom industry company, its exports increased by 20% more in 2001 than in 2000.

Analyses of 60 Slovak business companies with the highest added value in 2001 can be concluded by the following information:

- only one ICT manufacture (ranked in position 50) and three main telecom operators were included (ranked in positions 3, 9 and 13),
- none of the other companies in the ICT industry or IT sector play a significant role in this area at present,
- the SW sector business is perspective but not comparable, at present, with the turnover of the 60 biggest Slovak producers (see also Fig.1).

### **2.3 Expected effects of EU Accession**

Slovakia relies upon the foreign development of ICT, which means significantly extending the “imports” technology sector. This will still have impact on both export and import. However, export as well as import will both be directly influenced by the situation in FDI. The increasing export of software products will continue to rise as well as the import of technologies. The balance between them is difficult to estimate. There is an increase in companies, which provide software and application services abroad, however, the lack of technology will still play a key role in imports.



The Slovak Ministry of Economy notes that benchmarking of the competitiveness of export production (indicator RCA – based on a comparison of export and import in the same industry) based on the segmentation of industry, creates the best position for the electro-technical (and automotive production) sector. These products have the highest influence on further export dynamics. RCA indicators for NACE 30 have been improved from –230.1 (in 1997) to –132.2 (in 2001) and for NACE 32 from –88.1 to –46.7 (Table 8). The real transformation of the RCA indicators from negative to positive values, depends on the further restructuring of the industry and further modernisation of products (closely related to the FDI).

Table 8: RCA indicators in selected ICT production in Slovakia during 1997-2001

		<b>RCA indicators</b>		
NACE	Category	1997	2000	2001
30	Office machinery, computers and information processing equipments	-230,1	-106,9	-132,2
31	Electro-machinery	-22,1	-17,2	-10,1
32	TV, radio and communications devices	-88,1	-70,8	-46,7

Source: *Ministry of Economy (2002)*

The Ministry of Economy forecasts that the increase of investment imports and FDI can, in the short-term, rapidly influence the competitiveness of Slovak products, on foreign developed markets. It is realistic to expect that such foreign investors (global market players), have ensured import in foreign markets. For typical domestic producers, it will be necessary to increase their own marketing activities and correct business strategy under the conditions of foreign markets. A positive impact should bring close relationships of global market players with Slovak producers, which can also further increase net exports from Slovakia.

## 2.4 SWOT analyses

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
general macroeconomic development during last few years	infrastructure – big regional disparities
SW companies competitiveness on international level	strong dependence of majority domestic ICT industry companies on global market development (ICT components production)
quality management in majority ICT industry companies	bank loans conditions during last few years
<b>OPPORTUNITIES</b>	<b>THREATS</b>
new potential business partners in EU-25	negative economic development on national or in majority regions

## 2.5 Conclusion

From the point of view of foreign trade, the importance of FDI has indirect influence mainly on labour productivity, the updating of technology, increases of turnover and the quality of products in co-operating companies.

In document<sup>4</sup>, The Ministry of Economy underlines that the export per capita indicator is two times higher in Slovakia than the same world indicator, whilst the capacity of the Slovak economy achieved a less than 75% average of the world economy indicator.

The National Bank of Slovakia makes a note<sup>5</sup> that the current dynamic of industry restructure is insufficient, because the main domestic industry players are closely oriented towards imports, raw materials and their products have a very low added value.

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<sup>4</sup> Report on results of foreign trade in Slovakia for 2001, including Evaluation of the Complex program for the support of exports (document of the Ministry of Economy for government discussion, February 2002)

<sup>5</sup> Analysis of foreign trade evolution in the Slovak Republic in 2001, (National Bank of Slovakia, February 2002).

## **3. The EFFECTS OF accession on FDI flows**

### **3.1 General trend**

In Slovakia, after the period 1995-1998 (characterised as “malnutrition” in foreign investments), the next period 1999-2002 brought significant shifts from the perspective of the inflow of foreign capital, especially direct foreign investments. The year 2000 made the highest record so far (especially by the privatisation of Slovak Telecom ). In 2000, the FDI amounting to USD 2.1 Bil, exceeded the hitherto position of FDI accumulated during the entire previous transformation period. At the same time, the FDI has exceeded, by 2.8 times, the value of the deficit of the current account. A significant variation in approach for FDI investors was represented by the privatisation of banks and state monopolies.

### **3.2 ICT sector in Slovakia**

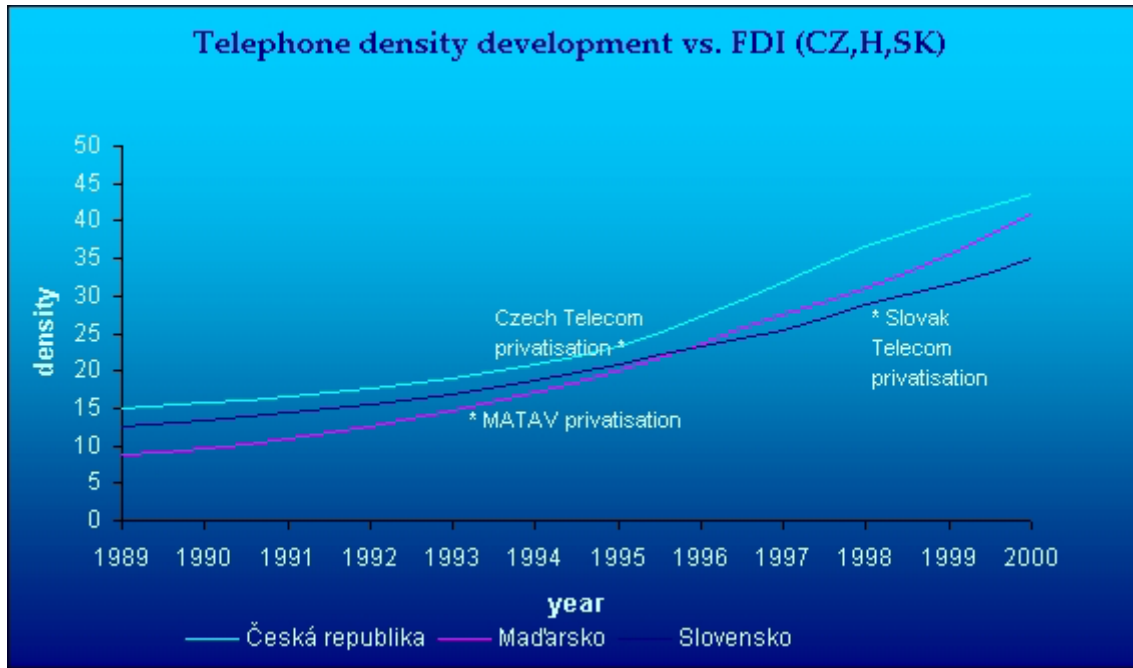
In Slovakia, the ICT industry was one of the first kinds of economy where it has started discussions about how former ICT producers should react to new market challenges, which related to a new situation, an open market. At the beginning of the 1990s, new development requirements of the domestic monopoly telecom operator, directly supported intensions to find foreign global market players, as investors for domestic ICT manufacturers. It was also the reason for a very early introduction of some global ICT market producers (e.g. Alcatel and Siemens) to the Slovak ICT industry. Foreign investors have privatised all of the main ICT industry companies in Slovakia.

In Slovakia, several new SW companies were established by foreign capital in the mid 1990s, with ambitious plans to use local, high-skilled SW experts (sometimes still students) for new, shared or application SW products, at an internationally high competitive level. The IT wholesaler sector was also established very early, but by foreign or local investors.

A totally opposite situation was created during the 1990s, in the IC sector in Slovakia. For the introduction of the first new mobile and data networks and services, daughter companies were established (Eurotel or former Radiokontakt Operator) by the incumbent operator with foreign investors (mainly from the US and France). But plans for the privatisation of the incumbent operator were, at that time, only a subject for discussion and not for implementation. In 1995, a special Act was also adopted, which aimed at forbidding privatisation for all domestic infrastructure monopolies. At that time, a very paradoxical situation was created in the telecommunication sector; legislation prohibiting privatisation vs. the high investment requirements for rapid development of the telecom infrastructure. A single solution (but not perspective for the long-term) solving this situation, was the use of loans from international banking institutions (EBRD, WB, EIB, later also the commercial banks). This period (strongly oriented towards loans for investment) lasted for more than 6 years.

Another non-systematic provision (additional special tax obligations for the monopoly telecom operator to the state budget) was implemented several times during the period 1995-1998. Its negative impacts on investments (required for the situation of being ready for a fully liberalized market), has started to play a negative role in the further development of the fixed-line telephone market in Slovakia.

Fig.6: Fixed telephone density development and FDI (CZ, H, SK)



The significant impact of the influence of FDI on tele-density development “at the right time” during the 1990s, is presented in Fig.6 by comparison amongst the Czech Republic, Hungary and Slovakia. The Hungarian incumbent operator, MATAV, was privatised in 1993 as the first incumbent operator amongst all of the candidate countries. The tele-density of Hungary was lower in 1989 than in the former Czechoslovakia. But during the second half of 1995, the MATAV density exceeded density of Slovak Telecom. The privatisation of Czech Telecom (in 1995) has also brought important capital for investments and new know-how in the telecommunication sector in the Czech Republic. The very late privatisation of Slovak Telecom (in 2000) did not allow it to reach the tele-density values of these two neighbouring countries, even until now. Generally, new business challenges by new technologies (like GSM, VoIP and UMTS), have created problems in the telecommunication market for less developed incumbent operators. This is also the reason why, in 2003, , the year of a fully liberalized telecommunication market in Slovakia, Slovak Telecom did not achieve a 100% digitalisation of its own network. This also has a direct negative impact on customers and new players (carrier pre-selection and number portability problems). More details are also presented in chapter 6 of this study.

In 1996, the second mobile operator (Orange) was established as a joint-venture company between the Slovak energy companies and France Telecom.

