Informatikai és
Hírközlési
Minisztérium

NATIONAL BROADBAND STRATEGY

Proposal To Lay the Foundation for the Fiscal and Public Policy Measures Required To Support the Spreading of Broadband Electronic Communications and the Implementation of the “National Broadband Strategy”

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Dear Reader,

When, in the second half of 2004, the Ministry of Informatics and Communications decided on setting up the National Broadband Strategy, there were some, even among the experts, who – either said or unsaid - considered it to be a passing fancy or a passion. Of course, they were wrong: by now, the percentage of broadband online communications has reached the 6 percent projected for end-2006 in the Strategy and is still on the increase. The Act on Electronic Communications generated a competition in supply in the market, and also prices clearly show a declining trend, which further enhances demand. Cable television providers offering so called **'triple play' services** including television, Internet and telephone services at the same time are making a more and more robust presence in the broadband market, to which the 'conventional' wire market will probably be forced to react by widening the scope, improving the quality and reducing the prices of their services. The market of broadband services has become one of the **most vivid** segments of the info-communications sector.

Since the completion of the Strategy, the MIC has taken several steps in terms of regulation, public policy and finance (support) in order to achieve the implementation of the vision set forth within the NBS. Through the preparation of the Strategy and its approval by the Government and through the actions it has taken so far, the MIC has positioned the issue of broadband on the required level in the info-communications market. **I can promise** on my own behalf and that of my colleagues that, through the monitoring and constant upgrading of the Strategy, **we will continuously give priority to** any measures related to **broadband** development efforts.

All this coincides with the definite intentions of the European Union: the revision of the **Lisbon Strategy** and of the eEurope2005 Action Plan as well as the objective of the i2010 programme equally point to the fact that, during the coming years, the European Union wishes to lay an **unprecendented emphasis** on establishing the conditions for broadband electronic communications in terms of infrastructure and substance, thus helping to develop the **economic competitiveness-** and **social cohesion**-strengthening effects of broadband communications.

Therefore, it is not surprising that one of the main reasons for the **preference treatment of broadband** is that the positive macro-economical processes associated with the development of the info-communications sector can be best given effect through widening the use of broadband electronic communications. Broadband electronic communications can be considered to **be a transmission mechanism** through which the production and application of ICT devices will contribute to modernisation and the **improvement of competitiveness** in an ever-increasing manner.

The Government of the Hungarian Republic **approved of** the NBS prepared in 2004-2005 by the MIC **in Government Resolution** No 2296/2005 (XII.6.). By this, the Government took official responsibility for the objectives of the NBS, in accord with the development of broadband communications with the aim of improving the quality of life, enhancing competitiveness and strengthening social cohesion during the period between 2007-2013. It is one of the primary goals of the NBS to represent the objectives of the broadband strategy emphatically and successfully in the Second National Development Plan (NDP II), the document determining the use of domestic and EU funds in the long run.

These are the thoughts with which I would like to recommend the National Broadband Strategy to your attention!

Kovács, Kálmán

Foreword

The Ministry's experts and the external consultants who participated in the compilation of the National Broadband Strategy ("Nemzeti Szélessávú Stratégia"; "NSZS 2005") are all convinced that the development of broadband electronic communications – with special respect to that of the "broadband infrastructure" and of the relevant public administration, business and cultural contents – is key to improving competitiveness and, as such, deserves special attention in the course of the elaboration of the development policy and of the allocation of resources available for development.

This is especially true in the light of the fact that, as a result of the revaluation of the Lisbon goals and the objectives set in the "eEurope 2005" action plan, **the EU has laid an even higher emphasis on creating the infrastructure and contents required for the proper operation of broadband communications – thus supporting the improvement of economic competitiveness and social cohesion**. Among the preliminary key aspects defined in the **i2010** Program are the positive impacts of the production and use of the info-communication technology sector on competitiveness and cohesion. **Broadband network communications is currently considered the most efficient means to achieve these positive impacts.**

One of the main reasons for giving broadband a priority is the fact that it is through the spreading of broadband electronic communications that the positive macroeconomic changes, at which the development of the info-communications sector aims, can be achieved with the highest efficiency. Broadband electronic communications can be considered a **transmission mechanism** through which the production and use of info-communication equipment can increasingly contribute to improving competitiveness. Based on these facts, supporting the spreading of broadband electronic communications is a **competition-related issue both in the European Union and, within that, in Hungary**. Therefore, it must be given top priority in long-term development policies.

