

DISCUSSION PAPER ON BROADBAND SERVICES

Thoughts for opening a debate concerning the development of the demand and supply on the Hungarian broadband market through the collaboration of the State, the market and the NGO sector

**Why broadband is important?
Where we are?
What are the main challenges?
Where we want to go?
What are the most urgent tasks?**

April, 2009

INTRODUCTION

1. Nowadays, every professional dealing with the information society or the economic and development policy sees clearly that broadband developments **exert a positive impact on economy, competitiveness, equality of opportunities and the quality of life.**

2. The importance of this area was also highlighted at the last **EU Summit**, and also at the **G20 meeting**; the Council has invited the European Commission to elaborate, together with the interested parties, a **European Union Broadband Strategy**; the **Reconstruction Plan** of the EU also contains the development of broadband networks in the mostly underdeveloped regions.

3. Since **no substantial and structured professional debate has been engaged in Hungary - ever since** the discussion of the 2005 National Broadband Strategy (NSzS) - on the development of the broadband infrastructure and services otherwise indispensable for the development and functioning of the Information Society, our Foundation has drafted a submits to the attention of the professional audience its analysis entitled "Discussion paper on broadband services".

4. The Foundation creates at the same time its independent professional initiative under the name "**Broadband Workshop**" (www.szelessavmuhely.hu), in order to offer a platform for a **continuous professional dialogue** between professionals of the State Administration, the Service Providers and the research sector.

5. The Broadband Foundation supports all professionally sound and useful initiatives aimed at promoting the spreading of broadband services in Hungary, and at the same time, in the opinion of the Foundation, the elaboration of a long term development concept **requires indispensably a wide professional debate** that - by involving the fullest range possible of stakeholders - could result in

- an accurate depiction **of the current status, and an analysis of the factors representing an obstacle to the spreading of broadband services;**
- the definition of the **target status and vision** that we want to achieve;
- an itemized review of **means** available for reaching the target situation;
- and based on these preliminaries, the definition of proposals that could help to find the most efficient solutions from the aspect of the development of broadband electronic communication and that of the Hungarian information society.

Of course, our Foundation cannot undertake to elaborate an overall concept strategy, however, with the help of this discussion paper, we wish to contribute, with our limited means to launching and maintaining a structured progress of professional dialogue on the future of broadband services in Hungary

MAIN FINDINGS

Why broadband is important?

The positive impact, concerning competitiveness, of the increased use of broadband services on the national economy, on the enterprises and on the public at large is evident. Continuous innovation in the field of services, applications and business models is the condition of the favourable impact of broadband services on the macro-economy. Broadband services and applications also contribute to the improvement of the **quality of life** and the promotion of **equal opportunities**.

Where we are?

During recent years, **penetration** in Hungary has been growing above the EU average, still the lag remains significant. A particular increase has been experienced in mobile Internet, and there is a dynamic growth on the cable platform as well. Over the last years **prices** have decreased considerably also in international comparison, yet, the specific price of larger bandwidths remains relatively high. **Bandwidth** has broadened above the EU average, and **competition** is fierce.

What are the main challenges?

The obstacles to the expansion of broadband services are mainly the problems on the demand side: the low level of **digital literacy** and of "digital self-confidence", the lack of **motivation**, the lack of info-communication preparedness by SMEs, the low level of advanced e-economical services, the **lack of confidence** in electronic payments and banking and the low level of "digital public confidence". In smaller villages the accessibility of broadband services is also limited.

Where we want to go?

The enhancement of broadband infrastructure and services may become successful, if by way of private investments, innovation and development policies the **infrastructure bottlenecks** can be neutralized, and an **attractive content and service offer** shall be generated based on expanding technological opportunities; obstacles in demand (such as knowledge, motivation, security) shall be eliminated and digital literacy (population, SMEs) shall increase.

What are the most urgent tasks?

Strategic foundations and impact studies are key **success criteria** for State intervention. **On the demand side:** increasing digital literacy and motivation of the population and of SMEs, training and education programmes, achieving a change in mentalities, strengthening of "digital public confidence". **On the supply side:** efficient market regulation, promotion of NGN/NGA optical network investments, efficient frequency spectrum management, targeted development of the broadband infrastructure.

1. Why broadband is important?

The impact of broadband services on economic growth

The decrease in the activities of traditional sectors (billion €/year)

- 39,8 billion €/year

The increase of economic activities (billion €/year)

+ 122,2 billion €/year

GDP growth: +82,4 billion €/year

The impact of broadband services on employment

Jobs lost in the economy (thousand/year)

- 1319 million jobs/year

New jobs in the economy (thousand/year)

+ 1424 million jobs/year

Employment status: +105 thousand jobs/year

Calculating with an annual penetration growth of 10% and a 3% of increase in the use of services, broadband would generate an annual incremental growth of 82.4 billion euros (0.71%) in the GDP of the European Union; and the employment balance would show an annual increase of 105,000 people – states MICUS (Germany) in their frequently quoted study “Effect of broadband on growth and profitability” elaborated at the request of the EU.

Continuous innovation in the field of services, applications and business models is the condition of the favourable impact of broadband services on the macro-economy. Broadband services shall create the link between ICT production and the use of ICT tools.

productivity - growth - competitiveness

production of ICT tools - BROADBAND - use of ICT tools

The positive impact, concerning competitiveness, of the increase of broadband penetration and of the use of broadband services on the national economy, on the enterprises and on the public at large is evident.

2. Where we are? - INTERNET PENETRATION - KSH

Number of Internet subscriptions by access service, 2001-2008

Dial-up+ISDN xDSL Cable Wireless* Others** Total Change

Internet-előfizetések száma hozzáférési szolgáltatások szerint, 2001-2008

31.dec	Dial-up + ISDN	xDSL	KTV	Vezeték nélküli*	Egyéb**	Összesen	Változás
2001	293 382	0	17 571	21	10 700	321 674	
2002	362 029	32 054	31 190	36	20 554	445 863	38,61%
2003	391 398	114 813	77 189	24 055	22 654	630 109	41,32%
2004	320 494	235 969	135 803	73 960	14 489	780 715	23,90%
2005	241 611	372 523	212 145	132 043	18 470	976 792	25,12%
2006	85 878	597 331	374 647	251 774	19 995	1 329 625	36,12%
2007	62 985	739 028	563 593	434 361	32 056	1 832 023	37,78%
2008	25 213	814 037	717 387	678 954	83 374	2 318 965	26,58%

Forrás: KSH * ide értve a mobilinternetet is, függetlenül a technológiától (2G, EDGE, 3G) tájékoztató márc. 10 ** pl. LAN, bérelt vonal

Source: Brief of the Central Statistics Office (KSH) as of March 10

* Including mobile Internet with no regard to technology (2G, EDGE, 3G)

** e.g. LAN, leased line

Main trends:

- low proportion of dial-up and ISDN
- for the last 2 years cable broadband services are increasing more than xDSL.
- the most dynamic growth is taking place in wireless (particularly mobile) access services
- in 2008 growth has become slower compared to the previous 2 years, but was still on the level of 27 per cent
- in the last quarter of 2008 increase was up to 6% compared to the previous quarter (in Q4 of 2007 it was 8,7 %)

date - broadband subscriptions* - broadband penetration*

January 1, 2007

July 1, 2007, ...

* Without mobile Internet, but including all other technologies

The evolution of Internet subscriptions, 2001 - 2008

January 2009 Quick report by NHH: 508 000 mobile Internet subscriptions

KSH (Office of Statistics): 570 000

The increase of penetration is steady, including mobile Internet it represents about 23 %. Close to a third of all subscriptions are mobile ones.

2. Where we are? - WIRED PENETRATION - EU

Broadband penetration in the EU, July 2008

On the basis of KSH data, the value calculated for July 2008 is 16,47%, and the value calculated for January 1, 2009 is 17,23%.

Source: "Broadband access in the EU: situation at 1 July 2008" Brussels, 1 October 2008 (DG INFSO/B3.COCOM08-41)

New broadband subscriptions / 100 inhabitants (July 2008)

The growth of the mobile Internet broadband subscriptions not considered here is even more dynamic.

Source: "Broadband access in the EU: situation at 1 July 2008.

Remarks:

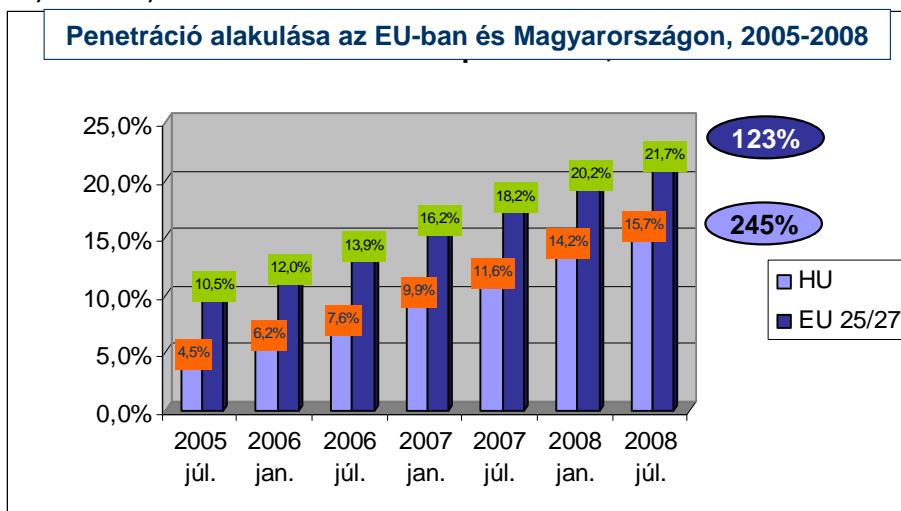
- source: "Broadband access in the EU: situation at 1 July 2008* Brussels, 1 October 2008* (DG INFSO/B3, COCOM08-41)
- **broadband penetration:** number of subscribers/100 inhabitants
- **data collected by:** DG INFSO
- **data supplied by:** ministries and telecommunication authorities
- **EU definition for broadband:** above 144 kbps
- these data include wired (xDSL, cable) and WLL (wireless local loop) services, while they **fail to include mobile broadband services.**
- the EU is envisaging to review the applied methodology, and to include at least the 3G mobile Internet offering a real broadband experience.

