

## Development of broadband in New Member States and in the Czech Republic: Achievements and open issues

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## Development of Broadband in the Slovak Republic

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# Overview of presentation



- ⌘ National Broadband Strategy
- ⌘ Broadband Statistics
- ⌘ Broadband Projects
- ⌘ Conclusions

# National Strategy for the Broadband Access in the Slovak Republic



**Approved by Government of the SR 13th of April 2005**

- ⌘ defines the objectives and procedures of future development of broadband in the SR (until the year 2008);
- ⌘ takes into account the requirement for accessibility to all groups of population, the business sector and the public administration, including promotion of the broadband access for rural and remote areas;
- ⌘ evaluates the current situation in the SR and identifies possibilities of its improvement, while observing the principle of technological neutrality and without the disturbing of the competition rules, so that the SR would achieve the level of developed European countries during the next 5 to 8 years.

Source: MTPT SR - <http://www.telecom.gov.sk/index/go.php?id=1617&lang=en>

# National Strategy for the Broadband Access in the Slovak Republic - definition



- ⌘ In general, the broadband access is a kind of access that does not constitute so-called “bottleneck” in the chain between the end user and service providers and the various network resources and which is accessible permanently.
- ⌘ On the basis of the actual situation on the electronic communications market, for the purposes of the **individual connection of the end user**, the attainable limit of the transmission rate of the broadband access is **256 kbit/s asymmetrically**, and for the purposes of the connection of the **business sector and the public administration** in the framework of the aggregation of demand, the attainable limit of the transmission rate of the broadband access is **2 Mbit/s symmetrically**.
- ⌘ These values should be regarded as starting ones. For the future evaluation, comparative values from the EU countries will be used.

# National Strategy for the Broadband Access in the Slovak Republic – short-term objectives



<http://www.telecom.gov.sk>

- ⌘ **NBBS defines 10 short-term objectives for further development of the electronic communications market in years 2005 and 2006.**

# National Strategy for the Broadband Access in the Slovak Republic – Objective 1

- ⌘ **To speed up the consistent application of the Act No 610/2003 Coll. on Electronic Communications, particularly in relation to the application of the mechanism of local loop unbundling.**
- ⌘ *Present situation:*
- ⌘ Telecommunications Office of the SR - Decision of 14th of June 2005 – Slovak Telecom has significant market power SMP on Wholesale Market 11 „Wholesale provision of unbundled access (including shared access) to metallic loops and sub-loops to provide broadband and voice services “.
- ⌘ TO SR imposed to ST obligation to publish reference unbundling offer RUO.
- ⌘ ST - published Reference Unbundling Offer RUO 12th of August 2005 (price actualisation 1st of August 2006)  
<http://www.telecom.sk/Default.aspx?catId=1236>
- ⌘ ... but only simple resale is available, no bitstream and no unbundled lines in October 2006.

# National Strategy for the Broadband Access in the Slovak Republic – Objective 2

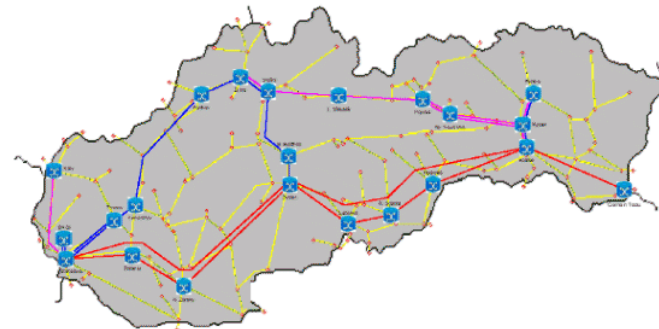
⌘ **To submit the Study on the Possibility of Effective Utilisation of Electronic Communication Infrastructure Owned by Entities in which the State has the Majority Shares to the SR Government.**

⌘ Present situation:

⌘ Study on the possibility of effective utilisation of electronic communication infrastructure owned by entities in which the state has the majority shares approved by Government 1st of March 2006 (Government Resolution 199/2006)

⌘ The Railways of the Slovak Republic (ZSR)

☒ Railway Telecommunications



# National Strategy for the Broadband Access in the Slovak Republic – Objective 3



- ⌘ **To submit the Policy for the Area of Frequency spectrum and Frequency Management in the Short and Medium-term Horizon to the SR Government.**
- ⌘ *Present situation:*
- ⌘ The Policy for the Area Frequency spectrum and Frequency Management for broadband access - approved by Government 11th of January 2006 (Government Resolution 5/2006).
- ⌘ The policy opened space for third mobile operator market entry and for faster implementation of digital TV.



# National Strategy for the Broadband Access in the Slovak Republic – Objective 5



- ⌘ **To support bridging of regional differences by enforcing support to the broadband services development as one of main aims in the framework of the structural support of EU for the period of years 2007 to 2013. To propose the preparation of an independent sectorial operational programme for the area of informatization.**
- ⌘ *Present situation:*
- ⌘ Operational Programme Informatization of Society - approved by Government 8th of October 2006 (Government Resolution 838/2006).
- ⌘ Next steps are under discussion.

# National Strategy for the Broadband Access in the Slovak Republic – Objective 6

⌘ **To submit to the SR Government the Strategy of the switch-over to digital TV and radio transmission by the year 2015.**

⌘ Present situation:

⌘ The Strategy of the switch-over to digital TV in the Slovak Republic - approved by Government 26th of July 2006 (Government Resolution 646/2006).

⌘ DVB-T pilot project in 3 regions Banská Bystrica/Zvolen (Channel 59), Bratislava/Myjava (CH66), Košice/Prešov (CH44).

⌘ Commercial operation - planned in 2007.