In Slovakia, the first Internet service has been provided by SANET (Slovak academic network) since 1993; later commercial operation of it was started by several dozens of local service providers. At the end of the 1990s, in this very fragmented sector, small Internet providers have gradually been combined Internet into a few larger service providers (mainly bought by foreign Internet providers or investors).

CATV services were provided in limited areas before 1989; the quality and scope of service were different in each locality. During the first half of the 1990s, mainly in the largest cities, new local CATV operators were established, which were fully or partially connected with foreign capital investors. Some of the local companies have been combined and created larger operators. In the second half of the 1990s, a process of the involvement the largest foreign investor (UPC) has started, which currently operates the majority of the largest CATV networks in Slovakia. Alternative (mainly based on wireless distribution) CATV services started to provide services in limited areas only a few years ago.

Generally, the benchmarking and country status of Slovakia in ICT development shows a “lag” of Slovakia in the areas of ICT. However, with respect to the expected process (chapter 1.2), the impact of integration will be influenced by an increasing demand for:

- new services,
- use of ICT,
- access to ICT
- and by overall ICT growth and an increasing rate of ICT on GDP.

Such conditions will create a demand for further FDI development into existing companies in order to provide new added services and bring know-how; the open European market will also allow the easier establishment of local branches by foreign ICT companies. A further transfer of certain activities to this region can be expected, which will provide services to a larger region, as is now seen by some examples (IBM, Dell).

**Table 9: Survey of selected ICT companies with foreign investors in Slovakia**

<b>Company Name</b>	<b>Foreign investors</b>
Sony Slovakia, Trnava	100% Sony (Japan)
Alcatel Slovakia, Liptovsky Hradok	100% Alcatel (France)
Emerson, Nove Mesto nad Vahom	100% Emerson (USA)
Osram Slovakia, Nove Zamky	100% Osram (Germany)
Siemens, Bratislava	100% Siemens (Germany)
IBM Slovensko, Bratislava	100% IBM (USA)
Hewlett-Packard Slovakia, Bratislava	100% Hewlett-Packard (USA)
Panasonic Slovakia, Bratislava	100% Panasonic (Japan)
Slovak Telecom, Bratislava	51% Deutsche Telekom (Germany)
Orange Slovensko, Bratislava	64% France Telecom (France)
EuroTel Bratislava, Bratislava	49% Atlantic West B.V. (USA)
Nextra, Bratislava	100% Telenor (Norway)
UPC Slovakia	100% UPC (Holland)
Telenor Slovakia	100% Telenor (Norway)

*Source: TREND Analyses (2002)*

### 3.3 Expected effects of EU Accession

The SAV analyses<sup>6</sup> show that Slovakia's economic development, marked by permanent GDP growth, is accompanied by the creation and deepening of disparities between regions (administrative regions, but especially districts).

The major factors influencing FDI in the ICT sector will not change dramatically from those influencing FDI in other industrial sectors. The main role is played by the overall environment attracting FDI and respected institutions and legislation.

However, a specific role for FDI in the area of ICT, will be played by the accessibility of skilled workforces, which could especially be specific in ICT products and services with a higher added value. Another specific role is the factor of globalisation, which plays an international role overall, since there are trends to integrate services. Amongst other factors are:

- penetration of the Internet, PCs,
- the quality and scope of fixed lines and mobile communications,
- the size of the ICT market.

The negative impact on an attractive environment, concerning the availability of skilled workforces, should be improved by the conceptual government policy in the area of education, training and life-long learning.

The globalisation factor will probably especially play a significant role in the area of ICT. Major investments in the telecommunication area prove the trends of joining activities, integration of services and the restructuring of the core business connected with an outsourcing of the remainder.

In Slovakia during the period 2004-2006, it is possible to expect further higher investments in all parts of the ICT sector, but the majority of investments should be oriented towards the IC sector (new mobile services, personal communications, alternative infrastructure development, etc.).

### 3.4 SWOT analyses

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
IT skilled workforces	insufficient investment incentives
legislation framework	infrastructure – big regional disparities
<b>OPPORTUNITIES</b>	<b>THREATS</b>
requirements for FDI by selected ICT companies	negative economic development on national or in majority of regional levels
not saturated telecommunication market	
regional readiness for foreign investor investments	

### 3.5 Conclusion

Privatisation of the incumbent telecom operator (but also of the banks and other former infrastructure monopolies) in the above-mentioned sectors, unambiguously meant a positive benefit for the Slovak

<sup>6</sup> Economic and Social Contexts of Slovakia's Accession to the EU - benefits and risks (Summary) Written by: Ing. Richard Outrata, CSc. et al., Institute of Slovak and World Economy of the Slovak Academy of Sciences

economy and the management of companies, in the form of new know-how and principles of efficient corporate governance. Despite that, the Slovak Republic lags behind neighbouring countries in the areas of green-field or brown-field investments into the corporate area. Such projects are namely inevitable in the interests of a greater reduction of unemployment, as inputs by investors in large corporations and banks are bringing, within privatisation, a decrease in unemployment related to an increase in efficiency of the operation of such entities.

## **4.Effects of EU-accession on the labour market**

### **4.1 General trend**

The parallel growth of employment (+22 thousand), as well as that of unemployment (+22.8 thousand), was characteristic for development in the labour market in 2001, caused by the number of new labour forces in the labour market. The demographic factor considerably complicated the situation in the labour market from 1999 to 2001. Another decisive point was the resumption in the growth of real-wages (+0.8%) in 2001. On average, economic employment increased by +1.0% in 2001 (whilst the number of unemployed persons has been falling since 1997). The number of unemployed persons increased by 4.7% in year-on-year terms (508 thousand persons), whilst the unemployment rate increased up to 19.2% in 2001, which was the highest unemployment rate in Europe. During 2002, this unemployment decreased to 18.2% and the negative top position in unemployment was taken by Poland.

For the last decade, the significant Slovak economy problems are mainly determined by a lower level of GDP growth, a high unemployment rate and a lower level of competitiveness. The Slovak Ministry for Social Affairs makes a note in a document<sup>7</sup> that “the current Slovak productivity rate is only one tenth of productivity rate of developed countries. Productivity was and still is the main component of economic growth. It expresses a level of competitiveness for corporations. Long-term supporting activities aimed at ensuring growth in productivity, should be based on the following three components: knowledge - skills – mindsets and their change”.

The level of ICT development has a significant role in positive or negative trends to social impacts in each country. The last Eurostat research (March 2003) has presented that the average working price per hour in Slovakia (3.06 €) is 7.5-times lower than the EU average (22.70 €). Higher values are presented only by Cyprus (10.74), Slovenia (8.98), Poland (4.48), Czech Republic (3.90) and Hungary (3.83).

A slight improvement in development of the characteristics of the labour market, is rather thanks to demographic factors and due to making the measures of employment policy more stringent, than due to better operation of the labour market.

The unemployment rate very much varies throughout the territory of the Slovak Republic ; the lowest unemployment rate is in Bratislava, while the highest is in the eastern part of the country.

### **4.2 ICT sector in Slovakia**

The total number of employees for the ICT sector is approx. 39 thousand. The total number of professionals employed by the SW sector is approx. 6 thousand (in foreign-owned companies approx. 2 thousand; the domestic SW development sector comprises about 30 substantial companies employing over 3 thousand people and near to 1 thousand people are employed in up to 200 small companies involved in a range of other supporting SW services). IT wholesale companies have near to 2 thousand employees. The number for IT consulting services employees is insignificant. The ICT manufacturing sector creates job opportunities for approx. 15 thousand employees. All of the telecommunication operators in Slovakia create job opportunity for approx. 16 thousand persons.

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<sup>7</sup> National program for growth in productivity and competitiveness of Slovak economy (document of the Ministry for Social Affairs for government discussion, September 2002)



After detailed analyses of the biggest 65 employers in the business sector in Slovakia in 2001, the following results relate to the Slovak ICT sector:

- only one telecom operator (incumbent operator, ranked in 4<sup>th</sup> position)
- and three ICT manufacturers (the best of them ranked in 45<sup>th</sup> position) were included in this survey.

All three ICT companies have increased the number of their own employees together (in 2001) by 876 (+25% of the total numbers in these ICT companies in 2000), whilst the incumbent operator decreased the number of employees by 581 (4.2% of total employees in 2000). This information can conclude that employment in the ICT sector has a slowly increasing trend, whilst there are precisely contradictory trends in the majority of the other industrial sectors in Slovakia.

**Table 10: Labour productivity in Slovakia**

<b>Indicator</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
<b>Industry</b>				
Monthly labour productivity based on receipts from industrial activities (SKK)	79 928	85 348	95 758	105 746
Average monthly wage (SKK)	10 293	11 107	12 136	13 373
<b>ICT sector</b>				
Monthly labour productivity based on receipts from industrial activities (SKK)	72 316	72 570	85 941	97 249
Average monthly wage (SKK)	9 609	10 547	11 629	12 528

*Source: Statistical Office Report 2002*

The quality of the domestic labour market in each country presents productivity indicators. For the ICT industry sector, relevant figures are included in Table 10. The comparison of wages in the SW sectors in the V4 countries show in Fig.7. Similar data for other service-oriented ICT sectors are not available. However, for the most competitive part of this sector it is less interesting than in the case of incumbent operator(s). For a long-term period, the most significant indicator reflecting the effectiveness of telecom operators, is the number of main telephone lines per one employee. In 2002, Slovak Telecom achieved 179 (in comparison with 56 in 1992). The average monthly wage was SKK 18,300 (in comparison with SKK 3,885 in 1991).