In Hungary, wired broadband penetration is still significantly lagging behind the EU average, although between July 2007 and 2008 it has increased at a rate above the average, by 4 per cent. The dynamics of the Hungarian increase - even without taking into consideration the mobile Internet that has also experienced a steady growth - has surpassed the EU average both in the period 2005 to 2008, and in the first half of last year.

2. Where we are? - WIRED PENETRATION

Evolution of penetration in the EU and in Hungary, 2005-2008

July January ...



Source:...

Broadband penetration and the pace of change, July 2008

Leading countries

Those on the top

Countries lagging behind

Emerging countries

The red arrow indicates the shift in the position of Hungary compared to last year.

Source: "Broadband access in the EU: situation at 1 July 2008.

Remarks:

- in the last 3 years the rate of increase of subscriptions has exceeded the EU average **by close to its double**.
- in EU member countries broadband penetration (without mobile Internet and certain wireless technologies) represented an average of 21,7% in July last year, which means **an increase of 3,5 per cent** during one year (Hungarian data show a 4,2% increase, but here it should be mentioned that Hungarian data for 2007 lag behind relevant KSH data - without the mobile Internet - by almost 200 000).
- between July 2007 and 2008 growth in the EU was 19,3%, and the Hungarian rate was 34,5% according to the EU calculation (on the basis of KSH data it was only 18%, which may indicate an imprecision of earlier EU data concerning Hungary)
- in the first half of 2008 EU growth was 7,8%
- in Hungary growth was 10,4% according to EU calculations, 11,6% on the basis of KSH data, and including also mobile Internet the rate of growth in the first half of 2008 was 14%.

From the aspect of wired broadband penetration Hungary belongs to the group of emerging countries. In the business segment - with the clear exception of the SME segment - the spread of Internet is almost complete. In most of the institutional segment penetration is close to 100%, the most important backdrop is in the group of health institutions.

2. Where we are? - WIRED PENETRATION

BACKGROUND

OECD broadband penetration and GDP per capita

Broadband penetration: June 2008.

GDP per capita

Broadband penetration (Subscriber no./100 inhabitants, June 2008)

GDP per capita (USD PPP, 2007)

Source: OECD, 2008

When evaluating penetration data it is worthwhile to consider the unequivocal correlation between the per capita GDP (USD PPP) of each country, and the broadband penetration in the same country. Penetration is not higher than in Hungary in any of those countries with a GDP/capita index lower than in Hungary.

2. Where we are? - MOBILE PENETRATION

Mobile broadband penetration, July 2008

January 2009 quick report by NHH:

508 thousand subscriptions (5% penetration),

KSH December data: 570 thousand subscriptions (5,7% penetration)

Source: "Broadband access in the EU: situation at 1 July 2008" Brussels, 1 October 2008 (DG INFSO 83, COCOM08-41)

Number of mobile Internet subscriptions - Those active - Total

Data traffic total (Gbyte) - Average data flow (GByte)

Total

Breakdown of subscriptions, January 2009 - Breakdown of data flow, Jan. 2009.

Source: "NHH Mobile Internet Quick Report, January 2009

From January this year NHH started to publish Mobile Internet quick reports. According to the report prepared with the cooperation of the certification agency MATRIX Kft collecting the data of the three mobile service providers the overall data traffic and the average traffic flow per subscriber both have increased compared to December. In January each subscriber had an average data traffic flow of 1,76 GByte.

3G indoors coverage (%) - 3G outdoors national geographical coverage (%)

Source: "NHH Mobile Internet Quick Report, January 2009

The most dynamically developing segment of the telecommunication market is the mobile Internet. This can be explained as a joint consequence of high mobile penetration in Hungary (122 mobile phones/100 inhabitants), the increasing geographical coverage of mobile internet services, the intensive competition between the service providers, price/quality indicators more and more comparable with those of wired service offers, and the need by end users to go mobile.

2. Where we are? - BPI

SUPPLY SIDE

BB Performance Index

DEMAND SIDE

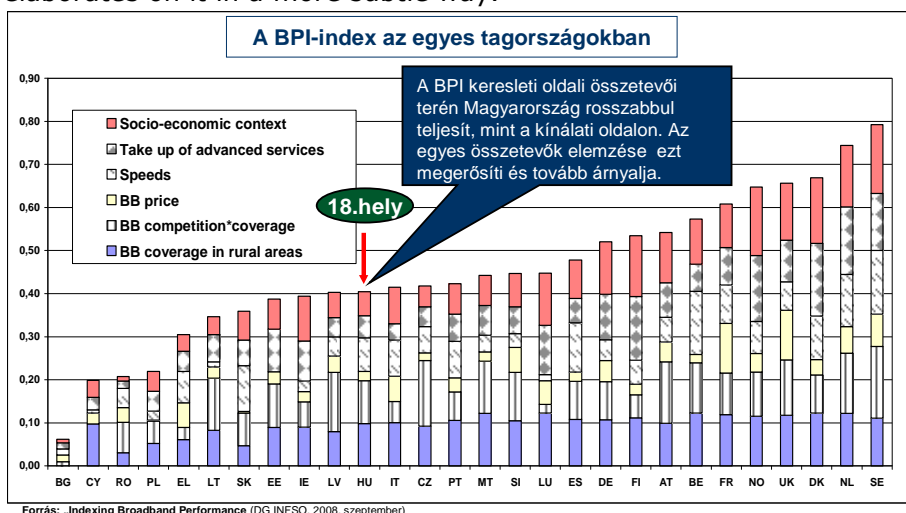
...

The broadband performance index (BPI) introduced by the EU Commission in September 2008 compares Internet access in Europe from the aspect of competition, coverage, speed and quality. On the demand side it analyses the take-up of advanced services by the population and the business sector, and also the socio-economic impacts. According to the communiqué of the Commission "The index ranks the results obtained in the field of high speed Internet by the EU member states calculated on the basis of major factors with an impact on the development of faster broadband access".

2. Where we are? - BPI

BPI index in each member state

As regards the demand side components of BPI, Hungary performs worse than on the supply side. The analysis of the various components confirms this, and elaborates on it in a more subtle way.



Source: Indexing Broadband Performance (DG INFSO, September 2008)

The penetration index is insufficient in itself to measure the performance of broadband services. The purpose of the introduction of the BPI index was to allow a comparison between the performance of broadband services of EU countries (plus Norway) and a selection of priority areas for further development for the decision-makers of the member countries.

BPI is a complex derived index, capable to identify the driving forces and limiting factors concerning broadband services, and to monitor the relative performance of the various countries in terms of the lead indicators of coverage, competition, bandwidth, prices, the use of advanced services, and the socio-economic environment. The elaboration of the methodology and weighing factors of the index has been completed with the participation of the member states.

As we shall see below, in a majority of the supply side components of the BPI index Hungary ranks better, while in a majority of the demand side demand side components, Hungary ranks worse than the 18th place it has achieved overall. On the basis of an analysis of the various components we can get a more subtle picture which - in accordance with the intentions of the EU - makes the index capable to identify the most significant challenges and to determine the areas for further development.

Further on we shall analyze the content of BPI and the trends behind by each component.

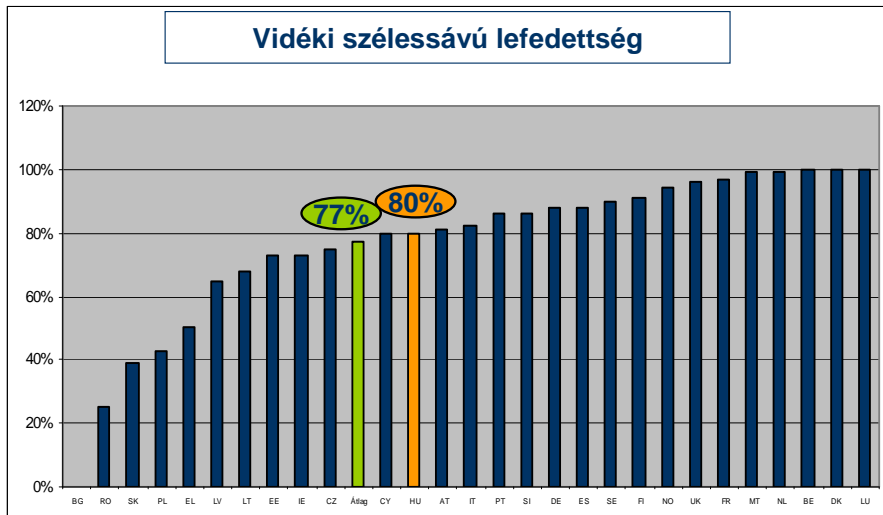
2. Where we are? - BPI SUPPLY SIDE / coverage

BB rural coverage

non weighted

Rural broadband coverage

Source: Indexing Broadband Performance (DG INFSO, September 2008)



Forrás: „Indexing Broadband Performance (DG INFSO, 2008. szeptember)

Index: broadband coverage in rural areas (weighting factor: 0,68)

Its content: the ratio of rural population supplied through local hubs equipped with DSLAM

EC reasoning: Index indicating geographical distribution in a geographical sense

Source: IDATE

Period: 31 December 2007

Remark: the index fails to consider areas not covered by PSTN networks, but provided with other broadband services. As regards Hungary the index is still better than EU average, and it could be even more favourable should wireless technologies also be considered.

Urban areas ...

Source: "Broadband coverage in Europe" (DATE; DG INFSO September 2008)

Considering the scattered geographical pattern of towns and villages in Hungary, the rural coverage index is rather good and at the end of year 2007, according to IDATE data used by the EU, it exceeded the EU average. To further shade off the picture, the situation is deemed to have improved since the end of year 2007 due to the GVOP/GOP tenders (GVOP - Operative Program for Development of the Economic Competitiveness and GOP - Operative Program for Economic Development) and to a lesser degree to market development projects.

2. Where we are? - BPI SUPPLY SIDE / coverage BACKGROUND

DSL coverage in rural areas and national coverage, December 2007

Rural National
BG ...