Hungary's EU accession has made it possible for the country to actively participate in the formulation of community strategies. This opportunity has to be seized now, during the planning and program development phases of the utilisation of the **Structural and Cohesion Funds available in 2007–2013**. The primary objective of the **2005 National Broadband Strategy**, therefore, is to successfully integrate into the **Second National Development Plan** ("NFT II"), which determines the use of EU funds and Hungarian financing opportunities in the long run, the consistently defined, long-term objectives of the development of broadband electronic communications.

The proposed objectives, measures and expected impacts of this Broadband Strategy are in line with the development objectives currently outlined in the **National Development Policy Concept ("Országos Fejlesztéspolitikai Koncepció"; "OFK") and the Competitiveness Strategy ("Versenyképességi Stratégia")**. As for its methodology, the 2005 National Broadband Strategy ("NSZS 2005") complies with the **Government Requirements for Strategy Compilation ("Kormányzati Stratégia-alkotási Követelményrendszere"; "KSaK")**, a document prepared by the Prime Minister's Office. This makes it easier to align the National Broadband Strategy and other strategic documents which are currently being prepared or modified.

Management Summary

INTRODUCTION

A clear political aim in EU ember states is to improve the infrastructure and contents required for the proper operation of broadband communications – thus supporting the strengthening of **economic competitiveness** and **social cohesion**. According to economic literature, **the info-communication sector has contributed to the increase of productivity** by 1.5 percent in the USA but only by 0.75 percent in the EU over the past ten years. One of the primary reasons for this difference is the fact that in Europe the increase in info-communication technology investments has not been accompanied by an increase in overall productivity or the productivity of work – i.e. the problem has not been related to the manufacturing of info-communication equipment but its actual **utilisation**. One of the main reasons for giving broadband a priority is the fact that it is through the spreading of broadband electronic communications that the positive macroeconomic changes, at which the development of the info-communications sector aims, can be achieved with the highest efficiency. Broadband electronic communications can be considered a **transmission mechanism** through which the production and use of info-communication equipment can increasingly contribute to **improving competitiveness**.

Hungary's EU accession has made it possible for the country to actively participate in the formulation of community strategies. This opportunity has to be seized now, during the planning and program development phases of the utilisation of the **Structural and Cohesion Funds available in 2007–2013**. The primary objective of the **National Broadband Strategy**, therefore, is to successfully integrate into the **Second National Development Plan** ("NFT II"), which determines the use of EU funds and Hungarian financing opportunities in the long run, the consistently defined, long-term objectives of the development of broadband electronic communications. The **Government Requirements for Strategy Compilation ("Kormányzati Stratégia-alkotási Követelményrendszere"; "KSaK"),** a document prepared by the Prime Minister's Office, was used as a guideline to define the **principles of strategic planning.**

The strategic document has been compiled and finalised as a result of **six carefully coordinated subprojects**:

- **Situation analysis using international benchmarks and empirical data**
- Market and technology **development scenarios**
- Estimation of the **macroeconomic impacts** of the broadband development policy
- international „**best practice**" in broadband development policy
- proposal for the **objectives, measures and prerequisites of the strategy** and for the monitoring system
- **strategy** updating, compilation of a **communication plan** and a draft **Government resolution.**

The primary focus area of the National Broadband Strategy is **broadband access**. However, in the situation analysis part, it also offers an insight into aspects like **content, motivation, education** and **security** and, as a horizontal priority, it also sheds light on considerations like **equal opportunities (e-inclusion)** and **innovation**. As for its nature, the Strategy is a "**thematic specialised strategy**" (a category used in the **"Government Requirements for Strategy Compilation"**). The Strategy covers the period between **2005–2013**.