Fig.7: Wages in the IT and software-related industry in the V4 countries (2000)

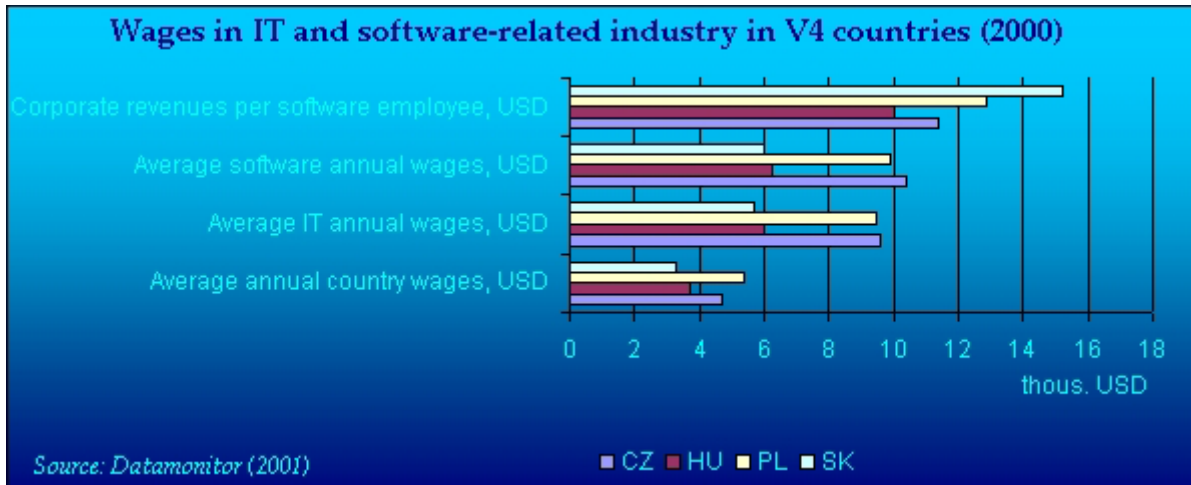
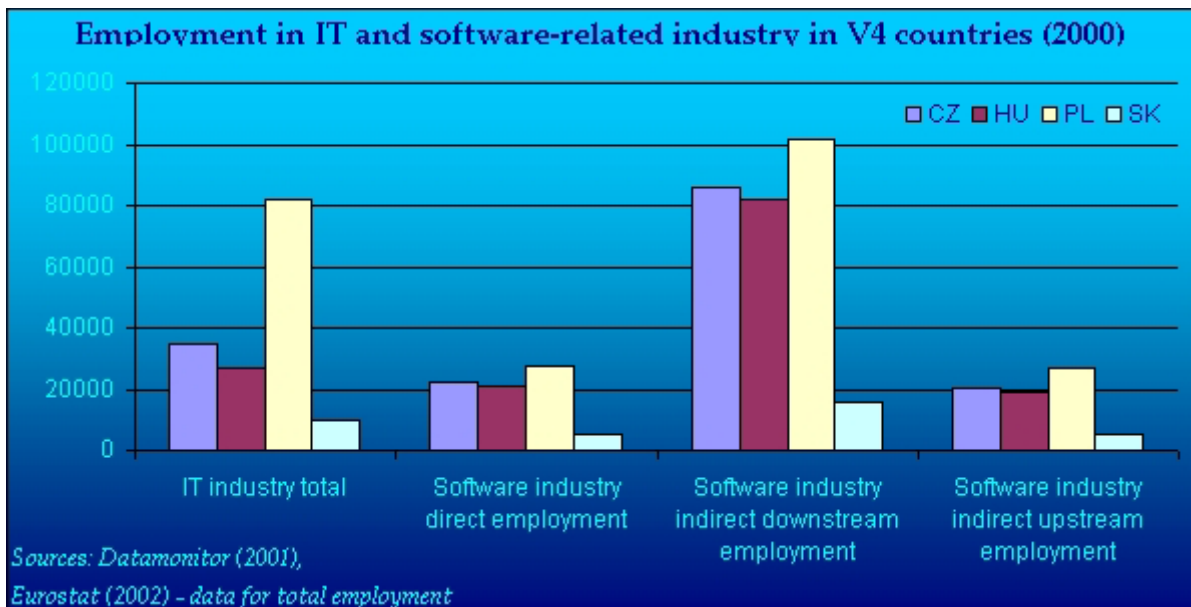


Fig.8: Employment in the IT and software-related industry in the V4 countries (2000)



In many studies it is acknowledged that the past education systems in the CEECs, have produced a large number of highly skilled specialists, including computer engineers. As a study<sup>8</sup> on ICT in Central and South Eastern Europe makes note; “CEECs traditionally have a very high R&D potential in the fields related to the IS. ...”. Several foreign companies are oriented towards using highly skilled specialists, mainly for software services. As was mentioned above, the increase of productivity is also related to knowledge. The World Bank Development Data Group<sup>9</sup> uses a rating from 1 to 7 to measure the availability of highly skilled technology workers in the industry. Employment in the IT and SW-related industry in the V4 countries is introduced in Fig.8. Fig.9 represents the ranking for the highly skilled IT job market in selected countries. The survey of IT graduates as a percentage of all fields of study is represented in Fig.10.

<sup>8</sup> Antelope Consulting (2000)

<sup>9</sup> Data are based on the Global Competitiveness Report 2001 of the World Economic Forum, as stated in the methodological notes to the ICT at a Glance tables (9.9.2002).

Fig.9: Highly-skilled IT job market (International ratings related to ICT skills and training)

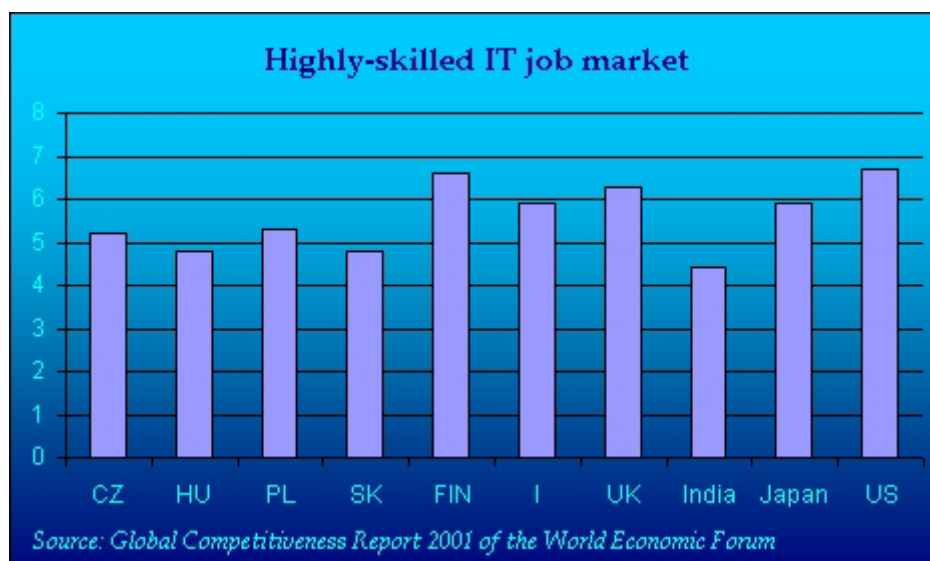
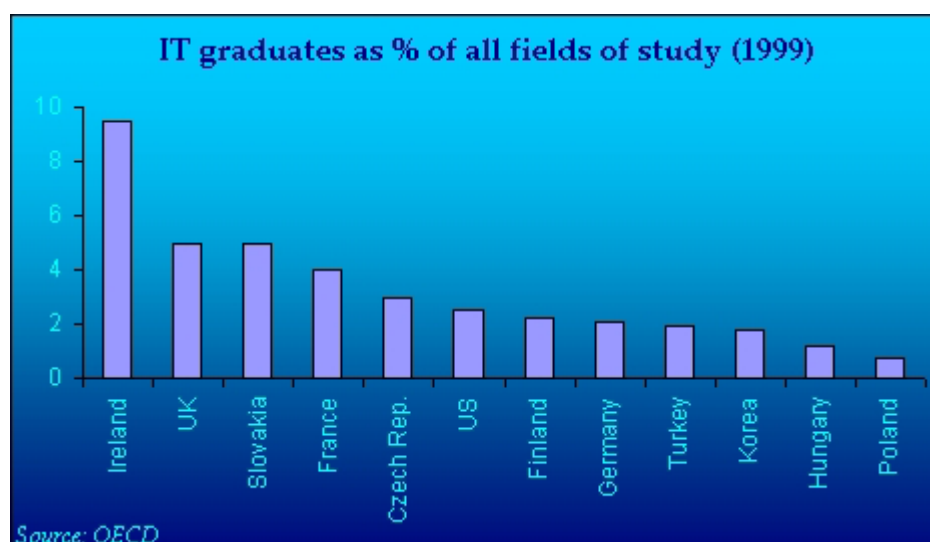


Table 11: Employment in the IC sector in Slovakia

Indicators – employment	1993	1994	1995	1996	1997	1998	1999	2000	2001
Public Fixed Telephone Network Operator (employees)	15 824	15 653	15 633	15 822	15 871	16 264	15 883	15 111	14 653
Mobile operators - total employees	141	173	236	366	997	1 387	1 531	1 603	1 802
Other operators (estim.)	100	150	200	250	300	400	500	600	700

Source: Ministry of Transport, Posts and Telecommunications, estim.

Fig.10: IT graduates as % of all fields of study (1999)



### 4.3 Expected effects of EU Accession

According to SAV model calculations, compared with 2001, the average nominal wage should increase roughly 1.55 fold in 2006 and 1.88 fold by the end of 2008. While an average increase of 8.7% annually is

expected in 2002 and 2003, it should rise by 9.7% annually between 2004 and 2008 (if accession takes place later, then only 8% annually).