Broadband subscriptions by technologies, July 2008

Source: "Broadband..."

IDATE data for Hungary	December 2007
DSL ...	

Source: ...

EU 27...

DSL total Other platform total
Hungary ...
DSL total Other platform total

2. Where we are? - BPI SUPPLY SIDE / coverage BACKGROUND

No optical district network connection - A single optical district network connection - Several optical district network connections

No broadband available: "uncovered areas" - Broadband available

- about 130 areas - 18 000 households - 47 000 inhabitants - on average about 140 households - on average about 360 inhabitants - **A**
- about 1000 areas - about 280 000 households - about 760 000 inhabitants - on average about 300 households - on average about 800 inhabitants - **B**
- about 1300 areas - about 1,4 million households - about 3,8 million inhabitants - on average about 1100 households - on average about 3000 inhabitants - **C**
- about 900 areas - about 2,1 million households - about 5,4 million inhabitants - **D**

A - No broadband available: broadband services are not available by any technology in these "white" spots (on the basis of a list prepared for the 2008 tender documentation of GOP 3.1.1., validated publicly on various occasions)

B - Broadband exists but there is no optical district network: there is no full coverage on these "grey" areas, although where the service exists, the currently available bandwidth is not necessarily lower than on the areas provided with an optical district network. With the exception of FTTx, any technology could be available (xDSL, cable, WLL, WiFi, etc.). Any further increase of penetration and use (bandwidth requirement) may result in bottlenecks.

C - Areas accessed by one optical district network: coverage problems may arise in these areas mainly at the local network levels. The backbone and district network capacities usually are sufficient, but the access to the district network may be an issue.

D - Areas accessed by more than one optical district networks: these areas normally include large towns and cities featuring competition based on infrastructure and service. Coverage problems may arise only in the smallest areas at local network level.

In a technology-neutral sense the coverage of Hungary shows a better picture than using the EU calculation methodology. At the same time, for the sake of building networks really fit for future requirements we could identify major needs for development as regards optical district networks and even more for local networks.

Source: GDP, market information

2. Where we are? - BPI SUPPLY SIDE / coverage BACKGROUND

Accessibility of optical district networks in Hungary, 2008

Accessible optical network (1945)

Optical network inaccessible, but to be built within GOP 3.1.1. (223)

Optical network inaccessible, and shall not to be built within GOP 3.1.1. (984)

Source: "Broadband for all: Intensive development of broadband coverage in Hungary" Considerations and proposal of the HTE Working Group

Over the last years coverage has considerably improved, yet no optical network covering all areas of the country has been built. The reason is, that under a certain size of a village the specific cost of investments required for this does not ensure for market actors an appropriate return on investment. In areas of the most scarcely inhabited and small size villages, even the grant content of 50 to 70% available with some EU projects has not proved to be sufficient to ensure that network development take place on market economy basis. On the map, those areas are indicated in red colour, where no optical district network has been built up until the end of 2008. This does not mean that broadband services would be unavailable on these areas, in case of an expected increase of penetration and user bandwidth requirements the lack of a local network connection may result in bottlenecks, where market actors shall only react by developments if they hope to earn a decent return on investment within a reasonable time.

The above coverage map figuring in several sources show the Monortel (UPC) areas in the central region of Hungary as uncovered, although in a majority of them there is a regional network optical solution. Therefore, the number of areas as yet inaccessible by optical solution can be about 950.

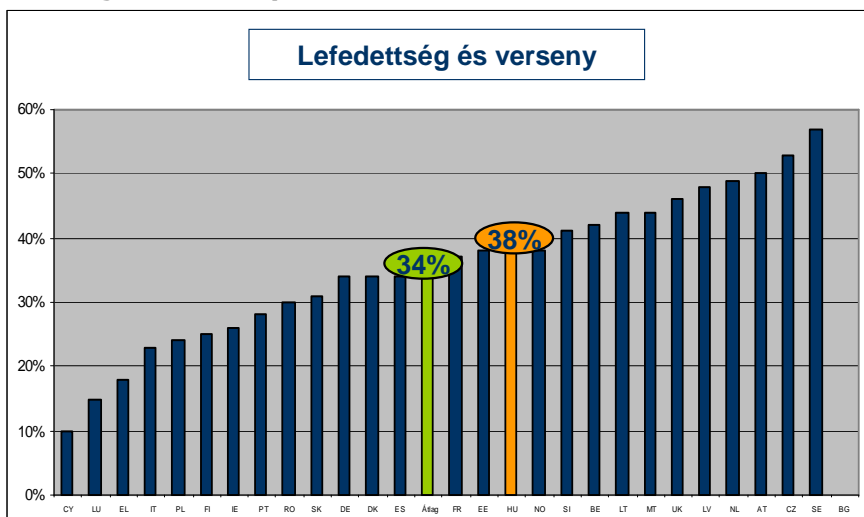
2. Where we are? - BPI SUPPLY SIDE / competition

Competition by coverage

Average* 34%

* Non-weighted

Coverage and Competition



Forrás: „Indexing Broadband Performance (DG INFSO, 2008. szeptember)

Source: “Indexing Broadband Performance” (DG INFSO, September 2008)

Market share of incumbents and new entrants, July 2008

Source: Broadband access ...

Index: Platform competition * national coverage (weighting factor: 0,92)
Its content: The ratio of lines (LLU, own PSTN and non-DSL) provided by new entrants within all broadband subscriptions * The ratio of all inhabitants provided with local hubs equipped with DSLAM
EC reasoning: An index indicating the level of competition. A more intensive competition shall increase innovation, investment projects and product choice.
Source: COCOM and IDATE
Period: 1 January 2008 and 31 December 2007
Remark: the second component of the index does not take into consideration areas unserved by PSTN networks, but covered by other broadband services. According to Hungarian sources the 91% figure of IDATE is rather in the range of 94-97%, that would obviously result in a better result for Hungary.

Concerning the BPI component indicating the level of competition the figure for Hungary is better than the EU average, that can be explained by the above the EU average market share of "new entrants" vis-a-vis incumbents, and by a national coverage close to the EU average. The national coverage ratio, according to Hungarian sources, is about 94 to 97%.

2. Where we are? - BPI SUPPLY SIDE / competition BACKGROUND

Wired Internet market 2007 Q3 - DSL market shares 2007 Q3 - Cable Internet market shares 2007 Q3

Source: SzaT - Source: SzaT - Source: SzaT

Incumb.DSL - Incumbent on other platforms

DSL - WLL - Cable - Leased line - FTTH - Satellite - PLC - Other - Total

Source: "Broadband access ...

New entrants on other platforms

DSL - WLL - Cable - Leased line - FTTH - Satellite - PLC - Other - Total

Source: "Broadband access ...

<p>The Internet market is characterized by intensive competition, yet the 25 largest service providers hold 80 per cent of the subscriptions. According to KSH data in Q4 of 2008 there were 408 Internet service providers in Hungary, which is 77 more than in the previous year.</p>

2. Where we are? - BPI SUPPLY SIDE / competition BACKGROUND

Incumbent's broadband ...

Source: "Broadband ...

DSL access ...

Source: "Broadband...

Market share on the broadband market (EU, July 2008)

New entrants total - Incumbents total

Market share on the broadband market (HU, July 2008)

New entrants total - Incumbents total

Market share on the DSL market (EU, July 2008)

New entrants DSL - Incumbents DSL

Market share on the DSL market (HU, July 2008)

New entrants DSL - Incumbents total DSL

2. Where we are? - BPI SUPPLY SIDE / competition BACKGROUND

New entrants DSL (PSTN)

Own network - Full ULL - Shared access - Bitstream access - Resale - Total
Source: "Broadband ..."

Access of new entrants to the local loop

own network - full ULL - Shared access - Bitstream access - Resale
Source: "Broadband ..."

From the aspect of competition it is essential to learn to what extent the incumbents (companies formerly in a monopolist position on the telecommunications market) could shift their lead position to the DSL market. The market share of new entrants on the whole Hungarian broadband market (57%) - due especially to the high degree of cable penetration - is higher than the EU average (53%), but in the DSL segment new entrants have a market share of only 28% compared to the EU average of 44%.

New entrants on the Hungarian DSL market access incumbents' networks mainly by "bitstream access". This is only explained partly by a high market share of cable service providers. One way to change the situation would be the implementation of the so-called "investment step" by regulatory means - the efficiency of which is questioned by many - e.g. by reviewing the "retail minus" pricing. At the same time NHH has taken several measures to increase service based competition: on the market no. 12 (wholesale broadband access service providing) it made mandatory for incumbents to take hold of the local loops and sub-loops, and of the national level IP bitflow. NHH has made mandatory for fees to be cost-based and to be verified, and to apply the principle of equal treatment. In a later decision NHH imposed the obligation of the so-called bare DSL service, providing as well a separate pricing formula. It has identified market no. 14 (trunk segment of wholesale leased lines) also as an affected market, without however identifying a JPE service provider, so no obligations have been imposed there.

2. Where we are? - BPI SUPPLY SIDE / competition BACKGROUND

WHAT DOES THE CONSUMER SAY?

Number of accessible service providers as the consumers know about it

Ratio of households (%), 2008

Land line phone - Mobile phone - Programme distribution - Internet
1,2,3, more than 3, NT/NV

Estimate number of accessible service providers

In percentage of those using the given services (%)

Landline phone - Mobile phone - Programme distribution - Internet
Too many - Just enough - Too few - NT/NV

Source: NHH-Ariosz market study, September 2008 (WWW.NHH.HU)

Only 10% of the households interviewed in the September 2008 public survey thought that they had only a single Internet service available to them, which is a lower ration than in the case of landline phones and programme distribution. According to 48% of those who replied it is the "just enough" number of Internet service providers that can be reached, and this is a two and a half times increase compared to a similar survey conducted in 2005.

2. Where we are? - BPI SUPPLY SIDE / prices

1-2 Mbit/s ...

VAT (Áfa) g*

* Non-weighted

It is in the price of offers with a high bandwidth, and consequently the specific bandwidth price, that there is a lag compared to the EU average.