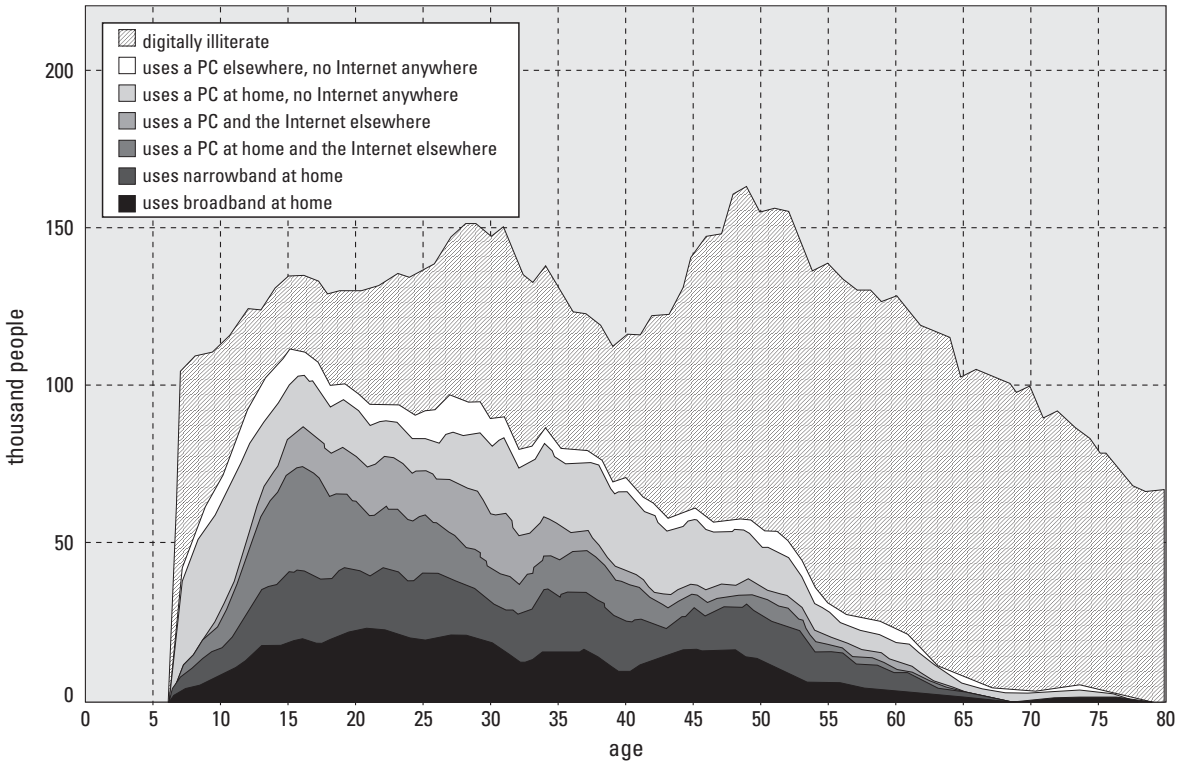
SITUATION ANALYSIS

When putting together this situation analysis, both **primary and secondary data sources** were used. After examining the secondary data sources, we identified the missing information and organised structured deep interviews (for business organisations and public institutions) to collect the same. Besides, a **representative** targeted **survey has been carried out in the residential segment** covering 1,800 households. In the situation analysis the **supply and demand sides** were analysed by key areas/

pillars (**access, content, education, security, motivation**), in a residential/business/public institutions breakdown (**see Section 2.3**). According to the result of the situation analysis, **residential Internet penetration** in Hungary is still far lower than that in the EU and in economically strong countries outside the European Union. At the end of 2004 only 17% of households had an Internet connection: this is less than half of the EU average (45%). Looking at **the number of broadband subscriptions per 100 citizens** the situation is no better: the **Hungarian index is below half of the EU average**: In Hungary in December 2004 the number of broadband subscriptions per 100 citizens was 3.8 – as opposed to 8.5 in the 25 EU member states at the same time.

A major challenge from the point of view of long-term growth prospects is the fact that **nearly 60% of Hungary's population is digitally illiterate**: has no experience in Internet or PC usage. The chart below shows that the highest level of digital literacy is in the young (15-17-year) age group (**„the Sulinet generation"**). However, as we go up the age pyramid the digital illiteracy rate rapidly increases.

"Info-communication age pyramid" in the Hungarian society



Source: "NSZS 2005" residential survey (Ariosz Kft.)