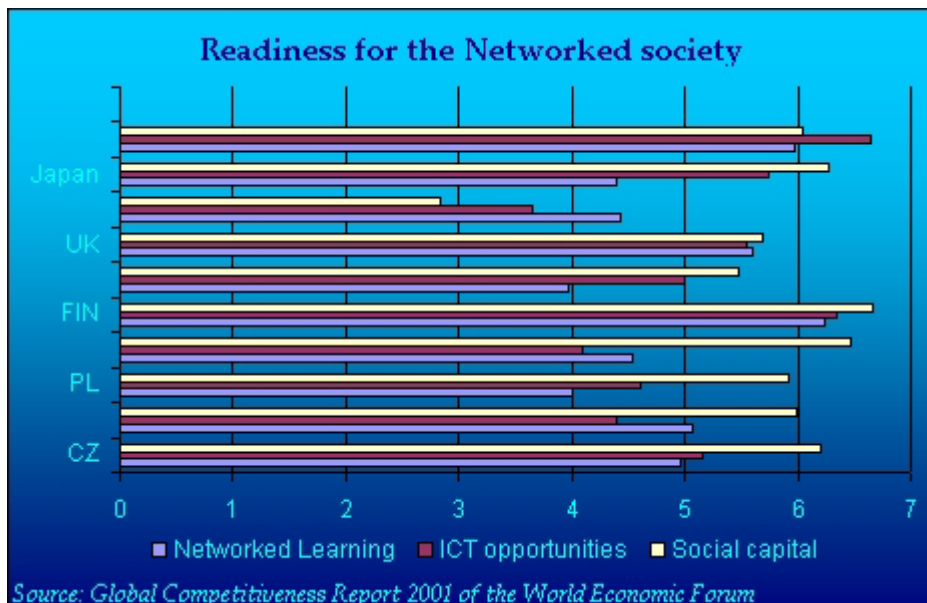
After two years of decline and a slight increase in 2001, real wages could rise by 3.6% (annual average) in 2002 and 2003, whilst their growth will slow down to around 2.7% annually between 2004 and 2006. Their growth could again oscillate around 4% (annual average) in 2007 and 2008. This pace of growth in real wages is in good conformity with the growth in labour productivity and does not therefore pose a threat to the macroeconomic balance.

A slight increase in employment of approx. 1.0% was achieved in 2001 and it could continue to rise at a similar pace in 2002 and 2003. The gradual rise in the pace of GDP growth and a more intensive inflow of foreign capital in following years, could result in a rise in employment in 2004-2008, at the average annual rate of 1.2%. The model projections took into account the decelerating effects of restructuring and the related growth in labour productivity and average wages. The unemployment rate could fall from its current 19%, to a level of around 15%, in 2008.

A positive trend in employment during the period 2004 – 2006 and a gradual increase in productivity, can be expected in all ICT market segments in Slovakia. In the middle of 2002, Slovak Telecom published information that its short-term target is to reach 220 main lines per employee (in comparison to 300 or more in the incumbent operators of EU-15).

A comparison of selected countries, reflecting their readiness for a networked society, is given by Fig.11.

**Fig.11: Readiness for a Networked society (International ratings related to ICT skills and training)**



#### 4.4 SWOT analyses

STRENGTHS	WEAKNESSES
IT skilled professionals well-developed IT education system lower level of social capital	IT training system for older population regional disparities
OPPORTUNITIES	THREATS
late fully liberalization of telecommunication market only few ICT opportunities during last few years	digital divide between regions

#### 4.5 Conclusion

The sensitive role of the ICT product and IC market development, will undergo a gradual rise in productivity growth, which can be more supported by a full liberalization of the telecom markets and by the direct impact of liberalization in decreasing the relevant telecommunication tariffs (mainly for Internet use) comparable to purchasing parity.

## **5. The EFFECTS OF EU accession on the regulatory framework**

### **5.1 General trend**

At present, the specific EC legal framework on electronic communications, is in a transformation period with a deadline for EU member states to implement it by the end of July 2003, at the latest. This legislative document is called "2003 acquis". For candidate countries, there is the obligation to implement them before May 1, 2004 - the day of the candidate countries' entry to the EU.

However, during the period 2001-2002, the European Commission issued several supporting documents to make easy implementation of the currently valid "1998 acquis" ("top 10 regulatory topics"). There was the expectation that candidate countries will also follow these instructions and will implement them in practice.

Both "acquis" are oriented on the introduction of clear and transparent procedures:

- ensuring a competitive environment in practice,
- influencing both extensive and intensive growth of all telecom markets and
- also supporting new investments in the ICT sector.

In Slovakia, all activities in the ICT sector are influenced from the government level, directly by legislative documents or indirectly by state specific sector policy documents. The ICT sector represents different activities in several different markets (manufacture production, supply of products, SW products, construction or operation of telecom networks, providing different kinds of telecom services, providing content services – e.g. radio and TV broadcast).

At present, at government level, only one common (over-sectoral) policy document was approved – the State Information Society Policy (adopted in June 2001 by resolution 522/2001). Unfortunately, it is only a policy paper without any requested implementation document(s) - e.g. National Strategy for Information Policy Implementation, or Action Plan for Information Policy in Slovakia (similar to the eEurope+ document), which has not at present been approved.

Other specific sector policy documents are oriented towards industrial policy, making Slovakia attractive for new foreign investments and the State Telecommunication Sector Policy (approved in 2003).

In general, at the legislative level, all main business activities in the ICT sector are regulated by the Commercial Act. The scope of this law is adequate for the non-problematic commencement of business activities in the Slovak Republic. The main problems can be expected in the case of following the procedures of other Acts related with administrative processes, scope of data requested, or time deadlines for submitting it to the relevant administrative organizations. Unfortunately, there are at present, only minimum possibilities of using electronic methods of communication with state administration.

A specific law on investment motivation was adopted in January 2002. This document supports potential foreign investors starting businesses in the Slovak Republic.

The Act on digital signatures was only approved in 2002; special decrees related to its implementation were adopted before the end of 2002. The first real applications for the use of digital signatures are expected during 2003. The regulatory body for digital signature certificates is the National Security Office.

The relationship between companies and employees is regulated by the Labour code, which came into force on 1<sup>st</sup> April 2002. In May 2003, it was amended by several principal changes motivating the acceleration and improvement of the labour market in Slovakia.

Specific IC activities are regulated by the Telecommunication Act (No195/2000 Coll.), which entered into force on 1<sup>st</sup> July 2000. This act has replaced the previous 36-year old telecommunication legislation. The current legislation is trying to implement "1998 acquis" into Slovak legislative system. The main problem of the valid act, is an absence of clear legal provisions and their implementation in practice, for new players coming to the market, as well as for the regulatory body to effectively and timely solve, or positively influence, (potential) disputes.

The licensing regime is complicated and has negatively influenced dynamics of liberalization in practice (structure of licences - Table.12). Important implementation for the use of "last mile" access to customers (local loop unbundling regime) is still missing. Last August, the Slovak Parliament did not approve the amendment of Telecommunication Act for the second time, which also implements the LLU regime, after the president's veto.

**Table 12: Structure of licenses issued by the Telecommunication Office for telecommunication networks and services in Slovakia (March 2003)**

type of licenses	type of licenses
fixed networks	VSAT
NMT-450	voice telephony
GSM	frame relay
FWA	data services
UMTS	Audiotext
rental of optical fibres	Internet
leased lines	teleconference services
radio equipments	VPN
MVDS	ISDN
satellite networks	VoIP

At present, there are three other documents of secondary legislation, which regulate specific aspects of the telecommunication sector:

- a. MTPT Decree (No.97/2001 Coll.) on the set minimum of telecommunication circuits, which determines the set minimum of telecommunication circuits and parameters for public telecommunication network operators with significant market power providing the telecommunication service of leased telecommunication lines,
- b. MTPT Decree (No.142/2001 Coll.) stipulating details about selected radio equipment, on the establishment of a board of examiners, on the content, extent and course of the examination and on certificates of special professional competence,
- c. Slovak Government Decree (No.443/2001 Coll.) setting the details of technical requirements and on the conformity assessment procedures for radio and telecommunications terminal equipment. (related as RTT directive implemented into Slovak legislation)

The main positive aspects in regulatory practice in the telecommunication sector, during the last few years, are as follows:

- universal service standards (incl. quality of services),
- implemented price cap regulation,
- real-time tariff system.

**Table 13: Indicators – fixed telephone tariffs (June 2002)**

<b>Indicators - tariffs (June 2002)</b>	<b>CZ</b>	<b>H</b>	<b>PL</b>	<b>SK</b>	<b>EU aver.</b>
Monthly fee (€) incl. VAT	10,2	12,3	10,7	5,5	11,78-11,96
Monthly fee (€/PPP) incl. VAT	22,3	25,5	19,1	14	11,91-20,15
Local calls - 3 minutes (€cents)	14,4	13	8,7	13,3	14
Local calls - 3 minutes (€cents/PPP)	31,4	27	15,6	33,8	14,5
Local calls – 10 minutes (€cents)	47,8	38,7	34,9	36,6	40,4
Local calls – 10 minutes (€cents/PPP)	104,8	80,6	62,5	92,9	41,6
Long distance calls - 3 minutes (€cents)	37,4	38,7	36,7	33,4	35,5
Long distance calls - 3 minutes (€cents/PPP)	82	80,6	65,6	84,9	37,7
International calls to USA - 10 minutes (€)	3,4	3,8	10,5	2,7	2,31
International calls to USA - 10 minutes (€/PPP)	7,5	8	18,8	6,9	2,42

*Source: EC - 2nd monitoring report (IBM, 2002)*

The main negative aspects in regulatory practice in the telecommunication sector, during the last few years, are as follows:

- regulatory capacities (only 7 of 186 employees in regulatory departments),
- absence of carrier pre-selection regime implementation (discrepancy with valid EU standards),
- very late number portability implementation (January 2005),
- late decisions on notification of SMP operators,
- absence of a local loop unbundling regime,
- several unsuccessful public tenders for a 3<sup>rd</sup> mobile operator during the last few years,
- independence of the regulatory body to the government is only declarative (budget),
- non-transparent ownership framework (the Ministry of Telecommunication is the policy maker but also the owner of 34% of the shares of Slovak Telecom),
- minimal activities positively influencing the speed of implementation of the latest technologies (ADSL, Internet through CATV networks, etc.)
- lack of transparency in the publishing of interconnection agreements, reference offers, licence conditions, quality of services indicators, etc.