Source: "Indexing ...

As regards the 1-2 Mbps category, the Hungarian price offer was at the EU level at the beginning of year 2008. The picture becomes worse for higher bandwidths, so there is a major Hungarian lag in the index expressing the specific price of the bandwidth, according to the Van Dijk analysis used by the EU. The methodology of research hides several significant characteristics of the Hungarian market, e.g. the high proportion of bundling and of contracts with a fidelity clause (discount contracts).

BPI component

- Prices (weighting factor: 0,88)

Its elements

- Price of 1-2 Mbps subscriptions - Price of 2-8 Mbps subscriptions - Price/bandwidth

Source

- Van Dijk - Van Dijk - EC on the basis of Van Dijk

Period

- 01.04.08 - 01.04.08 - 01.04.08

Description

- Median of the offer prices between 1 and 2 Mbps - Median of the offer prices between 2 and 8 Mbps - Price median divided by bandwidth

EC reasoning

- Calculated on PPP basis. In the EU 31% of the subscription belong to this category. - Calculated on PPP basis. In the EU 34% of the subscription belong to this category. - A value figure calculated on the basis of all offers (including bundling), that divides the median of monthly fees by the bandwidth publicized by service providers. The figure shows what average kbps amount can be bought for 1 Euro.

Remark

- It refers to offer list prices, it is not weighted with actual usage proportions, it does not contain building offers and discounts. - This is basically the specific price of bandwidth. The unfavourable value of the Hungarian index is motivated by the relatively high price of larger bandwidth offers.

2. Where we are? - BPI SUPPLY SIDE / prices

Broadband prices, September 2008

2nd place - 10th place - 12th place

Source: OECD ...

Changes in broadband prices, September 2006/2008

Source: OECD ...

Broadband price range, September 2008

Source: OECD ...

average prices - USD - USD PPP - USD/MB

Hungary

OECD

Source: OECD...

Recent data of the OECD (September 2008) display a fairly better panorama: according to OECD numbers, broadband prices fell in an annual average of 44% in Hungary in the last 3 years, which was the second largest decrease among OECD countries. There is a major reduction in both the ADSL and cable platforms, which is an indication of the boosting competition among platforms.

2. Where we are? - BPI SUPPLY SIDE / prices BACKGROUND

Average prices (256-2048kbit/s USD PPP), September 2008

Sources: OECD...

Average prices (2-10Mbps, USD PPP), September 2008

Sources: OECD...

ADSL bandwidth and price changes, September 2006/2008

Source: OECD...

Cable bandwidth and price changes, September 2006/2008

Source: OECD...

Despite a significant price decrease the price of higher broadband subscriptions in Hungary continues to remain relatively high. The stronger competition between the platforms shall exercise as expected bring about decrease of the prices (and the weaker HUF - as a non-desired side effect - shall improve the statistics...)

2. Where we are? - BPI SUPPLY SIDE / prices BACKGROUND

Average prices according to www.szelessavkereso.hu March, 2009

- Package - Description - Cheapest HUF/month - Average HUF/month - Average at a 300 HUF/EUR rate - Average at a 220 HUF/USD rate
- 1-2Mbps - 1 year fidelity "no limit" - 1.880 - 3.511 - 11,70 - 15.96
- 4Mbps - 1 year fidelity "no limit" - 4.494 - 6.132 - 20.44 - 27.87
- 8-20Mbps - 1 year fidelity "no limit" - 6.890 - 7.601 - 25.34 - 34.55

Source: www.szelessavkereso.hu

Evolution of retail prices 2002-2008

HUF/month (gross)

June 2002 - August 2002

Speed

Source: NHH

According to data of March 2009 of the broadband search service operated by our Foundation, the average gross price of typical packages (for contracts of one-year fidelity typical on the Hungarian market) is fairly lower than the one showed by international statistics. Obviously, the over 20% devaluation of the local currency (HUF) plays a role in this phenomenon. When calculating the average price of the various packages, in order to avoid overlaps, we have considered different speed values and we have calculated with their arithmetical average.

www.szelessavkereso.hu

In its recently published report entitled "The development of the Hungarian telecommunication market and regulations 2004-2008" NHH gives the following evaluation on the evolution of broadband prices: "The price of broadband services fell considerably during the last four years. While in 2003 the price of the least expensive broadband package was 8 to 10 thousand HUF with the leading service providers, by 2007 its price dropped to HUF 5000, and furthermore, for the price of 2007 users could buy a bandwidth three to four times larger than in 2003."

www.nhh.hu

2. Where we are? - BPI SUPPLY SIDE / prices BACKGROUND

WHAT DOES THE CONSUMER SAY?

Consumer price perception, September 2008

Average scores by users of particular services

Decreasing prices - Increasing prices

Landline phone

Mobile phone

Programme distribution

Internet

1 - considerable decrease 5 - considerable increase

Source: NHH-Ariosz survey. September 2008

Consumer and telecommunication price index, 2001-2007

In percentage of the previous year

Consumer price index

Price index of telecommunication services

Source: KSH

All price decreases concerning telecommunication services taking place in the last few years have not been perceived by a majority of the public. The only exception is represented by Internet services: according to an NHH analysis, on this market, although to a lesser extent only, consumers already notice the drop of prices.

2. Where we are? - BPI SUPPLY SIDE / quality

Take-up speeds...

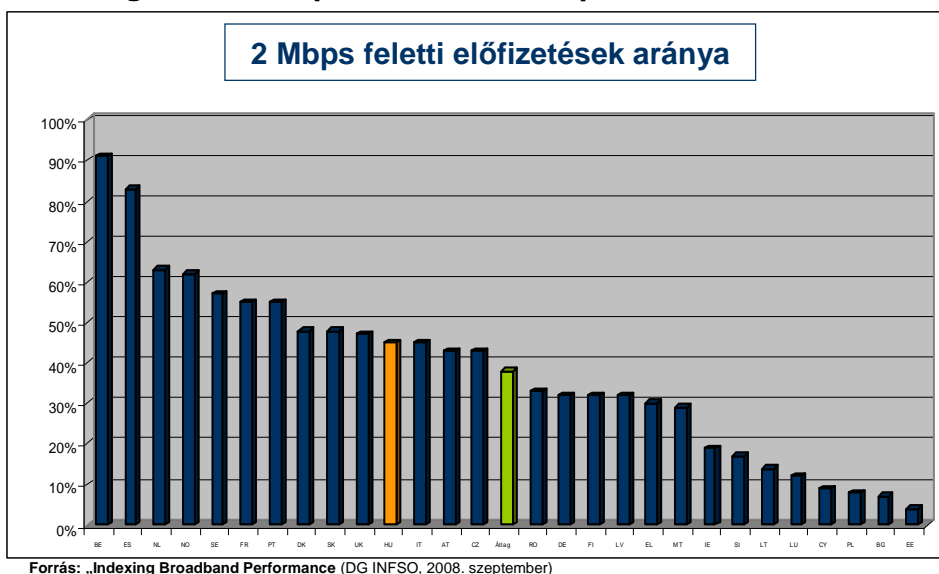
Average

* Non-weighted

Average bandwidth (kbps)

Source: "Indexing..."

Percentage of subscriptions above 2 Mbps



Source: "Indexing Broadband Performance (DG INFSO, September 2008)

Index: quality (broadband) (weighting factor: 0,99)

Its content: the weighted average of the nationally accessible (publicized, not effectively used) bandwidth + the proportion of subscribers for services above 2 Mbps

EC reasoning: Bandwidth is an indicator of the quality of broadband services. The high rate of consumers using higher bandwidth services augurs further migration to services with a higher bandwidth content.

Source: EC/IDATE

Period: 31 December 2007

At the end of year 2007, the generally announced bandwidth in Hungary was 5 Mbps, which exceeds the EU average (3.7 Mbps).

The ratio of 45% of subscribers to services above 2 Mbps, is also better than the 38% EU average, so the "quality" component of the BPI in Hungary outperforms the EU average.

2. Where we are? - BPI SUPPLY SIDE / quality BACKGROUND

Internet speed in the EU, December 2007

Source: "Broadband ...

Breakdown of subscriptions by bandwidth, July 2008

Source: "Broadband ...

Subscriptions by download speed, Hungary, December 2007

Bandwidth - xDSL - Percentage - Cable - Percentage - XDSL+cable - Percentage
Above 20 Mbps - ...

Source: "Broadband...

Some 93% of the xDSL and cable subscribers chose at least 1 Mbps, and 44% opted for a service of at least 2 Mbps bandwidth in Hungary in December 2007. In the same period, the corresponding EU ratios were 80% and 49%, respectively. Hungarian subscriptions under 1 Mbps represent only 7% - opposite to the 20% average of the EU.

According to another listing 15% of Hungarian subscriptions were above 10 Mbps in July 2008, that equals the EU average, and ranks as the 7th highest score among member states. At the same time, the percentage of subscriptions belonging to the 2-10 Mbps category is only half of the EU average, and it is explained by the high ratio of 1-2 Mbps subscriptions.

2. Where we are? - BPI SUPPLY SIDE / quality BACKGROUND

WHAT DOES THE CONSUMER SAY?

Satisfaction with the speed of Internet connection

In percentage of adult consumers with Internet connection

5. Fully satisfied

1. Not satisfied at all

ADSL - Cable - Mobile Internet - Mobile phone - Other wireless - Internet users total

Source: NHH-Ariosz market research, September 2008 (WWW.NHH.HU)

Three-quarters of the consumers are satisfied with the speed of Internet connection. Above the average satisfaction can be noted with wired technologies, while under the average satisfaction can be noted with wireless technologies and mobile Internet.

2. Where we are? - BPI DEMAND SIDE

In selecting the indicators intended to measure the use of advanced services the main requirement was to have a wide range access to data, and to have indicators both for the user ratios of the public at large and of enterprises, and for the confidence concerning on-line transactions.

Use of advanced services

20th place

Source: "Indexing Broadband Performance" (DG INFSO, September 2008)

Socio-economic context

21st place

Source: "Indexing Broadband Performance" (DG INFSO, September 2008)

On the demand side the ranking of Hungary is consistently worse than the 18th place obtained on aggregate.