SWOT ANALYSIS

To ensure easy understanding and alignment with the situation analysis, the four parts of the SWOT analysis (i.e. **strengths, weaknesses, opportunities, threats**) were put together using a breakdown by **"strategy pillars"** (access, content, education, security, motivation). In this Summary, no pillar-based breakdown is used, only the key elements are highlighted:

Strengths

– Increasing broadband coverage in cities and big towns
– The data transmission market is one of the **most dynamically growing** segments of the telecommunications sector
– The **number of broadband subscriptions** within total Internet connections is high
– High **mobile phone penetration**, intensive mobile usage

– High **CATV coverage** (75%) and **penetration** (52%) in Hungary
– Positive generation effect: **„the Sulinet generation"**
– Excellent Internet and computer access figures in institutes of **secondary and higher education**
– An extensive network of community access points
– Successful state-funded infrastructure deployment programs **("EKG", "Közháló", "NIIF"**)
– Sufficient number of IT experts available
– An increasing number of info-communication technology users who apply virus protection, firewalls and external data saving
– The Internet has a basically positive image **in the eyes of the country's population**

Weaknesses
– Conspicuous backwardness in residential broadband Internet penetration
– Based on purchasing power and income levels, **broadband services are expensive**
– **Low corporate broadband** Internet penetration and usage
– **Low** broadband Internet **penetration** in public administration bodies and **local governments** outside Budapest,
– The level of development of the **broadband network is uneven** in Hungary's territory both as regards density and the actual technologies used
– **In towns and villages with a population below 3000, two thirds** of the population have no access to any broadband services
– A high proportion of the population lives in rural areas where the density of population is low
– In **institutes of primary and secondary education** only 71% of computers have Internet access
– At present, the primary motivation for choosing broadband access is **comfort rather than the content available**
– Over 60% of **local governments** still do not have a homepage of their own
– The majority of **businesses** use the Internet only for mailing and to search for information
– The role of **e-commerce** is still negligible
– Nearly 60% of Hungary's population is still practically digitally illiterate
– The majority of public institutions are still not prepared to accept electronic signatures
– **SMEs show a low level of interest** in investing in IT modernisation

Opportunities
– **Decreasing prices**, expanding coverage, **increasing** residential and corporate Internet **penetration**
– Efficient Government infrastructure development and **successful demand aggregation**
– Full coverage in **public administration** and high penetration in **local governments**
– Intensification of **investment and innovation** efforts in the info-communication technology sector
– A more intensive use of info-communication equipment, a positive effect on growth and competitiveness
– Competition regulation, communication and education: **the dial-up development phase has been "skipped"**
– **Regional differences** in broadband coverage may significantly reduce as network deployment continues.
– Popular **contents available in Hungarian:** many new users with a lower level of education
– The majority of businesses plan to increase their online marketing and promotion budgets.
– Higher volume of resources and higher efficiency in coordination: **e-administration services spread**
– **If Internet usage in schools**, the availability of the necessary equipment and of digital contents are increased, Hungary can remain **among the leaders in Europe**
– **Electronic signatures:** prerequisites are provided – usage will increase
– More and more **state administration** employees are becoming open to new technologies
– A large part of the population are already open to programs that present the advantages of broadband Internet
– Broadband Internet usage will increase fast in businesses

Threats

– The rate of increase of Internet subscriptions will slow down
– As a result of the lack of the "network effect", Hungary's backwardness will become even higher
– Prices will not drop significantly, which will prevent many from using broadband Internet.
– The growing broadband dynamism will increase the "digital division",
– Convergence may result in **new „market defects"**, to which regulation will react with a delay.
– **No resources will be found** for demand aggregation and subsidy programs.
– The lack of resources and coordination will decelerate the spreading of **e-administration** services.
– Employees' IT skills and corporate Internet usage will remain at a low level.
– As a result of the lack of education and communication, **digital illiteracy** will not decrease significantly.
– **Public administration** employees will be against the digitisation of work processes.
– The **population's** fears from the threats of the Internet will intensify.
– **Businesses** will not take full advantage of the opportunities offered by the Internet.
– The Internet becomes the subject of negative communication, its image among the population deteriorates.

THE TARGETED SITUATION

The strategy outlines **a target-oriented vision (Section 4.2)** and a **value-based vision (Section 4.3)**. The target-oriented vision focuses on a central indicator (**residential broadband Internet penetration**). An important assumption of the **target-oriented vision** is that Hungary will follow a similar course of development to that of most EU member states – with the difference that Hungary stands a good chance of **having broadband as the main driver of reaching EU standards in the short term**. To estimate the difference between the targets outlined in the strategy and the "normal course of development", we tried to define the "**organic course of development"**.