**Table 14: Indicators - Internet affordability (June 2002)**

<b>Indicators - internet affordability (June 2002)</b>	<b>CZ</b>	<b>H</b>	<b>PL</b>	<b>SK</b>	<b>EU aver.</b>
Internet access to home (%)	17	9	n.a.	3	37
HOSTs per 1 000 inhab.	21,1	17,1	14,4	15,2	35
Internet access - 40 hours, peak (€)	61	40	20	47	70
Internet access - 40 hours, peak (€/PPP)	134	82	36	119	72
Internet access - 20 hours, peak-off (€)	12	22	13	13	28
Internet access - 20 hours, peak-off (€/PPP)	27	47	24	33	30

*Source: EC - 2nd monitoring report (IBM, 2002)*

### 5.3 Expected effects of EU Accession

At present, the process of Information Society activities in the Slovak Republic is determined by the following facts:

- there is insufficient co-ordination at government level for an Information Society
- several ministries have begun supporting the participation of the Slovak Republic in pilot projects of the Action Plan, adopted at the 2<sup>nd</sup> Forum of EU and Central and Eastern European countries (CEEC) on the Information Society,
- the document "Information Society Policy in the Slovak Republic" was adopted by Government in June 2001, but the expected subsequent documents (National Strategy, Action Plan for eEurope+) are still in preparation,
- In 1997, the Ministry of Transport, Posts and Telecommunication started implementing the problems of Information Society into the telecommunication policy of the Slovak Republic,
- competencies for the topics mention have twice been transferred during the last three years.

The IT sector has operated in a fully liberalized environment since 1990. Several IT companies (mainly in the IT services sub-sector) have competed with similar foreign companies for many years, on an international level (SW centres). For the local IT manufacturing sector, there is the expectation of doing business more easily (minimization of administrative barriers related to foreign trade) with business partners from the new single EU market. Significant negative aspects are not expected, because of the currently strong international competitive environment in these areas and the international alliance structure of the main local IT manufacturing companies (Alcatel, Siemens, etc.).

Limited competition has been started in the IC sector since 1992 (liberalisation of data services). Later, competition started in the mobile sector (1997) and alternative infrastructure (1998). The latest that was opened was the public fixed voice telephony market (January 2003). This is also a reason for expecting some problems with the adaptation of alternative domestic operators, because only one and half year after the liberalisation of such a market (the process should be at the stabilisation stage for domestic operators), the market will also be a fully open market for other operators from all EU member states, under the new conditions of "acquis 2003".

In November 2002, the Government Legal Board approved the principles of a new electronic communication bill. MTPT has started to prepare the legal version of the new bill, implementing the "2003 acquis" into the Slovak legal framework, before full membership of Slovakia into the European Union on May 1, 2004.

In the case of the preparation of new legal documents, implementing all requirements to “1998 *acquis*” or mainly “2003 *acquis*”, by open and professional discussion and, in the case of the clear implementation of such principles in the legal documents, it is realistic to expect no significant problems with the harmonization of the ICT sector in Slovakia with the EU legal standards. All of the prepared documents will then directly support the growth of the internal market by a well-developed competitive telecommunication environment, also in Slovakia.

## 5.4 SWOT analyses

STRENGTHS	WEAKNESSES
relatively good balanced tariffs (nominal prices) with the EU average (except monthly fee)	less transparency regulatory regime (licenses, interconnection agreements are not published)  regulatory capacities (more technical than legal and economic orientation)  valid legal framework (absence of effective influence for regulatory authority)  relative late approved legislation for digital signature  high telecommunications tariffs (PPP levels)
OPPORTUNITIES	THREATS
new telecommunication legal framework “ <i>acquis</i> 2003”  new legal framework for e-business (in preparation)	continuation of non-transparency process (absence of publishing) of licenses and agreements in telecommunications  delaying of transparent state ownership rights in dominant telecom operator (separation from the sector policy maker function)

## 5.5 Conclusion

The European Commission underlines<sup>10</sup> that, “in order to achieve full compliance with the *acquis*, issues related in particular to local loop unbundling and universal service need to be addressed, as was the aim of the rejected Government draft. Slovakia has not yet been able to evaluate the economic implications of implementing fully the universal *acquis* so as to achieve affordability and a decision on this point remains outstanding. Slovakia will need to transpose the updated telecommunications *acquis* before accession and to complete the implementation procedures as soon as possible afterwards... In order to complete preparations for membership, Slovakia’s efforts now need to focus on ensuring an affordable universal service in the telecommunication sector, ... and on strengthening, overall, the administrative capacities... The independence of the regulatory authority has now reached a good level but needs to be further safeguarded. In particular, in order to achieve a proper separation of regulatory from operational functions, the Ministry of Transport, Post and Telecommunication should no longer exercise the state’s property rights in the incumbent operator”.

<sup>10</sup> European Commission: Regular report on Slovakia’s progress towards accession, Chapter 19 – Telecommunications and Information Technology (2002).

The inadequacy of institutions, in particular the absence of a legal framework and law enforceability, has been felt outside as well as inside the country; by both enterprises operating in the Slovak territory and citizens who daily encounter the consequences of the poor functioning of institutions.

During 2003, there is the expectation for the adoption of a new Ministry decree on the universal service regime. This document and questionable problem with the implementation of a local loop unbundling regime, are main and sensitive problems for all of the alternative operators and competitors of Slovak Telecom. Both topics relate to "1998 acquis".

The quality and clear structure of the new telecom legislation, which should implement new EU telecom directives ("2003 acquis"), will play a very important role. A sensitive question is also when and how there will be an open discussion about the relevant draft document. Slovak alternative operators had negative experiences in the previous period (transparency and very short timing), to discuss new legislative documents effectively (in 2000, the new Telecommunication Act was discussed in Parliament by a short-time regime; in 2002, the amendment of the Telecommunication Act was rejected in Parliament; in May 2003, the similar amendment of the Telecommunication Act was approved in Parliament, but with official disapprobation by the government and the dominant operator; the process of rejection in the case of a presidential veto is again conceivable).

Another sensitive problem in the ICT sector in Slovakia, is the current non-transparent relationship between the incumbent operator and the Ministry of Transport, Post and Telecommunications. The Ministry is, in such a case, in two contra-positions; as policy maker for telecommunications (and information society, since May 2003) and as an important shareholder in the incumbent operator. Questions related to further privatisation (or selling the presently state-owned shares) in Slovak Telecom, the creation of more independence for the Telecommunication Office (separation from financing through the Ministry) and dynamics in the improvement of the quality and flexibility of its decision making process, are waiting for decisions at governmental and parliamentary levels.

## **6. The effects of accession on market structures**

### **6.1 General trend**

In Slovakia, the ICT industry was transformed during 1990s. Some former ICT manufacturers, oriented towards previous domestic ICT production, were fully privatised by global market players (Alcatel, Siemens); foreign investors have been involved in some companies. Several new SMEs, have been established (mainly with foreign capital). The ICT industry covers all regions in Slovakia, the capital city does not have a dominant position in this aspect.

New SW centres successfully operate in Bratislava, but also in several regional locations.

The location of IT wholesalers has another significant trend; Bratislava (the capital) dominates, but in 2002 only one region (Presov) had no IT representative amongst the 40 largest regional business companies in 2001. Regional offices of the majority of the domestic IT companies operate throughout the entire territory of Slovakia.

In the telecommunication sector, the majority of the main players (incumbent, mobile operators, alternative network operators, the majority of ISPs and the dominant CATV operator) are located in Bratislava. Local or regional Internet providers or CATV operators are mainly located in the regions.

### **6.2 ICT sector in Slovakia**

#### *6.2.1. ICT market value*

The value of the ICT market in Slovakia is presented in Fig.1 and Table 15.

The majority of ICT industry companies only produce specific components, but several ICT companies with final production are oriented mainly towards digital exchanges and TV sets. During 2001, the majority of the ICT industry companies increased their revenues in comparison with 2000; only 8 companies out of 27 decreased their revenues during this period.

In Slovakia, SW companies have traditionally had a progressive trend in the increase of revenues for the last few years. IT companies generally also had a positive trend in revenues in 2001, only 9 out of 70 IT companies presented a decrease in revenues.

The IC sector in Slovakia generally has a progressive development trend in revenues. In 2001, a significant percentage increase in revenues in 2001 was made by Internet providers (maximum of 78%), but, of course, in a nominal amount, the incumbent operator (9%) and mobile operators (approx. 34%).

**Table 15: ICT market value in Slovakia during 1992 – 2001 (mil. €)**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ICT market	330	365	393	533	640	900	1 060	1 242	1 342	1 640
of them: in IC	180	195	205	290	390	582	744	827	882	1 104
in IT	150	170	188	243	250	319	315	415	460	536
Telephone market	119	154	174	225	294	256	281	328	321	352
Mobile market	4	9	18	38	75	89	139	189	219	307
CATV	3	5	7	11	15	17	20	34	42	49
SW products	23	25	27	33	36	42	51	72	82	94
ICT equipments	240	260	285	315	350	390	435	463	496	628
IT services	25	28	32	41	45	76	97	118	134	154

Sources: EITO, Statistical Office of the Slovak Republic, Ministry of Transport, Posts and Telecommunications

### 6.2.2. Structure of the telecommunication sector

Further detail analysis is oriented only towards the telecommunication sector, because this sector plays the main significant role in the development of the total ICT market in Slovakia.

The telecommunication market in Slovakia has been gradually opened since 1992. Only Slovak Telecom had the exclusive rights for the fixed-line public telephone service, provided through the fixed-line telecommunication network and the operation of the public telephone network, until 31 December 2002.

#### 6.2.2.1. Fixed-line telephony

<b>Number of licenses for public fixed voice services</b>	<b>17</b>
Main players	Slovak Telecom (16 other operators received licenses at the end 2002 or early 2003 only)

Source: Telecommunications Office (2003)

In Slovakia, the tele-density in the fixed-line network is much lower than the EU average (Fig.12). The previously gradual trend of increase in tele-density, stopped in 2000 (impact of mobile competition and the starting process for the rebalancing of telephone tariffs). In May 2003, tele-density reached 28%. In comparison with the EU, Austria and Greece, there is a very different situation in digitalising of the fixed-line network in Slovakia (also with a negative impact on the commencement of real competition in fixed-line telephony) – Fig.13. Slovak Telecom will fully digitise its own network by the end of 2004. Competition in fixed-line telephony officially started from January 2003, but its real impact can only be expected in 2004-2005.