⌘ Digital switch-over - planned at the end of 2012.

⌘ DVB-T is specifically important for future broadband access mainly to households, to inhabitants who are equipped only with TV set and PC is for their inaccessible either for financial situation or for lack of praxis.

# **National Strategy for the Broadband Access in the Slovak Republic – Objectives 4, 7, 8, 9, 10**

- ⌘ 4. To search for possibilities of allocation of financial resources in the MTPT SR budget for the support of the broadband access development.
- ⌘ 7. To submit to the SR Government a Draft Amendment of the Act No 610/2003 Coll. on Electronic Communications taking into account security and protection of network infrastructure.
- ⌘ 8. To prepare in cooperation with the public and private sectors the base of information on the development, construction and utilisation of electronic communication infrastructure, particularly those for broadband access, monitoring and benchmarking.
- ⌘ 9. To search for possibilities of supporting projects aimed at the promotion of the broadband access in the framework of the State programmes of research and development.
- ⌘ 10. To currently evaluate the implementation of the National Strategy for Broadband Access in the Slovak Republic.

**Fulfillment approved by Government 5th of April 2006 (Gov Resol. 291/2006).**

Source: <http://www.rokovania.sk/appl/material.nsf/0/BF70AC68DF07D1CFC12571400029F2B5?OpenDocument>

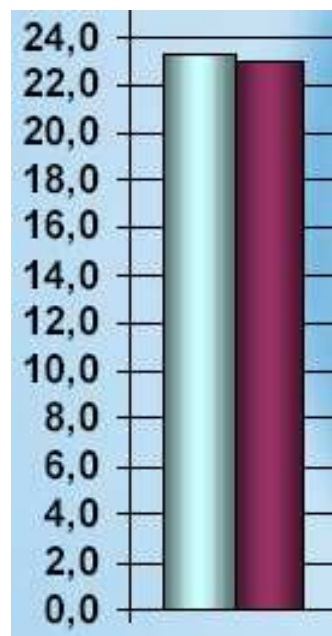
# Equipment of households in the SR with PC, Internet access and broadband Internet access, 2004 and 2005

% households with PC



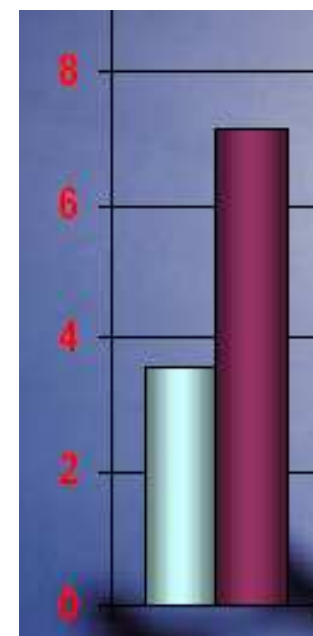
2004 2005

% households with Internet



2004 2005

% households with BB



2004 2005

Source: Peter Rozboril, Milan Šulík, Štatistický úrad Slovenskej republiky ITAPA 2005,

Využívanie informačných a komunikačných technológií v podnikoch a v domácnostiach SR

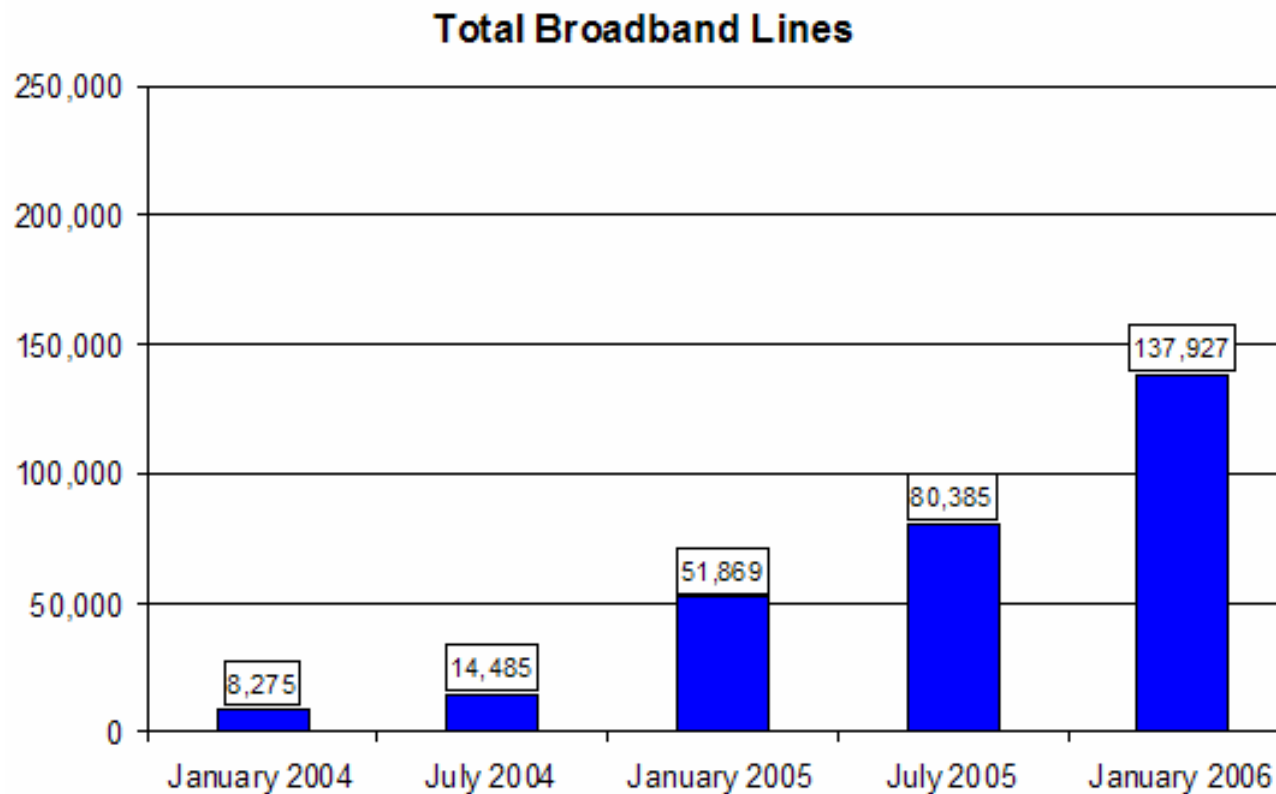
# Development of Broadband Access in the Slovak Republic 12/2003 - 06/2006