Forecast on the expected trends of the spreading of Internet use
Based on the 2005 residential situation assessment study carried out by NSZS

			2004	2006*	2008*	2013*
Home Internet use	households	thousand	666	1000	1312	1948
		%	17,2%	26,0%	34,1%	51,4%
	persons (14+)	thousand	1437	2263	2887	4267
		%	16,8%	26,6%	34,1%	51,4%
Home broadband Internet use	households	thousand	319	584	984	1754
		%	8,3%	15,2%	25,6%	46,3%
	persons (14+)	thousand	704	1322	2165	3840
		%	8,2%	15,5%	25,6%	46,3%
Home narrowband Internet use	households	thousand	347	416	328	195
		%	9,0%	10,8%	8,5%	5,1%
	persons (14+)	thousand	733	942	722	427
		%	8,6%	11,1%	8,5%	5,1%
Internet use anywhere	persons (14+)	thousand	2434	3378	3608	4741
		%	28,4%	39,7%	42,6%	57,1%
Full population	households	thousand	3863	3851	3850	3790
		%	100,0%	100,0%	100,0%	100,0%
	persons (14+)	thousand	8559	8510	8469	8300
		%	100,0%	100,0%	100,0%	100,0%

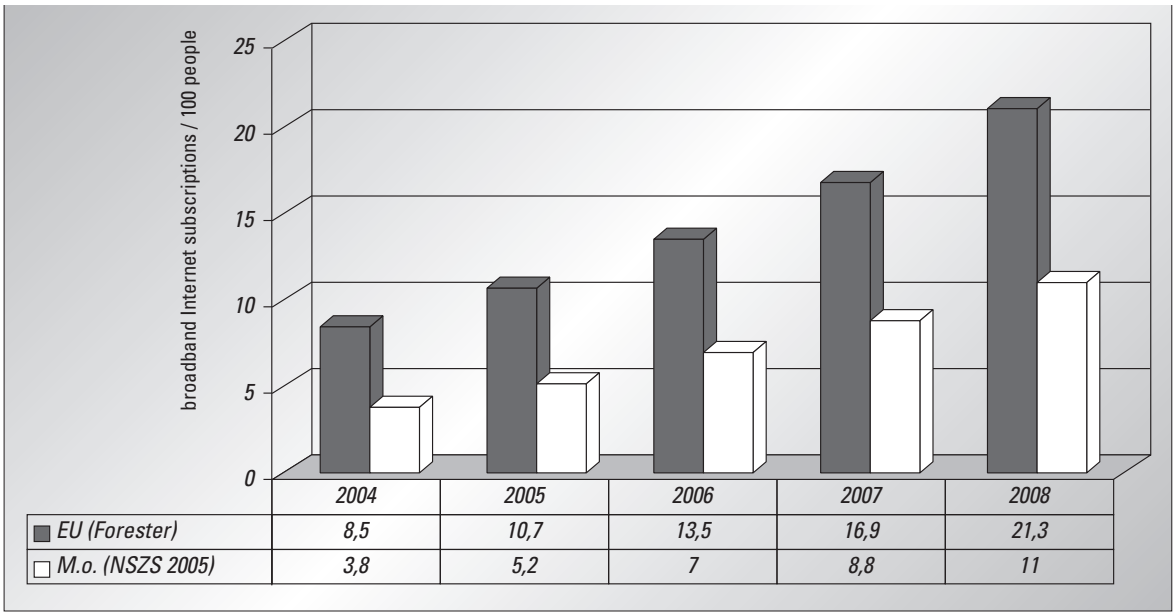
According to the assumptions made about the **organic course of development**

- **In the year 2006, some one quarter (26.6%)** of households will have an Internet connection and **60% of these households will use broadband** access.
- **By 2008, the Internet penetration of households may reach one third (34.1%)** and about three quarters of households with Internet **will have a broadband** connection to the World Wide Web.