Fig.12: Tele-density comparison (fixed-line networks)

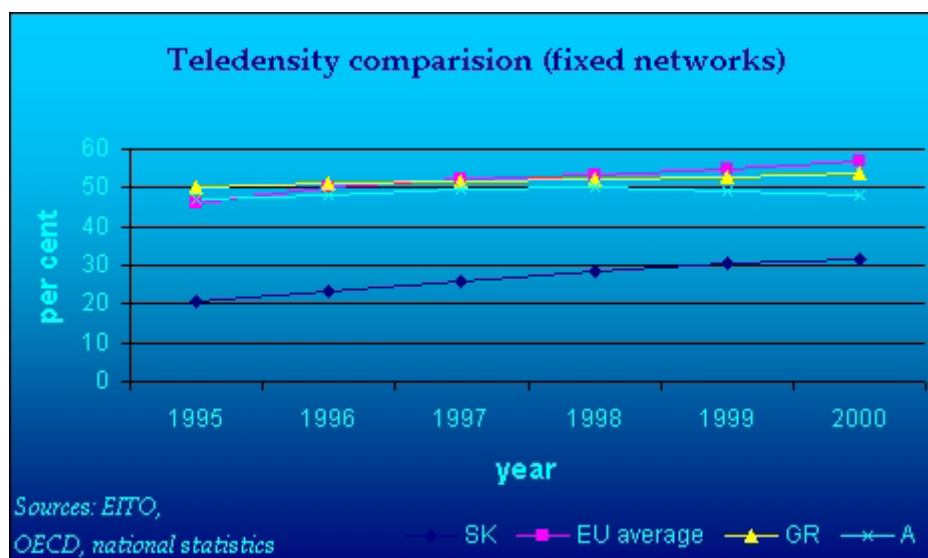


Table 16: Public Fixed-line Telephone Network indicators in Slovakia (1993 – 2001)

Indicators	1993	1994	1995	1996	1997	1998	1999	2000	2001
Main Telephone Lines – total (thous.)	893	1 004	1 118	1 246	1 392	1 539	1 655	1 698	1 556
Digitalisation (%)	5,17	14,85	25,68	37,57	50,65	62,05	66,81	70,41	74,28
Digitalizing of residential customers (%)	74,1	74,47	74,24	73,82	72,03	73,15	74,23	73,99	74,36
Main Telephone Lines - density (%)	16,87	18,75	20,85	23,22	25,88	28,54	30,66	31,43	28,39
Public Payphones per 1 000 inhab.	1,28	1,3	1,57	2,06	2,39	2,44	2,54	2,66	2,8
Slovak Telecom revenues for telephone (SKK, Mil.)	5 527	6 577	8 644	11 281	11 345	12 013	12 745	15 269	16 910
Traffic - total minutes for international calls (thous.)	64 104	124 072	142 012	295 016	335 266	277 464	300 253	318 804	317 228
Traffic - total number of international calls (thous.)	n.a.	29 967	36 389	90 494	95 387	97 909	105 571	113 375	113 189

Source: Ministry of Transport, Posts and Telecommunications

Since 1993, Slovak Telecom (the incumbent operator) has been in the process of totally upgrading its fixed-line telecommunication system (Table 16). The main trend in this area is characterized by the digitalising and reconstruction of infrastructure; the ratio of shared-lines was decreased to 2.3% in 2001 (e.g. Czech Republic – 2.1%, Hungary – 1.8%, Bulgaria 47.8%). The survey of quality indicators for universal service is presented in Table 17.

Fig.13: Digitalising of network - comparison

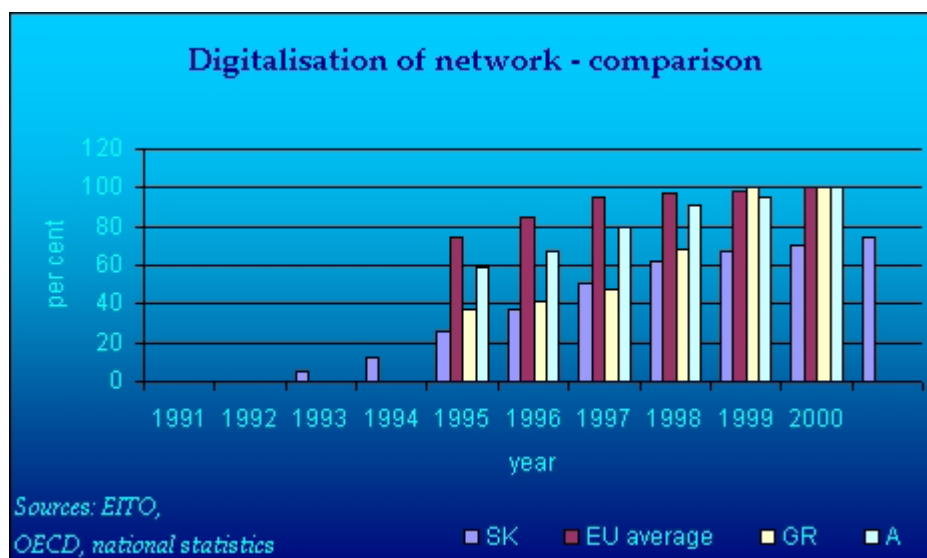


Table 17: Quality of universal service indicators in Slovakia (1993 – 2001)

Indicators -	1993	1994	1995	1996	1997	1998	1999	2000	2001
Time for MTL installation (months)	27	21	18,5	14	8,7	15,6	7,4	12,1	1
Number of outstanding requests for new MTL (thous.)	166	185	170	138	109	170	69	43	7
Number of defects per 100 MTLs	46	44	41,5	41,7	32,5	27,3	27,9	27	27
Defects repaired during 24 hours (%)	n.a.	n.a.	n.a.	n.a.	81	85,3	77,3	89	91
Public payphones – total functioning (%)	n.a.	n.a.	n.a.	n.a.	92	92	92	95	95

Source: Ministry of Transport, Posts and Telecommunications

#### 6.2.2.2. Alternative infrastructure

<b>Number of licenses for public fixed networks</b>	<b>32</b>
Main players	Slovak Telecom Transtel Slovak Railways Orange UPC (local network in Bratislava only)
Number of licenses for public fixed wireless networks (FWA)	2
Main players	Telenor SWAN potential new operators after tenders only (2003-2004)

In 1993, a decision was implemented with a later, direct, negative impact on delaying real competition in the leased lines market; a former potential competitor (former single radio communication operator) was combined with the incumbent operator in a single company. The liberalisation of an alternative

infrastructure market was officially opened from January 1998. In 2003, the real competition is in international, domestic, long-distance and satellite leased line markets, but not in the local loop market. FWA operators started operation in early 2002.

### 6.2.2.3. Mobile communications

<b>Number of licenses for public mobile voice services</b>		<b>2</b>
Main players	Eurotel (NMT-450, GSM900/18000, received license also for UMTS)	
	Orange (GSM900/18000, received license also for UMTS)	

In Slovakia, the density of the mobile networks has similar trends to the EU, Greece and Austria, but with a time delay of 2-3 years. Expected saturation of the mobile market will also be lower than in EU member states (Fig.14). In Slovakia, the NMT-450 service has been provided by one operator since 1991. Two operators have provided cellular GSM 900/1800 services since 1997. In January 2003, mobile penetration reached 54% (in comparison to 84% in the Czech Republic). It is expected to start providing UMTS services from 2005. The tender for the 3<sup>rd</sup> mobile operator was unsuccessful several times (1998, 1999, 2002).

Eurotel Bratislava (45% shares in the relevant market, 2002) is mobile network operator that started to provide services in 1991. Orange (former name was Globtel – 55% share in the relevant market, 2002) has been operating since 1997.

The survey of the main statistical indicators of mobile market development in Slovakia is presented by Table 18 (customers, coverage of the population) and Table 19 (mobile communication traffic).

**Table 18: Mobile services market in Slovakia (1993 – 2001)**

<b>Indicators</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Mobile services - total customers (thous.)	3	6	12	29	200	465	664	1 110	2 147
NMT-450 customers (thous.)	3	6	12	29	35	25	50	16	14
GSM 900/1800 customers – total (thous.)	0	0	0	0	165	440	614	1 094	2 133
Pre-paid cards - total customers (thous.)	0	0	0	0	n.a.	n.a.	127	483	1 536
NMT-450: coverage of population (%)	0	0	0	0	93	95	96	96	96
GSM 900/1800: minimal coverage of population (%)	0	0	0	0	91,6	93,7	94,4	95,4	95,6