2. Where we are? - BPI DEMAND SIDE / services

Use of advanced services

20th place

Source: "Indexing Broadband Performance" (DG INFSO, September 2008)

So that the positive impact of broadband can be fully exerted it is indispensable to ensure that the advanced services it offers be used as much as possible. On the basis of a survey of BPI components aimed to measure this one can see, that the Hungarian backdrop can be mostly explained by the important lagging behind accumulated in the fields of electronic invoicing by companies, online buying and e-banking services used by the public at large. In the case of online games and media downloads Hungarian data exceed the EU average, just as the use of e-government services by the population is also above the EU average.

e-invoice - e-Gov. - Online games and music - SW downloading - e-Gov -

Online buying - e-Banking

enterprises - public at large

average*

*non-weighted

2. Where we are? - BPI DEMAND SIDE / services BACKGROUND

Indicator - Source - Period - Description - Explanation

- e-invoicing (enterprises) - ESTAT (ICT research by enterprises) - 2007 Q1 - Ratio of enterprises issuing electronic invoices - Index showing the readiness of enterprises to use advanced services
- use of e-government (enterprises) - ESTAT (ICT research by enterprises) - 2006 - Ratio of enterprises providing data to government by electronic connection - Index showing the readiness of enterprises to use advanced services
- Games, music, film downloads (private persons) - ESTAT (household ICT research) - 2007 Q1 - Ratio of private persons downloading music / video / games in the last 3 months - Index showing the readiness of the public to use advanced services
- Software downloads (private persons) - ESTAT (household ICT research) - 2007 Q1 - Ratio of private persons downloading music / video / games in the last 3 months - Index showing the readiness of the public to use advanced services
- use of e-government (private persons) - ESTAT (household ICT research) - 2007 Q1 - Ratio of private persons providing data to public administration through the Internet in the last 3 months - Index showing the readiness of the public to use advanced services
- Online buying (private persons) - ESTAT (household ICT research) - 2007 Q1 - Ratio of private persons using online buying services in the last 3 months - Index showing the readiness of the public to use online transactions, indicating a certain degree of confidence
- e-banking (private persons) - ESTAT (household ICT research) - 2007 Q1 - Ratio of private persons making online banking transactions in the last 3 months - Index showing the readiness of the public to use online transactions, indicating a certain degree of confidence.

Source: "Indexing Broadband Performance (DG INFSO, September 2008)

In selecting the indicators intended to measure the use of advanced services the main requirement was to have a wide range access to data, and to have indicators both for the user ratios of the public at large and of enterprises, and for the confidence concerning on-line transactions. The data require updating: the components currently show the situation in 2007.

2. Where we are? - BPI DEMAND SIDE / services

e-invoicing (enterprises)

Hungarian companies have a huge lag in electronic invoicing

e-government (enterprises)

In using e-government services by enterprises the lag is more limited

Online purchases (retail)

There is a major lag as regards Internet-based retail purchases

e-Government (population)

The use of e-government services by the population is above the EU average

Source: "Indexing Broadband Performance (DG INFSO, September 2008)

2. Where we are? - BPI DEMAND SIDE / services

Online games and media (population)

As regards online games and media downloads Hungarian figures exceed the EU average

SW downloads (population)

As regards software downloads by the population no significant lag can be identified

E-banking (population)

As regards e-banking services a significant lag can be identified

Source: "Indexing Broadband Performance (DG INFSO, September 2008)

The picture obtained by an analysis of the BPI component metering "The use of advanced services" is also supported by Hungarian surveys.

Online activity of the business companies - except for the obligatory tax returns - is very low key, electronic invoicing is underdeveloped.

"The public at large uses Internet mainly for leisure time activities, the use of online buying and e-banking services is limited, which can be explained - in addition to a low level of penetration - by a lack of confidence.

However - in the field of the use of e-Government services there is no significant lagging behind (mostly due to its compulsory character).

2. Where we are? - BPI DEMAND SIDE / services BACKGROUND

Enterprises

The ratio of enterprises accepting online purchase orders, 2008

Source: Eurostat

The ratio of Internet based e-Commerce within the overall turnover of enterprises, 2008

Source: Eurostat

In the case of enterprises the scope of the BPI index is limited to e-invoicing and the use of e-Government services.

However, it is also worthwhile to compare the situation in Hungary with EU trends in the case of some other indicators not integrated in the BPI index.

EUROSTAT data refer to enterprises employing more than 10 staff and concern the period at the end of 2007.

Both in the field of online purchasing and selling Hungarian enterprises are lagging behind the EU27 average to a considerable degree. This index confirms the picture indicated by the "electronic invoicing" indicator of BPI.

However, within the overall turnover of enterprises the ratio of Internet based trade (12%) has doubled compared to the previous year, and has caught up with the EU average. The same trend could be noted in the Czech Republic, Lithuania, Portugal and Slovakia, too.

These two, seemingly contradictory data, may indicate that those, mostly large size enterprises, that are engaged in online selling use this sales channel in ever higher proportions.

2. Where we are? - the 2007 Business Readiness Index BACKGROUND

Enterprises

ICT application

ICT use

Source: <http://ec.europa.eu/enterprise/ict/policy/ebi/>

The e-Business Readiness Index is created by the General Directorate of Enterprises and Industry of the European Commission. It is based on two pillars:

1. ICT application
2. ICT use

The two pillars, and so the index is made up of the weighting of 6-6 "sub-indicators". The last data are from 2006, so they can only show a situation that existed earlier.

In 2006 the index showed a significant lag concerning the role of ICT tools in the activities of business companies which explains partly the Hungarian lag, still present today, concerning the demand side indicators of BPI.

The pillar indicators of the ICT application show that the overall picture is compromised at the same time by the lag in the use of computers and of the Internet from EU levels, and by a limited use by business companies of a company web page, Intranet and Extranet.

ICT use shows the relationship of individual countries to e-Economy first of all in B2B, B2C relations. The poor Hungarian ranking noted here explains the lag in the use of advanced services by enterprises shown on the demand side of BPI using data from a later period.

2. Where we are? - DEMAND SIDE / services BACKGROUND

Enterprises

Internet availability in enterprises, by size

Large companies - Medium companies - Small companies - Micro-companies

Total 10+ - Total 1+

Source: Bell Research ICT Report

Internet availability in the institutional sector

Institutions financed by the central state budget - Institutions financed by local governments - Educational institutions - Public health institutions - All institutions

Source: Bell Research ICT Report

Internet availability

According to Bell Research data, at the end of 2007, average Internet availability exceeded 90%, i.e. 9 out of 10 enterprises had Internet access.

According to availability surveys, the low use of advanced services by domestic enterprises is not caused mainly by the unavailability of broadband access. The size of the enterprise has a positive correlation with the index of Internet availability:

- *As regards large and medium size enterprises, Internet availability may be deemed full.*
- *As regards small enterprises employing more than 10 people, this ratio got closer to the medium-sized enterprise segment by 2007;*
- *Micro enterprises employing 1 to 10 staff still display a very low penetration.*

In the overall institutional sector there is a 94% Internet availability; in the municipal sector and in educational institutions this is almost 100%. The lowest Internet penetration has been found in the health sector (93%)

2. Where we are? - DEMAND SIDE / services BACKGROUND

General public

Purpose of Internet use

Frequency of online activities by individuals who used the Internet during the last 3 months

Online communication

Sending/receiving e-mail messages

Search for information concerning products and services

Reading online newspapers and magazines

Search for health information

Interaction with public institutions

Search for information concerning travel and accommodation

Search for information concerning public institutions

Software download

Web-radio, web-television

Downloading official documents

Job search, submitting applications for jobs

Internet banking

Sending official documents

Selling products and services

Source: Eurostat

The group of interviewees: those having used the Internet over the past 3 months. Likewise in the EU, from among online activities the various forms of communication activities take the lead (audio and video data transmission and/or sending email messages, also in Hungary. More than 4/5th of the general public buy goods after they consult the Internet. Reading web newspapers also remains popular.

E-government readiness index, 2008

Source: UNO

According to an international comparison published by the UNO in 2008 Hungary ranks **30th concerning e-government readiness**. In the field of e-government services there remains the shortcoming, that in the case of most of the services available, **single-counter case handling has not been introduced**.

The ranking of online activities confirm the picture outlined by the indicators on the demand side component of BPI. From the frequency line one can see, the use of e-Banking and e-Commerce services is lagging considerably behind the most popular services (online communication, e-mail, information gathering).

2. Where we are? - BPI DEMAND SIDE / services BACKGROUND

WHAT DOES THE CONSUMER SAY?

Usually watches DVD, video CD, or video

Percentage of adult population with Internet connection at home

Usually watches video contents on Internet

Usually downloads video contents on Internet

frequently - rarely - never

Where he/she usually watches downloaded contents

Percentage of adult population downloading video contents

Computer, laptop - Television - Other equipment

Source: NHH-Ariosz research, September 2008

According to NHH research 57% of the population using the Internet usually watches video contents, but only 32% downloads videos at least occasionally from the Internet. Downloaded contents are most often watched on the computer, but many also use the television-set for this purpose.

2. Where we are? - BPI DEMAND SIDE / context

Socio-economic context

21st place

Source: "Indexing Broadband Performance, DG INFSO, September 2008)

In the case of all indicators making up the "socio-economic context" component of BPI the Hungarian index remains below the EU average, that can be explained first of all by the low level of digital literacy required for using information communication tools and services, and/or the lack of motivation. In the case of the 3G indicator there has been probably a positive change since the collection of these data, and as for the low ICT spend the nominal data reporting (instead of PPP) also contributed. In total this is the weakest indicator of BPI in the Hungarian context, and the situation is not better even if we take into consideration further other data.

e-skills of the population - household PC penetration - 3G device penetration - per capita ICT spend (€)

Average

Source: "Indexing Broadband Performance, DG INFSO, September 2008)

2. Where we are? - BPI DEMAND SIDE / context

Indicator - Source - Period - Description - Explanation

- e-skills - ESTAT (household ICT research) - 2007 Q1 - Percentage of individuals with minimum Internet use skills (who used the Internet at least once) - E-skills are necessary to use advanced services. This indicator shows the social attitude towards the Internet.
- Household PC penetration - - ESTAT (household ICT research) - 2007 Q1 - Percentage of households where at least one person uses the home PC. - This indicator shows to what extent households are PC equipped, an important conditions for the use of broadband applications.
- 3G device penetration - EC/IDATE - 31 December 2007 - The percentage of 3G subscribers compared to the whole population. - This indicator shows to what extent such devices are present, an important conditions for the use of broadband applications.
- ICT spend - EITO - 2007 - Per capita ICT spend - This indicator shows the degree of commitment to ICT.