	12/2003	6/2004	12/2004	6/2005	12/2005	6/2006
<b>Internet customers with fixed connection all (narrowband+broadband)</b> <sup>[1]</sup>	182 143	201 887	230 689	244 736	294 108	334 171
<b>Internet customers with fixed broadband access (residential+business)</b>	11 190	27 568	59 950	86 958	138 569	215 279
<b>Internet customers with fixed broadband access residential</b>	5 602	13 178	30 246	44 889	84 142	141 148

<sup>[1]</sup> Internet customers with mobile access are excluded

SR population = 5 384 800 in year 2005

# Development of Broadband Access in the Slovak Republic 01/2004 - 01/2006



Source: COCOM

BReATH, Prague,  
november 2006

# **Broadband Penetration 04/2005 - 06/2006**

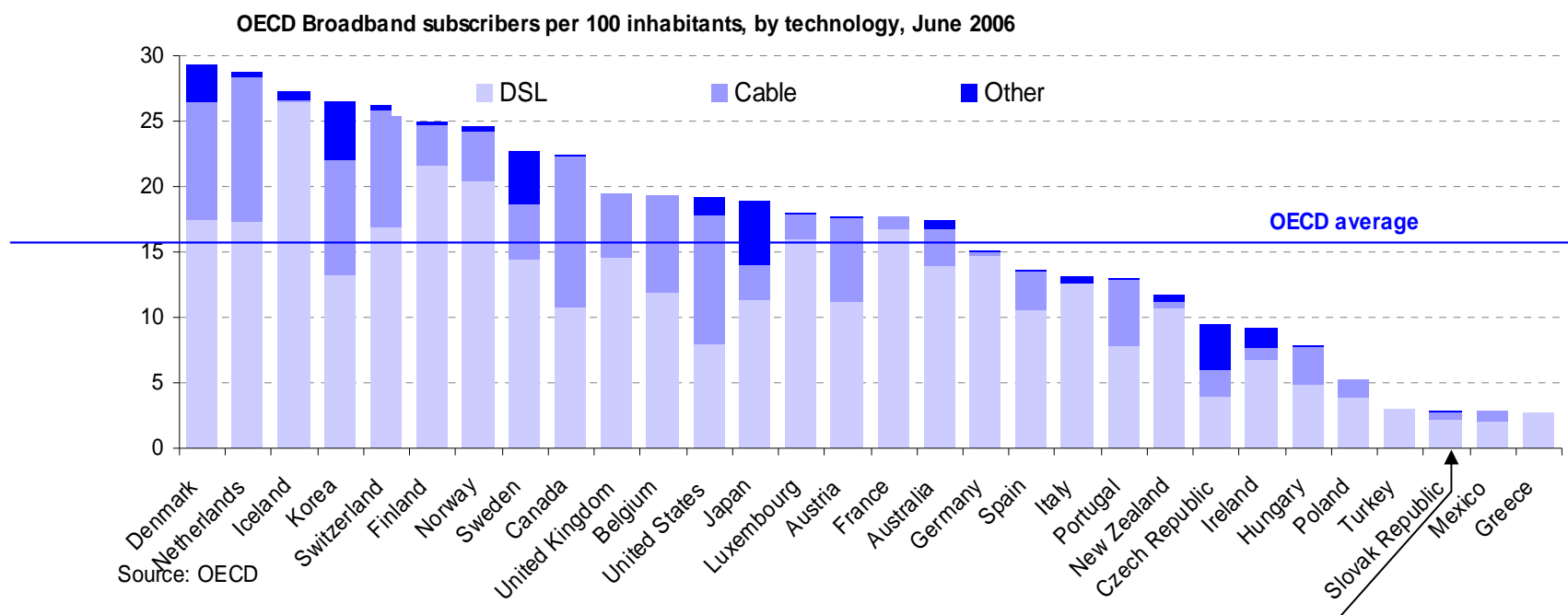


April 2005 .... 1,2%

June 2006 .... 4,0%

... still growing but ...