*Source: Ministry of Transport, Posts and Telecommunications*



Fig.14: Mobile density - comparison

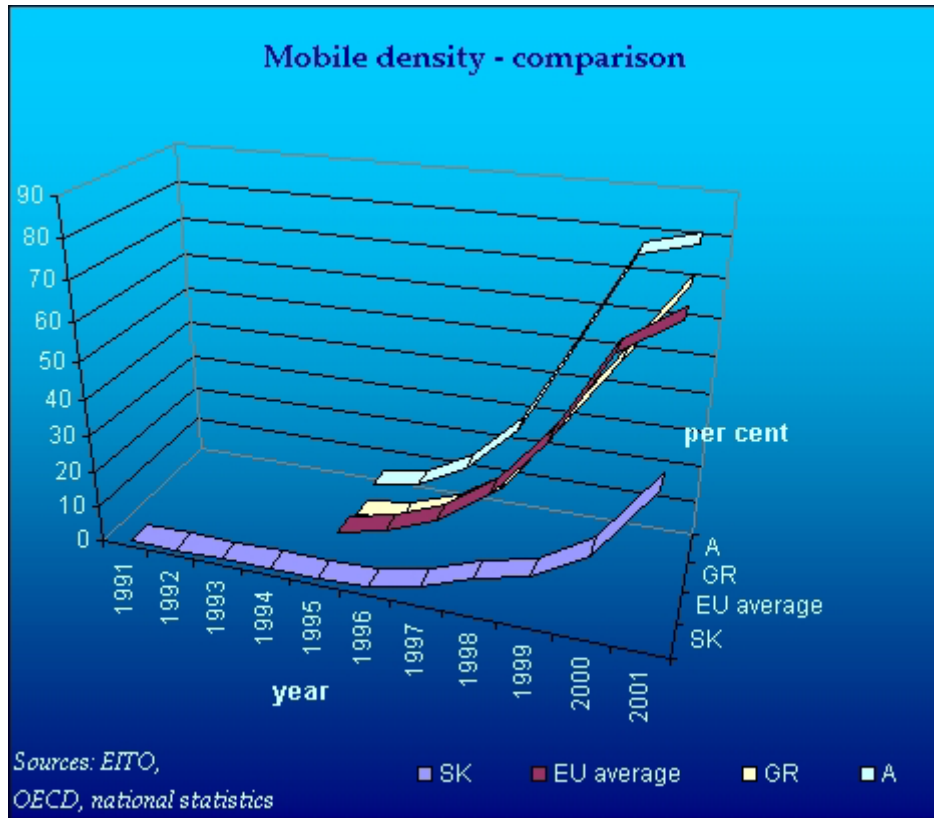


Table 19: Mobile services traffic in Slovakia (1998 – 2001)

Indicators -	1998	1999	2000	2001
NMT-450: total outgoing traffic - number of calls	12 354 896	14 339 383	6 328 705	2 731 874
NMT-450: total outgoing traffic - total minutes	21 003 324	24 376 952	10 758 799	3 802 511
NMT-450: total incoming traffic - number of calls	7 638 210	7 758 674	3 453 081	2 040 075
NMT-450: total incoming traffic – total minutes	12 984 958	13 189 845	5 870 237	2 490 786
GSM 900/1800: total outgoing traffic - number of calls	176 764 919	466 594 586	388 802 845	417 651 624
GSM 900/1800: total outgoing traffic - total minutes	247 848 253	638 081 336	619 702 891	522 563 313
GSM 900/1800: total incoming traffic - number of calls	134 733 935	333 060 972	454 931 865	526 145 404
GSM 900/1800: total incoming traffic - total minutes	182 377 682	464 201 124	655 877 713	665 777 588

Source: Ministry of Transport, Posts and Telecommunications

The latest development of telephone tariffs in the fixed-line network (gradually increasing trend) has, since 2001, created mobile operators (slowly decreasing trend in mobile prices), as direct competitors for the incumbent operator.

#### 6.2.2.4. Internet

<b>Number of licenses for Internet services</b>	<b>45 licenses + approx. 90 local registrations</b>
Main players	Slovak Telecom
	Nextra
	Slovanet
	Euroweb
	SANET

In Slovakia, Internet penetration is much lower on average than in the EU (Fig.15). The slow development in Slovakia is mainly critical in comparison with dynamic growth in the EU. This trend is mainly reflected in the process of increasing prices for Internet (PPP level) during the last three years, whilst in Europe, an inverse trend in Internet access was typical. There were 322 thousand Internet customers in Slovakia in 2002<sup>11</sup>.

**Table 20: Internet users in Slovakia (1993 – 2001)**

<b>I n d i c a t o r</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Total users (estim.)	6 800	17 000	28 000	42 087	62 851	144 539	292 359	507 029	674 039
dial-up customers	n.a.	n.a.	n.a.	n.a.	20 995	34 895	46 107	65 798	97 560
HOST - total number	510	1 414	2 913	7 938	14 520	22 064	39 774	56 434	72 557

*Source: Ministry of Transport, Posts and Telecommunications*

Unfortunately, Slovakia in April 2003 was the last candidate country where high-speed Internet access was not commercially provided. Previous pilot activities for ADSL services, provided by the incumbent operator, were stopped by the Antimonopoly Office in June 2002, because of discriminatory conditions for competitors. The dominant CATV operator, only started to provide Internet access through the CATV network, in limited areas of Bratislava, in May 2003. The latest information provided by the incumbent operator (April 2003), gives the expectation that the commercial operation for ADSL services will be started from June 2003, in three largest cities in Slovakia.

<sup>11</sup> Taylor Nelson Sofres Factum research (June 2002)

Fig.15: Internet penetration - comparison

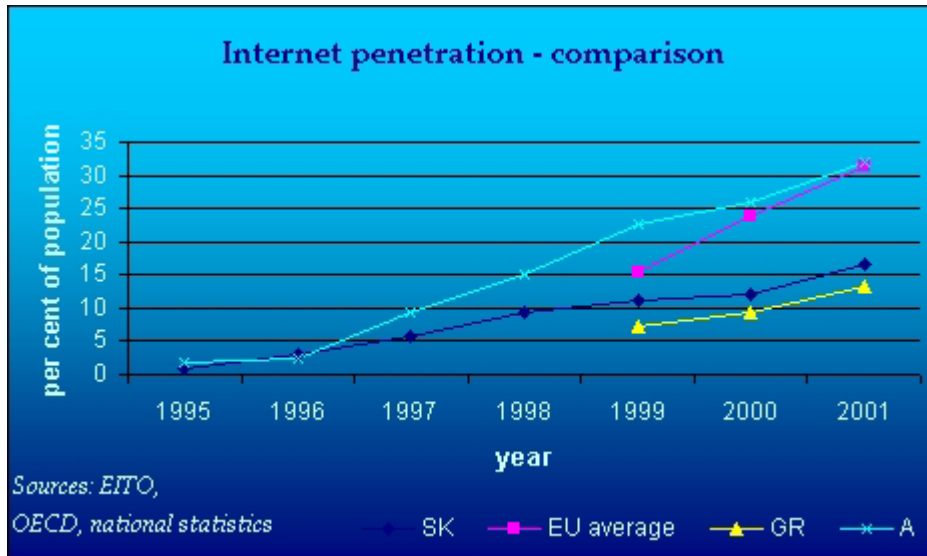
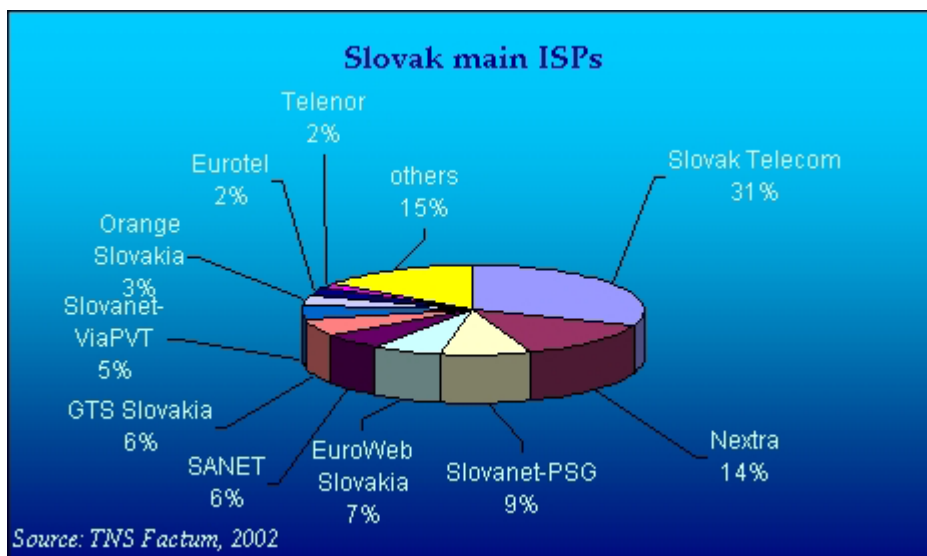


Fig.16: Main Internet service providers in Slovakia (2002)



#### 6.2.2.5 Other public data services

<b>Number of licenses for Frame Relay</b>	<b>5</b>
Main players	5 operators
Number of licenses for ISDN	3
Main player	Slovak Telecom
Number of licenses for public data network	33
Main player	Eurotel
Number of licenses for VPN	3
Main players	3 operators

The data service market has been open for competition in Slovakia since 1992. Different types of data services (telex, telegraphy, public switched data network, frame relay, ISDN, etc.) are available. ISDN services have been in operation in Slovakia since 1998.

**Table 21: Data services in Slovakia (1997 – 2001)**

<b>Indicators - data services</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
Public data services - total customers	3 389	4 709	5 730	6 733	8 953
of them by switched lines	2 286	3 507	4 309	5 021	6 776
by fixed lines	1 103	1 202	1 421	1 712	2 177
Total telegraph stations	171	175	154	100	88
Total telex customers	822	622	320	180	135
Total ISDN customers	0	771	4 353	11 911	31 047
of them with basic access (BRA)	0	724	4 183	11 365	29 461
with primary access (PRA)	0	47	170	546	1 586

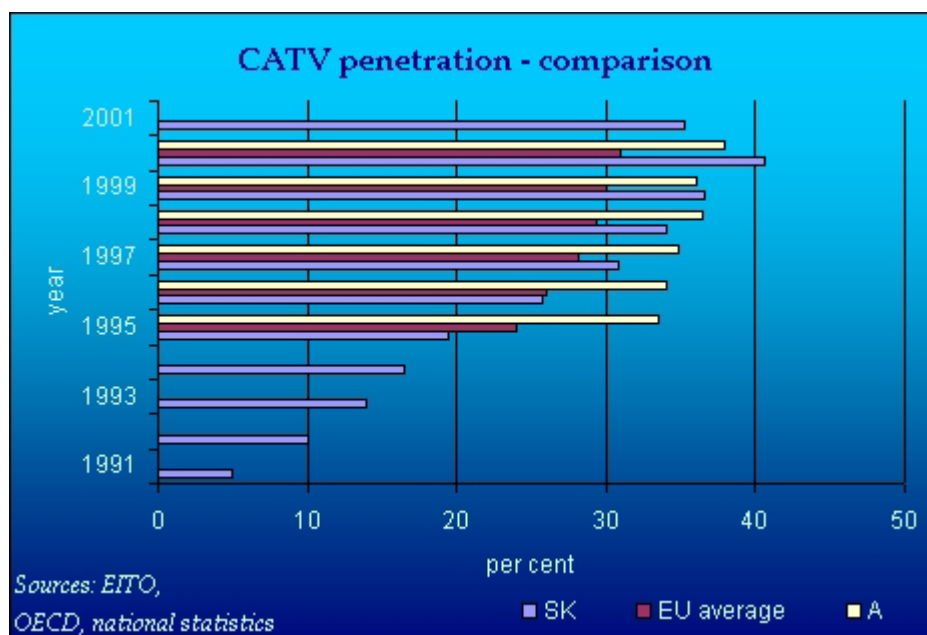
*Source: Ministry of Transport, Posts and Telecommunications*