Why don't you use the Internet?

Doesn't need it.

Not interested in it.

Has no computer.

Too expensive.

Doesn't know how to use it.

Source: The map of the digital future WIP (THAKA-ITTK-TÁRKI)

Why don't you subscribe to the Internet?

Doesn't need it.

Has no computer.

Access is expensive.

Complicated to use.

Full package is expensive.

Has access at another place.

Has no telephone line.

Phone is expensive.

Internet is an ephemeral vogue.

Source: ---

Reasons for refusing the Internet:

Cognitive reasons: doesn't need it, not interested in it, doesn't know how to use it, fear of the technology, no time for it, etc.

Material reasons: PC not good enough, has no PC, too expensive, slow access, etc.

In recent years, we have witnessed a reduction in the number of Hungarians that cannot afford a computer or fail to use the Internet for lack of resources. This is a result of a decrease in the prices of telecommunications services and computing devices. Parallel to the diminishing incidence of pecuniary obstacles, the role played by cognitive obstacles (lack of motivation or use skills, as well as negative attitude towards technology) has been growing.

2. Where we are? - BPI DEMAND SIDE / context

E-skills of the population

The percentage of those having at least once tried to use the Internet is lagging behind the EU average

Household PC penetration

The number of households equipped with a PC is below the average, and progress has slowed down over the last period

3G device penetration

There may have been a significant change in the meantime concerning this indicator, as over the last year mobile Internet penetration has greatly increased.

Per capita ICT downloads (€)

Nominal value figure, at purchasing power parity Hungarian ranking would be probably better.

Source: "Indexing Broadband Performance (DG INFSO, September 2008)

2. Where we are? - BPI DEMAND SIDE / context BACKGROUND

Percentage of households equipped with a PC and an Internet access in EU countries (in percentage of all households) 2007

Computer Internet
Source: Eurostat

Percentage of those, who used a computer during the last three months

Source: Eurostat

Household PC and Internet penetration

Eurostat data allowing international comparisons are only available for the year 2007. Compared to the 2007 Hungarian data of Eurostat, Hungarian research shows poorer data even for 2008. The September 2008 survey of NHH (Ariosz) puts e.g. the percentage of households with PC to 45%, and those with Internet access to 36%.

According to all available data and surveys household PC and (especially) Internet penetration is still significantly lagging behind the EU average. The indicators for a village/town improves in direct proportion to the size of the village/town.

At the same time, PC and Internet use by the population shows a smaller - and steadily decreasing lag, indicating that a significant part of the population uses a PC and the Internet at the workplace/school, but is unable/not willing to buy a PC and an Internet access in his/her home.

2. Where we are? - BPI DEMAND SIDE / context BACKGROUND

Percentage of individuals within the population, who have never yet used a PC/the Internet

Computer Internet
Source: Eurostat

Changes in the share of people using regularly the Internet in specific age groups

Source: TNS-NRC InterBus 2000-2008. Basis: ages from 15 to 69

15-69 years

15-24 years

25-34 years

35-49 years

50-69 years

Source: TNS_NRC

According to the 2008 data of Eurostat 31% of the adult population have never yet used a computer, and 37% have never yet used the Internet. Both data show a significant progress -in excess of the change of the EU data - compared to the data of the beginning of 2007 used for calculating the relevant indicator of the BPI index.

Almost half of the adult population failed to use regularly the Internet in the first quarter of 2008; still in every age group we can note an increasing although differentiated rate of people surfing regularly the Internet.

In the last quarter considered by the TNS-NRC survey, the age group of 25-34 showed the fastest growth, but still 40% of them still fail to use the world wide web. It is surprising that one of five even from the "sulinet or school net generation" evades the online world. As for older generations, most of the people don't use the Internet.

Internet use is fairly pre-determined not only by age groups, but also by regions. In the capital city, in other big cities the indicators of use are higher than in smaller towns and villages.

2. Where we are? - BPI DEMAND SIDE / context BACKGROUND

WHAT DOES THE CONSUMER SAY?

Those planning to purchase home Internet access within 1-2 years

In percentage of households

Households with Internet access at home

Probably not 24%

Probably yes 11%

278 thousand households

Surely not 59%

Surely yes 4%

NT/NV 2%

Technology of the planned subscription

Likely or firm buyers

Cable TV

ADSL

Mobile Internet

Other wireless

Source: NHH+Ariosz research, September 2008

Almost 40% of the households planning a purchase envisages the cable Internet option, a further third of them prefers ADSL. Since the survey of last September the ratio of mobile Internet users has probably expanded, since according to market data this is the most dynamically progressing segment.

3. What are the main challenges? - SUPPLY SIDE

Despite this steady growth, the major challenge is still the broadband penetration lagging behind the EU average. There are identifiable obstacles on both the demand and offer sides impeding the growth of the remarkably low penetration among older and low-educated people living in small villages as well as among micro and small enterprises. A key challenge is how to overcome these obstacles.

- 1. Uncovered areas (no broadband):** no broadband service can be accessed by whatever technology ("white" areas). In the case of these about 130 settlements the immediate challenge is to ensure broadband coverage for the about 18 thousand affected households.
- 2. Areas without an optical district network connection:** no full-scale broadband service access, and even where access is available, penetration and use (bandwidth needs) may result in bottlenecks. In the case of these settlements the immediate challenge is to build an optical district network connection.
- 3. "partly covered areas": on certain parts of the area no broadband service is available.** Such areas can those uncovered by optical technology, but also those where there is already an optical district network. In these areas the main challenge is to cover the area parts and households presently uncovered by local networks.
- 4. shortcomings of the competition:**
 - the relatively low market share of the new entrants on the DSL market (28% compared to the 44% EU average, partly counterbalanced by the fact that also considering the cable platform, the market share of new entrants is 57%, compared to the 53% EU average)
 - the significant oversize of the bitstream access in the case of new entrants on the DSL market (limited implementation of the "investment step")
 - operational shortcomings of the wholesale markets (leased line segment)
- 5. high specific price of larger bandwidths:** in the case of subscriptions offering larger bandwidths prices in Hungary can still be considered high compared to OECD and EU countries. This problem is clearly connected to the previous one, even more as cable television service providers characteristically price their Internet packages on the benchmark prices of the DSL based services market.
- 6. quality matters:** the majority of subscriptions in Hungary belong to the 1-2 Mbps category, the ratio of 2-10 Mbps subscriptions is only half of the EU average. Due to the variance between nominal and actual bandwidth many subscribers do not even know precisely what bandwidth he/she really has. On the long run, both an increase of the average bandwidths and diminishing variance between nominal and actual bandwidths are indispensable for the use of advanced services.

There has been a notable distension concerning access obstacles withholding broadband penetration (increase in both coverage and competition, and lowering prices). It is still important to keep the physical infrastructure advanced enough on the long term as to ensure for every subscriber a proper price and proper quality in their broadband access.

3. What are the main challenges? - DEMAND SIDE

Enterprises

Enterprises

1. Lack of info-communication readiness: among the owners and management of enterprises (mostly inland owned SMEs) openness towards info-communication tools and services and the readiness to use them is low. This has an unfavourable impact both on the IT equipment level of SMEs, and on the use of broadband services.

2. Penetration: at the level of enterprises (PC and Internet) penetration problem can be likewise identified in the case of micro- and small enterprises.

3. Limited online activity - further to the compulsory tax returns, the online activity of enterprises is low: Hungarian enterprises are significantly lagging behind the EU average in terms of online purchases, sales, and e-invoicing.

4. Lack of awareness of the opportunities: Hungarian enterprises use the opportunities offered by an own webpage, Intranet and Extranet to a much smaller degree, than the EU average.

Population

Population

1. Low level of digital literacy: among the population in Hungary the level of digital literacy required for the use of info-communication tools and services is low. (31% of the adult population has never used a computer, and 37% has never used the Internet).

2. Cognitive and motivation obstacles: there is a high proportion of people that for cognitive reasons have not used the Internet (don't need it, or find it not interesting, or don't know how to use it, or are afraid of it, etc.). In their case we see a motivation problem – experts say that pecuniary excuses (have no computer, it is too expensive, etc.) often go back to motivation problems.

3. Low computer and Internet penetration in the households: still it is rather lagging behind the EU average. Many computer and Internet users are satisfied with access at the workplace or the school and don't want/desire to purchase a computer and Internet service for their home.

4. Generational and regional differences: most of the older generation is reluctant to use the Internet, and even in middle aged groups there is a serious lag. There are higher usage indices in the capital and in larger towns, but smaller towns and rural areas feature a notable lag here. Education levels and labour market status have also a straight correlation with usage levels.

5. Low use of advanced services: even among people regularly using the Internet there is a very low percentage of individuals using e-Banking and e-Commerce services.

6. Lack of trust: Internet-based transactions and payment options are remarkably low level as compared to the EU, which is prominently due to the lack of trust.

4. Where we want to go? - premisses

The development of broadband infrastructure and services can only become successful, if, by the means of investments, innovation and development policies:

- the bottlenecks of the infrastructure can be neutralized
- an attractive content and service offer shall be available, using the advantage of expanding technological opportunities
- certain limiting factors on the demand side (skills, motivation, security) shall be overcome, also in the case of newly joining groups

Broadband penetration and the speed of change

The increasing demand encourages network investments

The expanding use of services and applications creates a demand

More advanced networks support the development of services and applications

To realize the vision - irrespective of its specific content - it is of utmost importance that the formulation of the vision and of the objectives

- mirror the common ideas of the market, state and civil actors,
- can be realistically implemented with an effective and efficient cooperation of the actors,
- the stakeholders follow up its implementation by way of ongoing consultations and monitoring.