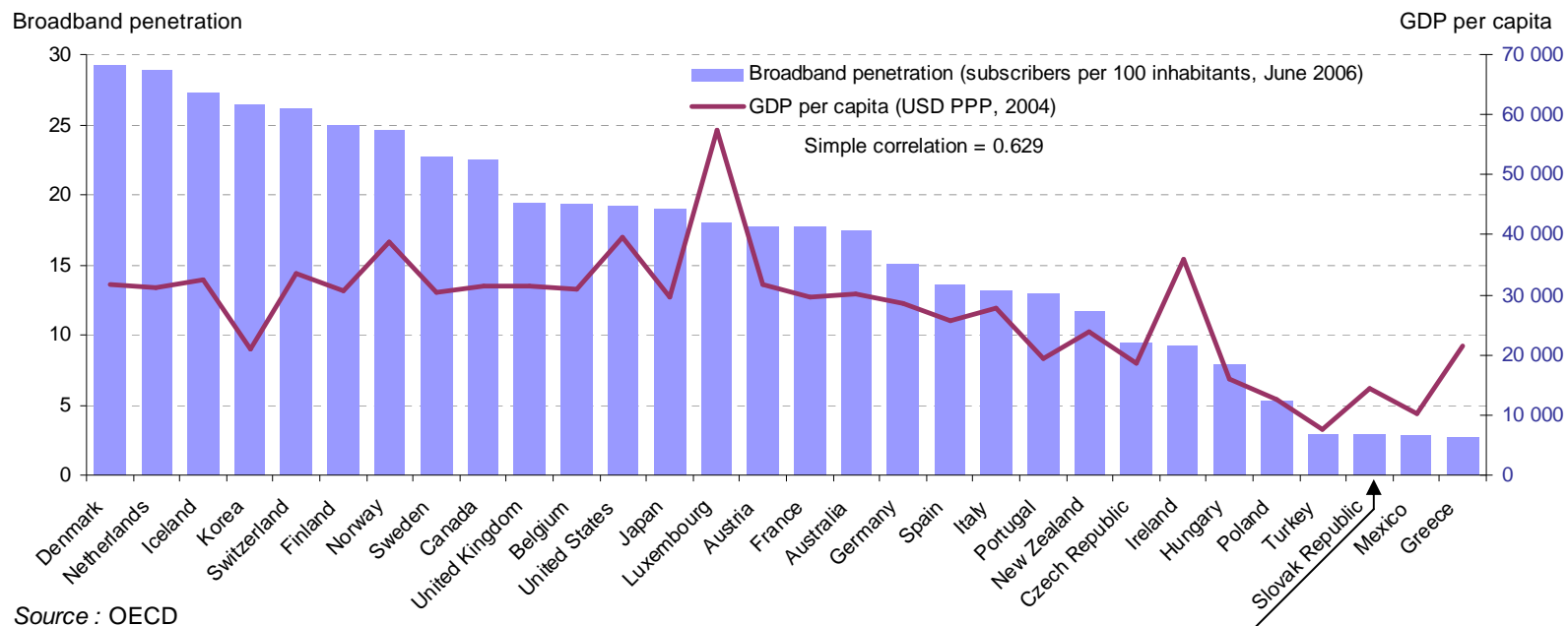
# OECD Broadband subscribers per 100 inhabitants, by technology, June 2006