#### 6.2.2.6 CATV

<b>Number of registrations for CATV networks</b>	<b>537</b>
Main players	UPC SATRO
Number of licenses for MVDS networks	1
Main players	limited for local operation only
Number of licenses for MMDS networks	13
Main players	limited for local operation only

The penetration of CATV in households in Slovakia is higher than the EU average (Fig.16). This type of service has reached a comparable figures with Austria. Unfortunately, until May 2003, this kind of infrastructure has not been used for services other than the distribution of radio and TV programmes. Since May 2003, the dominant CATV operator (UPC Slovakia) has started provide Internet access through the CATV network, in limited areas of Bratislava. It was historically the first commercial service providing high-speed access to the Internet in Slovakia (before the commencement of ADSL services through the incumbent operator's network). Further development of Internet access through the CATV network, throughout the capital or in other cities (where the company operates), can be expected later in 2003 or 2004.

Fig.16: CATV penetration – comparison



### 6.3 Expected effects of EU Accession

Development of the value of the Slovak ICT sector is compared with the ICT markets in Greece and Austria, during recent years, in Fig.3. There is a realistic expectation, that the entry of Slovakia to the EU, will accelerate the dynamics of the IC sector (Fig.4) and the IT sector (Fig.5). The rapid growth in the dynamics of the IC sector in Austria, after its entry to the EU (1995), supports such an expectation, which is also applicable to the IC sector in Slovakia.

The Slovak ICT industry is ready for adaptation to new market conditions after the entry of Slovakia to the EU, because of the recent gradual trend of development of the domestic ICT industry, in competitiveness and restructuring of the shareholders structure (mainly oriented within globalisation trends at the European or world-wide level), during the last decade. Positive trends related to the growth of production in the ICT market in Slovakia, can also be expected, because all current administrative barriers will be cancelled, providing flexible business with potential partners from the new EU-25.

The SW sector in Slovakia is also waiting for new business opportunities after the entry of the country to the EU, because it is ready for the following, expected, major factors, which will continue to drive this industry in the near future:

- eCRM (Customer Relationship Management) becoming key to the way that businesses operate,
- continued growth in communications networks and other related services,
- continuing e-business growth,
- continuing move to and development of, strategic outsourcing,
- follow-the-leader mentality, as major companies show that the system can work and be very profitable.

The telecom sector in Slovakia is also facing big business opportunities. In comparison with the EU average, there is the possibility for further rapid development, mainly in mobile and satellite communications, fixed-line telephony, Internet penetration and alternative infrastructure. The Slovak government has published information that a new public tender for other mobile operator(s) will be prepared in 2004-2005.

## 6.4 SWOT analyses

STRENGTHS	WEAKNESSES
mobile sector (strong duopoly regime)	relative lower level of life standards
SW center potential	regional disparities in development
	present regulatory and legal regime
OPPORTUNITIES	THREATS
public tenders for new mobile operator(s)	potential negative economic development on national or in majority of regional levels
lower level of internet development	
delay in liberalization of telecommunication market	potential “digital divide” (between different structure of population or between regions)
new legal and regulatory regime “acquis 2003” (since 2004)	

## 6.5 Conclusion

Within Europe, Slovakia has a good location for SW centres, because of a ready availability of well-educated, multi-lingual, professional and administration staff, a telecommunications infrastructure throughout the country with good external international connectivity, low cost, a competitive operating environment (particularly labour costs) and the presence of key companies already operating such centres in Slovakia.

The telecommunication sector in Slovakia has a large development potential in the further development of voice, data and multimedia services and, also, in infrastructure. A negative example for the minimal motivation of the private sector, was the conditions and procedure of the last public tenders for a third mobile operator, provided in 1999, 2000 and 2002. For a higher motivation of potential new investors in the near future, it is necessary to improve the tender preparation processes. The time delay for real competition in the fixed-line telephony market in Slovakia, relates to the late decision on the privatisation of Slovak Telecom (2000).

In Slovakia, it is also necessary to eliminate the barriers to the further rapid and wider connectivity of citizens to the Internet, which are represented by the current purchasing power of the citizens, telephone tariffs during the monopoly period for fixed-line telephony and the absence of a legal and regulatory framework for access to local loops (“last mile”).

The European Commission, in its last report<sup>12</sup>, makes a note that “...the Slovak Act on the Protection of Competition covers the main principles of Community anti-trust rules as regards restrictive agreements, abuse of dominant position and merger control... for administrative capacity, the Anti-Monopoly Office functions well, with a good track record and a continued high level of staff training”. In chapter 19 - Telecommunications and Information Technology underlines that, “fair competition and proper functioning of the market need still to be ensured. Further efforts are necessary to prepare for full liberalization of the market. ...”.

<sup>12</sup> European Commission: Regular report on Slovakia’s progress towards accession, Chapter 6 – Competition Policy (2002).

## **7. Short-term policy measures related to individual sectors**

The level of ICT development has a significant role in the positive or negative trends to social impacts in each country. The last issue of the EITO13 also notes that, “while the design, manufacture and operation of ICT has created some jobs in some areas, the uneven distribution of the technology is seen by many as reinforcing social exclusion, through the operation of the digital divide. According to a positive assessment, the ongoing use and application of ICT presents numerous opportunities for society; improved work-life balance, greater access to information and better services. But the full realization of this principle is still somewhat off. Barriers, such as a lack of access, inadequate security and low levels of trust, stand in the way of the majority benefiting from these opportunities (access to information, security challenges, access to better services, e-commerce, tele-working, new communities online, popular protest online). Isolating the aggregated effects of large scale ICT use on society and social equity, from equivalent effects on the economy or the environment, presents many challenges. Equally, society is affected by a vast range of other factors and, at this level, it is artificial to separate these from those of ICT use. However, there follow a number of opportunities for building social capital, to which widespread adoption of ICT has contributed (cultural homogeneity vs. cultural diversity, building local communities, building civic culture).”.

### **7.1 Challenges for policy makers**

- to adopt government document(s) with the government’s vision, strategy and action plan aimed at ensuring the complex development of the country in all aspects of information society by industry, public administrations and all citizens
- to adopt a realistic national eEurope+ Action Plan (with identification of potential financial support from the state budget)
- to prepare and implement e-government activities
- to prepare and implement e-business activities
- to eliminate the barriers that ensure the current limited Internet access for the majority of citizens
- to separate ownership competence from the telecom policy making process
- to ensure the significant improvement of present telecom legislation
- to ensure flexible and effective regulatory body activities in telecommunication
- to decide on the second stage of privatisation of Slovak Telecom
- to eliminate bureaucratic government procedures, ranging from the issue of residency permits to executives (and their families) who come to Slovakia to manage the start-up of new operations
- to ensure the improvement in customs procedures, which were currently raised by many companies as major negatives to locating in Slovakia
- to ensure more transparency and consultation in the preparation of business law and, consequently, some poor enforcement of certain parts of it, e.g. debt collection
- to ensure motivation for higher investments in ICT in Slovakia
- to ensure readiness for private-public partnership
- to ensure a regime of protection of customers’/citizens’ rights

## **7.2 Challenges for corporations**

- to prepare concrete activities presented in readiness for supporting eEurope+ initiatives
- to prepare concrete supporting activities, which can help to improve life-long education and a training system for the ICT skills of citizens



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## **List of Acronyms and Abbreviations**

A	Austria
CEEC	Central and Eastern European Countries
CZ	Czech Republic
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EITO	European Information Technology Observatory
ESIS	European Survey of Information Society
EU	European Union
EU15	The present 15 member states of the European Union
EU-25	European Union incl. 25 member states (expected since May 2004)
FDI	Foreign Direct Investment
FMS	Federal Ministry for Communications of the (former) Czechoslovak Republic
GDP	Gross Domestic Product
GR	Greece
H	Hungary
IC	Telecommunications (incl. alternative operators and carrier services)
ICT	Information and Communication Technology
IPTS	Institute for Prospective Technological Studies
IS	Information Society
ISP	Internet Service Provider
IT	Information Technology
ITAPA	Information Technology and Public Administration (conference)
IVO	Institute pre Verejne otazky (Institute for public questions, Slovak NGO)
MTL	Main Telephone Line
MTPT	Ministry of Transport, Posts and Telecommunications of the Slovak Republic
NADSME	Slovak National Agency for the Development of Small and Medium-size Enterprises
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PL	Poland
PNE	Public Network Europe
PSTN	Public Switched Telecommunications Network
R&D	Research and Development

SARIO	Slovak Agency for the development of investments and trade
SAV	Slovenska akademia vied (Slovak Academy of Science)
SK	Slovakia
SKK	Slovak crown (currency), 1 USD=38.2 SKK, 1 EUR= 41.8 SKK (March 2003)
SME	Small and Medium-sized Enterprise
SU SR	Statistical Office of the Slovak Republic
TREND	Slovak weekly business publication
TUSR	Telecommunication Office of the Slovak Republic (regulatory body)
UN	United Nations
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organisation
US	United States of America
USD	US dollar
VAT	Value Added Tax
V4	Visegrad group (Czech Republic, Hungary, Poland and Slovakia)
WEF	World Economic Forum