The result indicator of the success of strategic objectives can be broadband penetration and coverage.

4. Where we want to go? - value based vision

SUPPLY SIDE

A physical infrastructure dynamically adapting to the needs of applications and users, offering geographically balanced conditions, that shall contribute to the development of innovative broadband services and applications. The infrastructural dimension of digital dividedness shall cease.

DEMAND SIDE

Population - Digital literacy shall be acquired by groups presently lagging behind.

Enterprises - The use of ICT tools by enterprises shall significantly increase. E-economical solutions shall be widespread even among SMEs.

The State - In government administration in the field of client services and internal processes the "shift to digital" shall take place.

- increasing penetration among the population and among enterprises
- increasing supply and demand on the market of advanced e-Services
- expanding employment
- improving competitiveness at the level of individuals, enterprises and the national economy
- stronger social cohesion, weaker regional differences
- improving quality of life

A detailed formulation of a value based broadband vision is the common task of the State, market and civil actors. In the vision formulation, the major effects of the improvement of supply and demand terms and conditions, by main segments, as well as the expected economical and social advantages should be identified.

4. Where we want to go? - objectives in figures

Broadband penetration

Penetration objective

Thousand people

NSZS objective: By 2010 accessible broadband Internet should be available for all inhabitants.

Inhabitants covered, living in villages with less than 3 thousand inhabitants.

Inhabitants covered, living in villages/towns with 3 to 10 thousand inhabitants.

Inhabitants covered, living in villages/towns with more than 10 thousand inhabitants.

Inhabitants covered only by 3G, living in villages/towns with more than 10 thousand inhabitants.

Source: SzAT (PwC) estimate, GKM

As regards penetration a realistic middle-term goal could be reaching and even surpassing the EU average – by attenuating or eliminating the obstacles on the offer and demand sides. The long-lasting crisis may render difficult to get closer. Special attention is needed here – for instance by extending and/or using with higher efficiency the available EU sources.

A full broadband coverage providing basic service may be reached by 2010. Following the full optical coverage at basic level, attention should be paid to implement networks fully covering the inhabited areas as well as for quality enhancements:

- Enhancing range of offers
- Decreasing access prices
- Further market boosting
- Improving quality of service

On the middle-term, a realistic goal could be that every Hungarian household should have access to at least one broad bandwidth service (and the vast majority of households should have the option to choose among services).

5. What are the most urgent tasks? - basic principles

1. Strategic foundations of regulatory and support programmes, with the involvement of market and civil actors by means of consultations, and ensuring they are well-founded and have just proportions.
2. Coordination of the intentions of State, market and civil actors, with the involvement of the stakeholders into the preparation, implementation and supervision of development policy actions.
3. Minimizing the distorting impact of State development policy programmes.

1. A strategic foundation of regulatory and support programmes increase the chances for success.

A. In those countries where development projects have been based on a consequently implemented strategy (e.g. Sweden, UK or Estonia) significant results have been achieved, while in countries where the lack of a concept was predominant (e.g. Poland) the backlog is more important in reducing digital dividedness.

B. In the case of regulation the most important elements of a strategic foundation (**better regulation**):

- elaboration of **alternative intervention options** before any decision,
- wide use of regulatory **impact analyses**,
- simplification of the regulation (**deregulation**)

C. An appropriate **monitoring** of the programmes is indispensable, as well as the definition of success criteria to measure success, and of qualitative or other indicators capable to measure the programmes.

Strategically well-founded approach, regulatory impact analyses, the involvement of the stakeholders through consultations, as well as continuous monitoring are essential success criteria of State interventions. Furthermore it is also worthwhile to combine all State tasks related to this area into a single competence-centre, and positioning it properly within the government.

5. What are the most urgent tasks? - basic principles

2. Coordination of the intentions of State, market and civil actors, with the involvement of the stakeholders into the preparation, implementation and supervision of development policy actions

A. Involvement of the **civil and market sector** into a situation evaluation laying the ground for regulatory and/or fiscal interventions is also necessary: it is important, that there should be a consensus concerning the interpretation of the most important indicators and trends characterizing the situation. The elaboration of the vision, and the development and application of the means to be made available to achieve that can produce its most effective impact if there is joint action.

B. The State should **encourage** the involvement of more and more non-State actors (businesses, civil society) into the jointly developed programmes, as this is how their efficiency can be increased, and the partners can also participate in financing. The involvement of local governments, enterprises and civil initiatives can also increase a better use of local knowledge, a targeted and more efficient approach to handle problems.

C. Civil and market control should be implemented also as concerns the transparency and accountability of grants, as in this way one can first increase the motivation of the stakeholders concerning joint efforts, and second **public confidence** could be strengthened as for the usefulness of info-communication development schemes.

D. The positive impact of the dialogue between State, civil society and service providers could be increased if, by developing information society, the strategy development and regulatory tasks related to e-Government and telecommunication policies would belong to a single **State administration actor** with a competence in each of the affected areas.

5. What are the most urgent tasks? - basic principles

3. Minimizing the distorting impact of State development policy programmes.

A. The purpose of intervention should be clearly stated in each case

- market failure: market mechanisms cannot produce appropriate results by themselves
- **redistribution objectives**: social aspects, reducing the digital gap
- **increasing regional competitiveness**: helping backdrop areas to catch up

B. State infrastructure development with a **redistribution objective can be justified, when**

- it ensures the availability of a service generally widespread in other regions and/or consumer segments
- market actors decline to make investments, despite effective demand

C. With programmes aimed to help **regional infrastructure to catch up, the following risk factors should be examined in priority:**

- at a later stage, market actors could also implement the investment projects,
- early State infrastructure programmes may result in a fast outdating of the applied technology

D. Parallel to the increase of penetration **focussed programmes, aimed at smaller target groups shall become more and more important, versus large-scale initiatives with an all-embracing scope. These require a well-founded segmentation, heavily relying on research results.**

E. Development should be implemented in accordance with **national and EU State subsidy rules:**

- A **well-defined** problem/target identification?
- Is **State subsidy really the most efficient means** to reach the target?
- Does the measure answer the **proportionality** requirement?

In the practice of the European Union, a well-defined goal and the assessment of the grounds, efficiency and proportionality of the intervention should be accompanied by a comprehensive market analysis to substantiate the intervention. Selection shall be made through public tenders leaving to the market the identification of the most suitable solution. It is similarly important to build an efficient control mechanism to monitor the use of subventions.

5. What are the most urgent tasks? - SUPPLY SIDE

Covering the uncovered areas (white spots)

Uncovered areas represent a shortcoming on the supply side, but it is of urgent priority not so much from an economical, but rather from an equality of opportunities aspect.

Today in Hungary there are 132 settlements where an at least 512 Kbit/s speed Internet supply is inaccessible.

In percentage of settlements this represents a coverage of 96%, and in percentage of the 47.000 people living there the coverage by population is about 99.9%.

In order to solve the supply to these areas we suggest to start a mentor programme with a related opportunity to submit proposals.

Considering that in the GOP 3.1.1. programme the coverage of these areas by way of subsidized business investments has failed, we find it necessary to make a survey of these areas in order to elaborate customized solutions that take into consideration the market, the geographical situation and the accessibility of service networks in the nearby.

If required those involved in the solution should benefit from support and advice. An active participation in preparing and drafting the proposal documentation, in supporting the implementation of the investment could also be the task of the Mentor.

In those areas where there is no other solution, on the basis of the survey and advice of the Mentor programme a community Internet access-point would be established to ensure a minimum level of equality of opportunities.

5. What are the most urgent tasks? - DEMAND SIDE - POPULATION

PROPOSALS

Targeted training and education programs for well-defined segments of the population

Integrated access to devices and training (e.g. WiFi Falu) for those lagging more behind

Enhancing the info-communications training **within the curricular education system** (basic, middle and higher level)

Strengthening info-communications in the extra-curricular training (adult education)

Mentality reshaping programs to increase social receptivity for info-communications tools and contents

Strengthening the "**Digital public trust**" and elaborating the system of **digital identity certification**

Enhancing **e-Government services** for the people and promoting their use

SUCCESS CRITERIA

By segments (TGI) with the participation of civil society and market actors, relying also on community access points.

Targeted approach, sustainability.

Practice oriented, full scale access to devices, intensive training of teachers.

In an integrated way, with job market measures and programmes. At an affordable price, locally. Accompanied by widespread information.

On PPP basis, in a concentrated way, adjusted by segments.

With an identification of relevant services, on the basis of empirical surveys.

Use-friendly services, cost-effective development projects, continuous monitoring.

In every program it is important to assess the needs in advance, consult with the market players, perform preliminary impact studies, and ensure cost-efficiency and sustainability.

5. What are the most urgent tasks? - DEMAND SIDE - POPULATION

Targeted training and educational programmes

In order to reduce the ratio of digitally illiterate adult population well-defined educational/training programmes are needed on a large scale. Following a precise identification of the target groups, with market-State cooperation, relying also on the community access points (e-Hungary access points, Tele-houses, etc.) and when possible with the use of EU funds (TÁMOP, TIOP). Special attention should be paid to the e-involvement of the above 50 age group lagging behind.

Integrated access to devices and training

Integrated programmes for the most needy population groups (socially disadvantaged, living in deep poverty, handicapped, etc.), that integrate device and Internet access with intensive training can become efficient tools for catching up. Train-the-trainer programmes, by winning over the local opinion leaders. A good example is the WIFI Falu (village) project (TÁMOP, TIOP).

Placing IT education on new foundations

In place of/in addition to IT as a subject, integrated inclusion of info-communication tools, contents and services into the system. Development of presentation and communication skills, use of audio-visual aids in training and evaluation (concerning all subjects). Support of the development of child friendly contents and changing the often rejecting attitude of parents (communication).