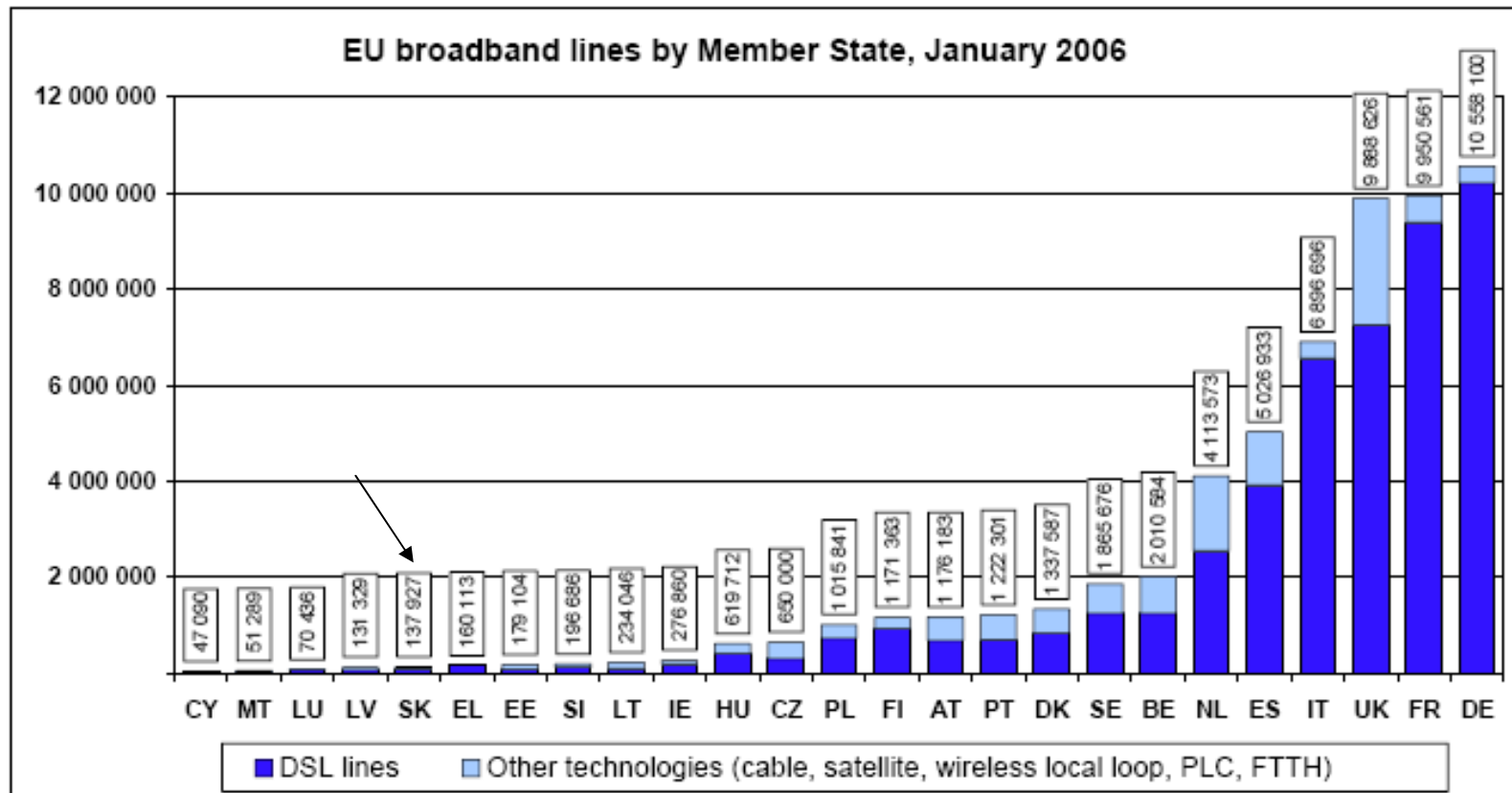


# OECD broadband penetration and GDP per capita, June 2006

OECD broadband penetration and GDP per capita



# EU Broadband Lines by Member State, January 2006



Source: COCOM

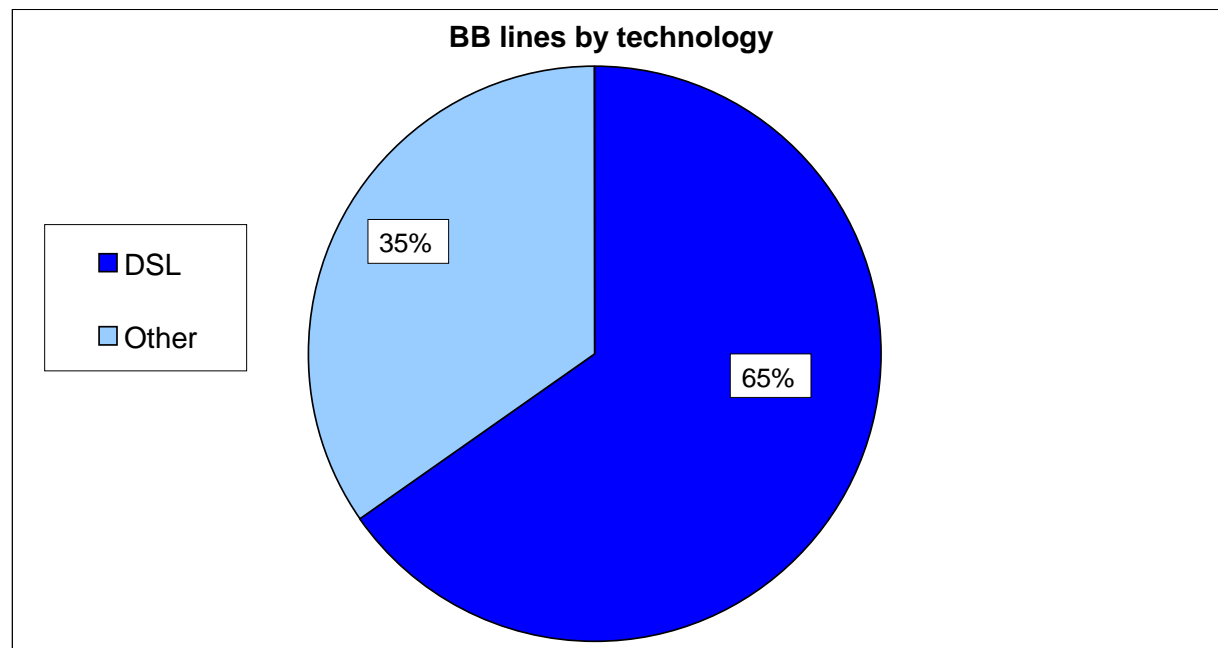
BReATH, Prague,  
november 2006

# Broadband Access Technologies available in the SR at present



- ⌘ xDSL (especially ADSL) – allowing the broadband access via classic telephone connection;
- ⌘ cable modem – allowing the broadband access through the infrastructure of cable TV distribution systems;
- ⌘ fixed wireless access (FWA) – allowing the broadband access through the radio transmission system (WiFi, WiMAX);
- ⌘ satellite access – allowing the broadband access through a satellite;
- ⌘ optic cable networks – allowing practically unlimited capacity and reliability and high quality of transmission;
- ⌘ third generation (3G) mobile networks – allowing the broadband access through a mobile phone.

# Broadband Access in the SR by Technology, January 2006



Source: COCOM

# Digital Subscriber Lines DSL



- ⌘ ADSL is available in 790 municipalities= aprox. 70% population coverage.

<http://www.t-com.sk/Default.aspx?CatID=515&Section=home>

- ⌘ Naked ADSL available from Slovak Telecom since 1st of May 2006.