Assuming that proportions between the different broadband user categories (i.e. households, businesses, public institutions) do not change significantly during the period covered by the forecast, broadband Internet penetration of the population will be 7% in 2006 and 11% in 2013[1] – as opposed to the current 3.6%. Forrester Research's 2004 forecast prognosticates significant development in the European Union.

Based on the optimistic EU development prospects and Hungary's very pessimistic prospects for development, Hungary can expect to be 3 years behind the EU's average broadband Internet penetration level in 2008 (i.e. by 2008, Hungary would reach the level prognosticated for 2005 in the EU), unless wise regulatory and public policy measures are taken and state interventions are made.

Expectations for Internet penetration: expected changes in EU average and Hungary, 2004–2008



	2004	2005	2006	2007	2008
EU (Forester)	8,5	10,7	13,5	16,9	21,3
M.o. (NSZS 2005)	3,8	5,2	7	8,8	11

The strategy's **value-based vision** highlights the positive economic and social impacts of broadband electronic communications. The vision's aspects related to **competitiveness**, **economic policy** and **info-communication** are analysed in the relating chapters (**4.3.1. and 4.3.2.)** of the strategy. The following table briefly summarises and prioritises the possible **macroeconomic effects.**

[1] This indicator (i.e. broadband Internet penetration) is important as it is used as the primary indicator used for comparison purposes in the European Union.

Effect	EffeAffected area	Priority
1. Advantages	**Penetration rates, access increase**	XXX
	Intensification of investments in the state and private sectors	XXX
	Productivity growth	XX
	A move towards sectors offering a higher added value	XX
	Flexibility of labour markets grows	X
	Competition intensifies in main market segments	X
2. Costs	Rate of employment decreases in the community sector	XXX
	In the short term: negative impact on the fiscal balance	XX

Notes: XXX: top priority, XX: average importance, X: not too important

As for the **„info-communication vision"**, a core expectation for the period covered by the strategy (i.e. the next 6-8 years) is that the following will have an **increasing importance**: content and services, the transmission channel and the end user equipment (horizontal convergence) and, at the same time, the **process of convergence** between telecommunications, the media and information technology (vertical convergence). Convergent information content services will be characterised by a "multimedia nature", **high speed/broadband transmission** and a desire for **interactivity**. A new element in widening the product portfolio already present in Hungary is the appearance of **„triple play"** type (voice-data-video) services. In business applications, the **demand for broadband communications** will be boosted by the need for mobile offices, the need to have continuous **data communication** with the company/workplace with no limitations on speed or access, the spreading of the **videoconferencing** service and the launch of e-learning (which also uses multimedia means) and **e-administration**.

The changes expected in **networks/services** will be triggered by the **convergence of voice and data services**. Service providers will try to find a flexible and cost efficient solution through the implementation of the NGN (**Next Generation Network**) concept (combination of voice and data traffic in trunk and access networks). As for the implementation of access networks, expected scenarios will remain **wireless** (WLAN, WiMax), **mobile** (3G, 4G) and **DSL/CATV** solutions (depending on costs). The **convergence of terminal equipment and devices** will primarily manifest itself in the integration of user equipment functions into one single set (e.g. PC-based digital television sets, interactive television, PDA, etc.). In practice, this means the addition of new functions to existing equipment types.

STRATEGIC DIRECTION, ALTERNATIVES

When strategic directions and objectives were planned, one of the requirements defined was to identify **the lowest possible number of strategic targets and indicators** against which the achievement of the objectives can be measured. These can be used to objectively assess if the strategy has been successfully implemented, to set clear parameters which indicate the extent to which the vision has been put into practice and simplify the operation of the monitoring system. The objectives and the means were identified using the following approach:

What strategic **objectives** and related **indicators** can be used to best describe the vision?

- What intervention and what **measures** must be applied in the different key areas to achieve the strategic objectives?
- Based on the strategic concept and the approach applied, the overall aim of the strategy can be summarised in the following sentence:

„Through the concerted application of regulatory, public policy and support measures, to eliminate any and all circumstances that hinder the spreading of broadband electronic communications and to promote faster development in access, content, motivation, education and security in order to strengthen economic competitiveness and social cohesion."