Mentality reshaping for educators and teachers

Spreading the use of communication tools and services at skills level among primary and secondary school teachers. Supporting training programmes, motivation, curriculum development. In this way, educators and teachers can become the agents of the information society, and can also take a role in convincing parents. One should also consider to include opinion leader parents into the programme.

5. What are the most urgent tasks? - DEMAND SIDE - POPULATION

ICT training in adult education

Targeted catch up training for the long-term or temporarily unemployed, with the purpose to promote job market reintegration by acquiring ICT-competences, with the use of EU funds (TÁMOP, TIOP). Giving more weight to the ICT-approach in ongoing retraining programmes. **Train-the-trainer** projects. With special emphasis on the info-communication training of the **50+ age group** and of disadvantaged groups.

Mentality shaping and motivation programmes

Market actors could participate in the programme first of all with communication activities in line with their strategies (campaigns, PR, etc.), and the State side by supporting through a bidding system those programmes of civil organisations that aim to strengthen the information society.

Promoting the use of e-Services

Encouraging the already digitally literate groups of the population to use advanced services. Information programmes and campaigns (TCR) about the advantages of e-Commerce, e-Jobs, e-Learning, e-Banking, e-Signature, e-Government, etc. (price and time saving, comfort, improving quality of life, etc.) about the real risks and on how to deal with them.

Strengthening the "Digital public trust"

Safety concerns, lack of confidence concerning online transactions and payments play an important role in leaving the Internet aside, and even more, in the low level of using advanced services. The most important means to counter it is digital identity certification. In connection with the above proposed programmes, by way of a shaping of mentalities, communication, practical examples, pulling down myths.

5. What are the most urgent tasks? - DEMAND SIDE - ENTERPRISES

PROPOSALS

Training and motivation program for SME managers

Establishing an **SME consulting network**

Promoting the expansion of **electronic invoicing**

Increasing the volume of **e-Commerce**

Increasing the share of **ICT real investments within the total real investment portfolio of the companies**

Promoting the infrastructure-related real investments of SMEs (micro-enterprises) (computer, Internet)

Employee training and development of e-skills

Developing the **e-Government services offered for enterprises and** promoting their use

SUCCESS CRITERIA

State commitment, allocating sufficient resources, readiness on the entrepreneurial side, company management awareness

Market and self-organisation based,

User-friendly infrastructure, capable to integrate

Online confidence, security, reliability

Entrepreneurial awareness, expanding management knowledge

Efficient fiscal and development policy tools

Awareness on the employee and employer side

User-friendly, cost-effective, with continuous monitoring

With each programme it is essential to complete a prior survey of the needs, to consult with market actors, to make a prior impact analysis, cost-effectiveness and sustainability.

5. What are the most urgent tasks? - DEMAND SIDE - ENTERPRISES

Training and motivation program for SME managers

Integrated, ICT-focussed training of SME owner groups, strengthening their motivation. Thanks to these training sessions enterprises would understand their general growth and development opportunities, with special emphasis on the application of ICT tools and services within internal business processes and in the external relations of enterprises. With the development of entrepreneurial knowledge openness of ICT shall also increase.

Establishing an SME e-Consulting network

Even within the follow-up of the previous programme, the creation of a small-regional and regional consulting network, where skilled consultants deal with the integration of SMEs into the e-Economy. Consultants may help SMEs with customized proposals, specific ideas in shifting to IT solutions in their internal processes, work organisation, and/or sales practices (B2B, B2C), and external business relations.

Promoting the expansion of e-Services

In B2B, B2C relation the development of e-Commerce, contents industry, e-Banking and e-Payments within EU programmes (GOP). The setting up of an e-Commerce quality certification system and introducing a trademark, in order to increase consumer protection and consumer confidence (the trademark shall offer a guarantee to users that the given e-service answers the strict quality certification requirements).

Increasing the ratio of ICT-investments

In transactions within the enterprise (e.g. integrated company management systems) and between enterprises (e.g. interactive web-pages, able to perform e-services) promoting the use of ICT tools and applications in order to increase the "IT equipment level" of SMEs. A more efficient use of EU funds with similar purpose (GOP), strengthening the motivation and raising the interest of the stakeholders.

5. What are the most urgent tasks? - DEMAND SIDE - ENTERPRISES

Development of ICT specialists

In order to ease the lack of highly trained IT specialists with ICT companies and/or on the user side. Second graduate and retraining programmes (non-IT) for graduates. Quantity and quality development of the training of IT specialised engineers. Training centres, academies, programme support for ICT specialists, with special regard to retain specialists losing their job due to the crisis.

Development of the innovation culture of enterprises

Raising awareness of the use of ICT tools and application among enterprises (especially SMEs), in the field of product-, process-, and organization development, and innovation. Creating a consulting network, that shall help those SMEs asking for it to identify the development and innovation opportunities offered by ICT, shall explore the grant bidding and resource tapping opportunities and shall support the marketing of the results of development schemes.

Encouraging the use of e-Jobs

Supporting the creation of part-time or full-time e-Jobs, helping the coordination between employers, local governments and employees. With special emphasis on the support of the e-Job opportunities and hence the job market integration of mothers in charge of their children, of people with disabilities, of people living in small villages.

Supporting the training of employees

Supporting enterprises in their efforts to offer more training to employees in ICT. The form of this could be a tax bonus, or the opening of such EU grant bid channels where entrepreneurs/employees may become the final beneficiaries, and where one or more training centres shall be mandated with the implementation.

5. What are the most urgent tasks? - DEMAND SIDE - e-Administration

Proposals concerning e-Administration services

- Enhancing the security and architecture of the **Ügyfélkapu** (Customer Gate)
- **User-friendly development** of e-Government services (individuals and enterprises),
- Implementing **4th and 5th level services** (level 5 is a proactive level – e.g. early information about tax return deadlines);
- Promoting the use of e-Administration services at **communal Internet access points**, involving e-advisors;
- Making the consistent use of the **8 EU services compulsory for enterprises**;
- Assessing the option for the **compulsory electronic tax return** (individuals) (with impact assessment)
- **Digitalize** and make available State-owned contents and **public data** (NAVA, NDA, PSI)
- Strengthening the **IT support for the internal processes** of public administration
- **Implementing standards instead of island-type solutions**. Ensuring **interoperability**.

"... in the G2B contact system the level of electronic services is relatively low, the degree of sophistication is lagging behind that is required by enterprises. Most of the services can be accessed at three level, those accessible at level four is limited. The quality level of services offered by e-Administration, just as their accessibility is uneven. There are significant differences in the quality level of electronic services offered by central, regional and local administrations. There is an especially important lag in the case of local governments. E-Administration development projects are top-heavy, i.e. most of the resources available for this segment are used for investments in the central electronic services system, and even there basically by the Ügyfélkapu. The result of the above is that the central electronic services system makes up for 95 per cent of the Internet based case turnover of the State administration, and 60 per cent of the citizen and enterprise level information exchange handled on the Internet." (ITTK: Electronic Administration Annual Report)

On the basis of official indicators in the field of the use of e-Administration services Hungary is not lagging far behind, and this is due to the compulsory electronic tax returns, but as for the content, quality level, usability, facility to understand and interoperability of the systems significant progress would be required. The open accessibility of public data is also an urgent task.

5. What are the most urgent tasks? - PARTNERSHIP

According to Szeélessáv Alapítvány (Broadband Foundation) the **Government, market actors and civil organisations** should make **joint** efforts in order to eliminate the limiting factors.

It seems worthwhile to integrate all State tasks in this area into a **single competence-centre**, and to position it appropriately within the government.

This Government actor entrusted with a unique, adequate authorization could set up such a **partnership** with the representatives of the market and of civil society, that could ensure a maximum use of the positive impact on competition in the information sector, and could hence result in a strengthening of the information society in Hungary.

We are convinced that we should **together redefine the cooperation of the State, of the market and of civil society** so that by handling the real problems Hungarian information society could catch up with the leading actors in the EU.

In the frame of partnership a **mutual recognition of the efforts so far undertaken** is essential, just as the taking into consideration of the market initiated infrastructure investments representing an amount in the range of hundred billion HUF annually, just as an analysis of the measures taken in order to reinforce the demand side, and - above all - to engage in a joint situation analysis, to define a vision by consensus, as well as actions supported by all parties.

Our Foundation branding the flag of popularizing broadband access and use prepared this debate launching analysis with the aim to contribute to shaping a partnership, to start a joint work and a professional dialogue. That's because all agree with the positive impact of broadband access and use on the economy, on competitiveness, on equality of opportunities and on quality of life, yet no meaningful professional debate has been taking place in Hungary on this subject for several years now.

ABOUT OURSELVES

Szélessáv Alapítvány (Broadband Foundation)

Szélessáv Közhasznú Alapítvány (Broadband Public Purpose Foundation) has been created with the aim to support all such ideas and initiatives that may help individuals and organisations wishing to join the information society with respect to the Internet, especially in the broadband technology area. The Foundation considers as one of its most important tasks to overcome the factors still limiting the spread of broadband services, access and use.

Activities

Since the creation of the Foundation it considered the task of making broadband access and use popular, as its own, and took this as one of the priority areas in its activities: it has created and it operates the www.szelessavkereso.hu portal, including the maintenance and updating of the database of the broadband search engine, as well as the elaboration of the electronic training materials available on the site.

To achieve its goals it keeps continuous contacts with market actors (service providers, special interest organisations and authorities, professional organisations, etc.) engaged in similar tasks.

As a recognition of its activities, the services provided by Szélessáv Alapítvány and the www.szelessavkereso.hu website operated by it, have been ranked among the best forty from among 160 EU projects that were submitted to the Bridging the Broadband Gap conference organized in Brussels in 2007, as a single project from Hungary.

The work of the Szélessáv Alapítvány has been recognized and followed upon by the General Directorate in charge of Information Society in the European Union (DG INFSO): from 2007 on Szélessáv Alapítvány has been a member of the IANIS + eInfrastructure Work Group set up by the European Commission.

In 2008 the Szélessáv Alapítvány has become a full-fledged member of ERIS@, an organization created by an initiative of the Commission and having also launched IANIS+, that explores the information society best practices in regions of the member states otherwise competing with each other, and that help in spreading them as much as possible.

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