<http://www.t-com.sk/Default.aspx?CatID=1643&Section=home>

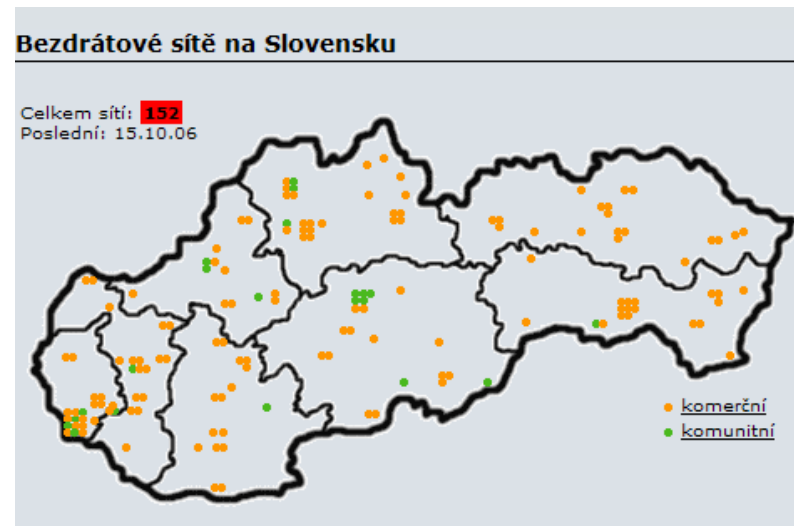
## Broadband access via Cable Modem



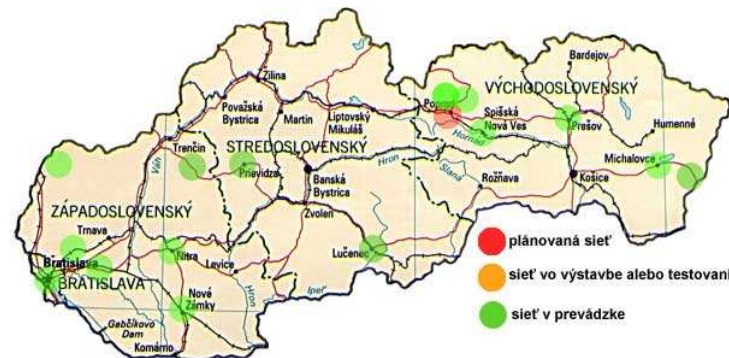
- ⌘ Broadband access CATV is available only in larger cities (Bratislava, Trnava, Žilina, Košice, Nitra).
- ⌘ Apox. 28 000 customers in June 2006.
- ⌘ Market leader - UPC BROADBAND SLOVAKIA, s.r.o. – broadband access „Chello“ – available in Bratislava, Trnava, Žilina, Košice.  
<http://www.upc.sk/>

# Fixed Wireless Access - WiFi

- ⌘ Broadband access is available in many places in Slovakia.
- ⌘ Commercial networks - apox. 36 000 customers in June 2006.
- ⌘ Free hot-spots (about 500)  
<http://www.teleoff.gov.sk/sk/Internet/Zdarma/hotspot.html>
- ⌘ Community Networks – SK FreeNet



Source: <http://www.internetprovsechny.cz/wifisk.php>



Source: [http://www.skfree.net/index.php?module=Static\\_Docs&func=view](http://www.skfree.net/index.php?module=Static_Docs&func=view)

# Fixed Wireless Access - WiMAX



## ⌘ 4 licenced operators FWA 3,5 GHz:

☒ WiMAX Telecom Slovakia, s.r.o.

☒ Amtel Slovensko, s.r.o.

☒ Swan, a.s. (GlobalTel)

☒ GTS Nextra, a.s. (Telenor Networks).



# Fixed Wireless Access - WiMAX

- ⌘ WiMAX Telecom Slovakia (coverage – more than 30 cities in July 2006)



October 2006

Source: <http://www.wmx.sk/sk/index.php>

# Mobile broadband

⌘ Orange Slovensko, a.s. – 3G/HSDPA 1,8/3,6 Mbit/s



44 cities = 43,3%  
population coverage

Source: <http://www.orange.sk/private/coverage/index.jsp>

# Mobile broadband

- ⌘ T-Mobile Slovensko, a.s. - FLASH-OFDM 5,3 Mb/s 1,8 Mb/s available since 17th October 2005. Worldwide primacy.



Source: <http://www.t-mobile.sk/sk/!pages.get?id=1607>

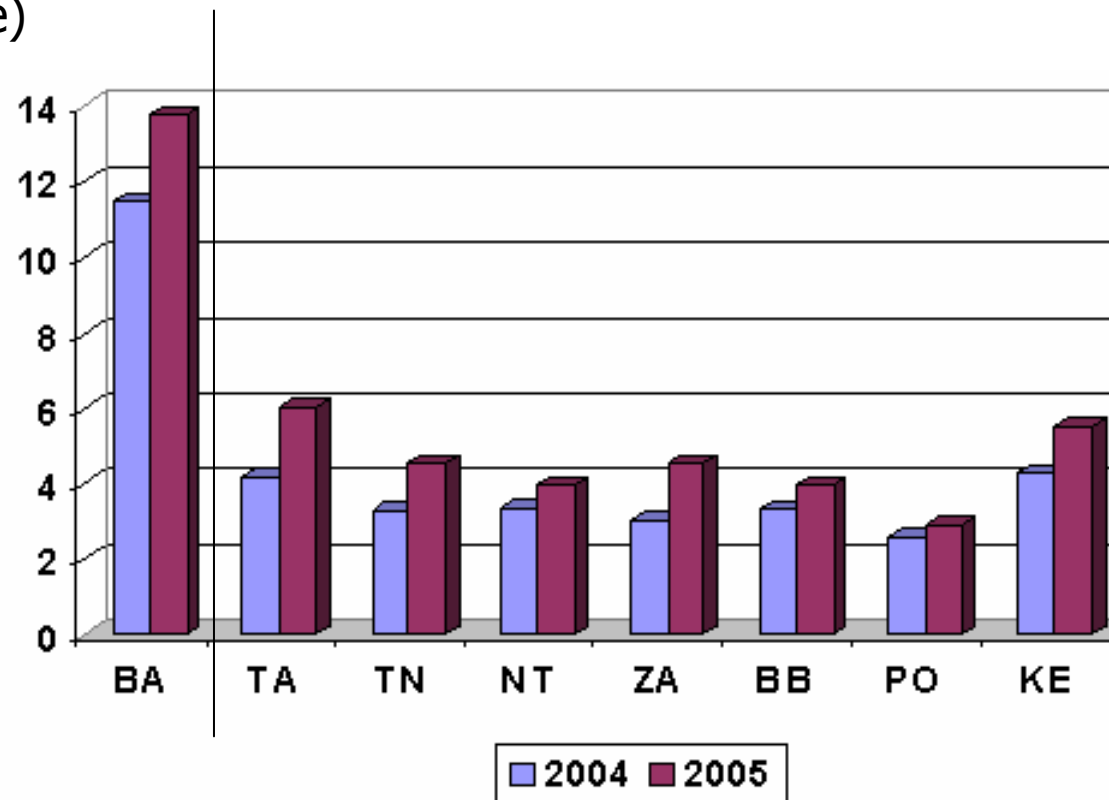
# Optical Fibre FTTx

- ⌘ Broadband access FTTx is available mainly in larger cities (Bratislava, Košice), but there are some local providers in smaller cities (e.g. Trnava, Poprad, Liptovský Mikuláš, Šaľa, Námestovo, Spišská Nová Ves).
- ⌘ Apox. 26 400 customers in June 2006.



# Digital Divide Bratislava vs. Regions

Penetration of Internet Customers with fixed connection divided by Self-Governing Regions (Bratislava, Trnava, Trenčín, Nitra, Žilina, Banská Bystrica, Prešov, Košice)



# Government Project - demand stimulation

## „Internet for Education“



- ⌘ The Slovakian Ministry of Transport, Post and Telecommunications (MTPT) has announced in April 2006 a programme at increasing the use of high-speed internet across the country. Some Sk 240 million (€6.4 million) will be provided to users in the form of direct subsidies.
- ⌘ This programme aims to increase use of high-speed internet services across the country by providing personal grants to users up to the tune of €6.4 million in total. Under the plan, called 'Internet for Education', the Ministry will give new internet users a subsidy of Sk 6016 (€160) per person over a three-year period.
- ⌘ The money are distributed in monthly payments to high-speed internet users, in particular, to increase IT literacy and access to high-speed internet among young people from 15 to 25 years of age. The MTPT subsidies will go to 5000 applicants from each of Slovakia's eight regions – a total of 40000 new applicants across the country.

# Public Intervention to increase broadband coverage in under-served areas



## ⌘ The Manifesto of the Government of the Slovak Republic

August 2006

⌘ ... *The Government will further continue in the development of the broadband access by promoting competition, and the economical use of the frequency spectrum and support of building of high-speed broadband networks also in rural regions ...*

<http://www-8.vlada.gov.sk/index.php?ID=1672>

# National Strategic Reference Framework 2007 - 2013



⌘ STRATEGIC GOAL: „To significantly improve the competitiveness and performance of the regions and of the Slovak economy by 2013, while adhering to the principles of sustainable development.”

⌘ STRATEGIC PRIORITIES

- ☒ Infrastructure and regional accessibility.
- ☒ Innovation, informatization and knowledge-based economy.
- ☒ Human resources and education.

⌘ 11 OPERATIONAL PROGRAMMES.

⌘ Actual version SR „NSRF 2007 – 2013” approved by Government 8th October 2006 (Government Resolution 832/2006).



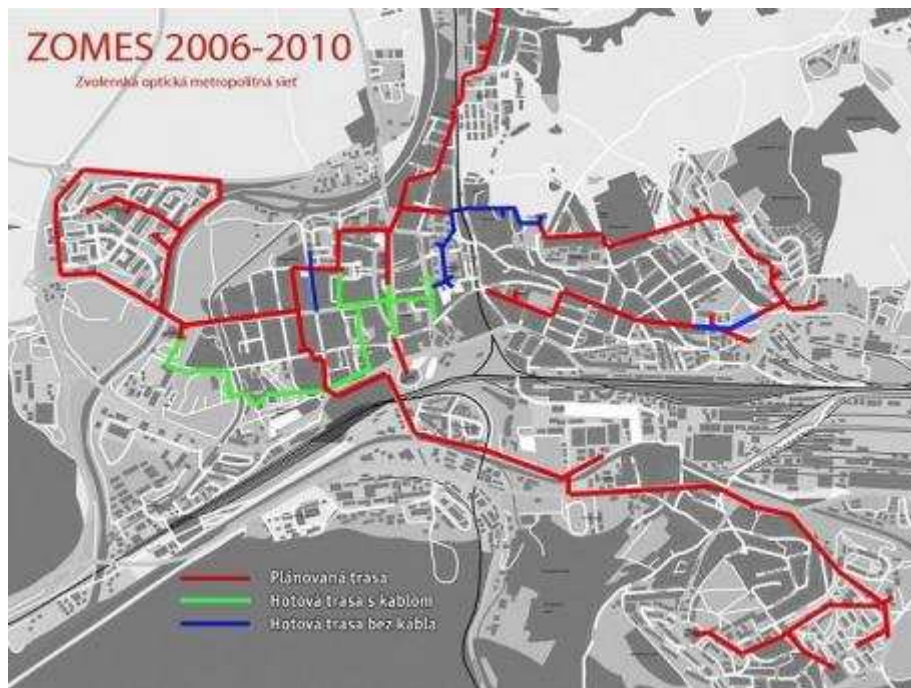
# National Strategic Reference Framework 2007 - 2013



- ⌘ Specific Priority: Informatization of Society
- ⌘ Measure 2.3
- ⌘ Goal: high penetration of broadband internet
- ⌘ Priority 2.2.3 Increase of availability of broadband internet
  - ⌘ Types of activities (projects):
    - ⌘ Support of development metropolitan optical networks;
    - ⌘ Support of development regional and local networks;
    - ⌘ Broadband access demand stimulation.
  - ⌘ Recipient:
    - ⌘ Public sector, PPP.
  - ⌘ Form of support:
    - ⌘ Direct;
    - ⌘ In-direct;
    - ⌘ National Projects, Demand Projects.

# MUNICIPALITY PROJECT

## Zvolen Optical Metropolitan Network (ZOMES)



Source: [http://www.zvolen.sk/main.php?id\\_menu=17215&firmy\\_slovenska\\_flag=0](http://www.zvolen.sk/main.php?id_menu=17215&firmy_slovenska_flag=0) (in Slovak only)

### Goals:

Creation of infrastructure for electronic communication based on optical fibres with huge capacity:

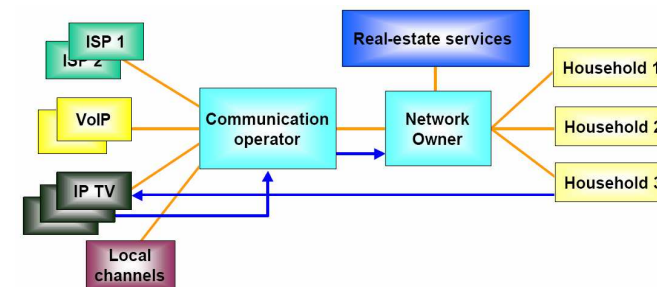
- Connecting all schools and kindergartens and other selected non-commercial organisations to ZOMES network with minimal speed of 100Mb/s.
- Creation of the town police security camera system - increase safety in the town.
- Available access to ZOMES for entrepreneurs and households.

# Municipality projects



BReATH, Prague,  
november 2006

## FTTH Council Europe Business Model



Source: <http://www.europeftthcouncil.com>

# Network Operator projects

- ⌘ *INNOVATION, INVESTMENT AND COMPETITION: „The correlation between investment in broadband and competition in infrastructure has become clear. Countries with strong competition between incumbents and cable operators tend to have the highest broadband penetration.”*

[http://ec.europa.eu/information\\_society/policy/ecomm/doc/info\\_centre/public\\_consult/review/com334\\_en.pdf](http://ec.europa.eu/information_society/policy/ecomm/doc/info_centre/public_consult/review/com334_en.pdf)

- ⌘ Orange Slovakia is planning pilot project „Fibre To The Home” to test Triple play (Internet, IPTV, VoIP) in 3 cities Bratislava (Petržalka), Piešťany and Trnava.

Source: <http://zive.sk/h/Bleskovky/AR.asp?ARI=119849>

- ⌘ Slovak Telekom (T-COM) started Triple play pilot project in July 2006 and announced start of commercial operation based on technology ADSL2+ in 2007.

Source: <http://www.inet.sk/clanok/4112/miroslav-majoros-pri-triple-play-aj-pri-adsl-2+-ratame-s-uvedenim-dokonce-tohto-roka>

- ⌘ UPC Broadband Slovakia – first offer Triple Play in Slovakia. Service is available in Bratislava since 12th September 2006.

Source: <http://mobil.sme.sk/clanok.asp?cl=2894200>



**Thank you for your attention!**

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**<http://www.vus.sk>**

# DVB-T



Back-up slides

# DVB-T

- ⌘ At present, the following technologies of broadband access are available in the SR:
- ⌘ xDSL (especially ADSL) – allowing the broadband access via classic telephone connection;
- ⌘ cable modem – allowing the broadband access through the infrastructure of cable TV distribution systems;
- ⌘ fixed wireless access (FWA) – allowing the broadband access through the radio transmission system;
- ⌘ satellite access – allowing the broadband access through satellite;
- ⌘ optical cable networks – allowing practically unlimited capacity and reliability and high quality of transmission;
- ⌘ third generation (3G) mobile networks – allowing the broadband access through a mobile phone;
- ⌘ **DVB-T – allowing the broadband access through set-top box.**

# DVB-T



- ⌘ DVB-T is specifically important for future broadband access mainly to households and inhabitants who are equipped only with TV sets; PCs are for them inaccessible either because of their financial situation or lack of praxis;
- ⌘ Already in 2001 the Slovak Government approved the “National Strategy and Technical Criteria for Implementation of DVB-T in Slovakia” (Resolution No. 589/2001); the so called “Group for Digital Broadcasting” (SKDV) started its activities;



# DVB-T



⌘ In 2002 the Slovak Government approved “The National Policy on Electronic Communications” where in point 3.7.2 declares – “The implementation of the broadband potential requires that everyone has the opportunity to benefit from it (health system, education, business, state administration and public administration). An important place should be also reserved **to the new communications platforms not requiring PCs.** It particularly concerns the **interactive digital television** and the 3G mobile systems which open the possibilities for access to services on several platforms.”

# DVB-T



⌘ In January 2006 the Slovak Government approved “The Policy of Frequency Spectrum Utilization for Broadband Access” (Resolution No. 5/2006) and later on in July 2006 “The Strategy of the Switchover from Analog to Digital Terrestrial TV Broadcasting in Slovakia” (Resolution No. 646/2006) where the year 2012 was fixed as a final date for analogue switch-off.

# DVB-T



⌘ Currently three DVB-T pilot projects are in operation in Slovakia:

- ⌘ western part (Bratislava, Myjava),
- ⌘ central part (B. Bystrica, Zvolen)
- ⌘ eastern part (Košice, Prešov).

⌘ The goal of these projects is to test new technologies, to investigate propagation of the electromagnetic waves, to gain good practice in installation of equipment and measurements, to test the providing new services (especially e-Government), to test interactivity, to survey the reactions and interest of the consumers, etc.

# DVB-T



⌘ Apart from these technical and frequency allocations problems also very important questions towards new legislation and information necessity for inhabitants have arisen. That's why the "Digital Law" has also been drafted. It was already approved by the Legislation Council of the Government.

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