The international comparison of the main findings of the strategic **situation analysis** shows that the realisation of positive changes in broadband electronic communications **is basically hindered by insufficiency in access and the wanting nature of relevant content**. Of horizontal aspects, a distortion that requires direct intervention is in **e-inclusion** („the depth of the digital gap"). For the above reasons, strategic priorities were set around **access, content** and **e-inclusion**. The objectives of the strategy are defined and organised around the following priorities and areas of intervention:

– increase broadband Internet usage – population, businesses, public institutions
– offer more relevant content – public institutions, businesses
– provide the preconditions of e-inclusion – disadvantaged groups

The following specific objectives have been designated to the different priorities and areas of intervention

Priorities	Areas of intervention	Code	Specific objectives
1. Increase broadband Internet penetration	Population Businesses Public institutions	C.1	Broadband Internet penetration (i.e. number of broadband subscriptions per 100 citizen) will reach EU average by the end of 2008 and the average of the "EU 15" by the end of 2013.
2. Offer more relevant content	Public institutions	C.2	The use of e-administration services will reach the EU average by the end of 2008 and the average of the "EU 15" by the end of 2013.
	Businesses	C.3	The use of e-commerce services will reach the EU average by the end of 2008 and the average of the "EU 15" by the end of 2013.
3. Ensure equal opport	Disadvantaged groups	C.4	90 percent residential broadband coverage by the end of 2008 and full coverage by the end of 2010.
		C.5	„Digital illiteracy" (i.e. the proportion of those with no Internet or computer usage experience) will drop below 50 percent by 2008 and below 33% by 2013.

MEASURES

The strategy reviews measures in the following breakdown:

Regulatory measures

E.1 Ex ante **competition regulation**
E.2 Management of **scarce resources**
E.3 **IT regulation**
E.4 **Convergence regulation**
E.5 Public Administration Procedures Act (**"KET"**)
E.6 **Freedom of Information Act** Public policy measures
E.7 **Strategy compilation**, orientation
E.8 Targeted **information** campaigns
E.9 **Demand aggregation**

Fiscal measures

E.10 Support the deployment of the **broadband infrastructure in villages and small towns**
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in **public education**
E.13 Support the development of **innovative** broadband technologies and applications

E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a **horizontal priority**
E.15 Tailored education and access programs for **disadvantaged groups**
E.16 Support participation in central **EU programs** (FP6, FP7, eTEN, eContent)
E.17 "**Közháló"** ("PublicNet")
E.18 **Tax concessions** (infrastructure, Sulinet Expressz, employees' PC program, temporary direct subsidies)
E.19 Support the development of **e-administration** (a central program in the "NFT II")
E.20 Support **e-business** development projects for SMEs
E.21 Support **e-culture** programs ("NDA", "NAVA")

Section 6.5. highlights the **interconnections between strategic objectives and measures**.

PROGRAM PROPOSALS FOR THE SECOND NATIONAL DEVELOPMENT PLAN ("NFT II")

One of the **success criteria** of this strategy is for it to make reasonable and programmable **proposals for the "NFT II",** which determines the areas of development for the period between **2007-2013**. The compilation of specific programs means the assessment of which of the **proposed measures may potentially receive EU co-financing**. According to currently available information, the following measures of support may potentially be integrated into the "NFT II":

1. Programs directly relevant to broadband communications

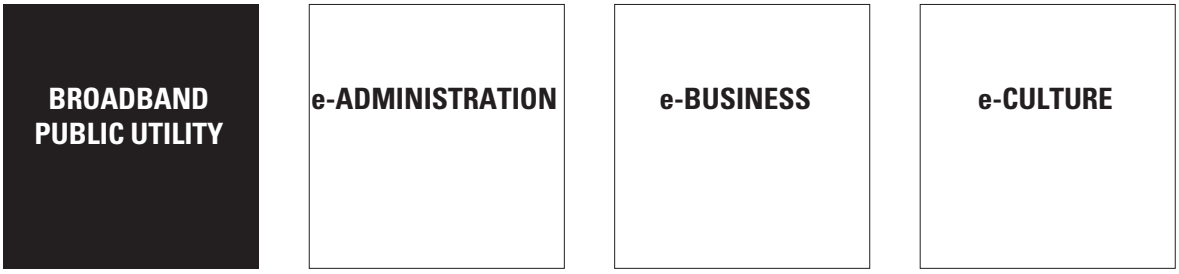
E.10 Support the **deployment of** the broadband **infrastructure** in villages and small towns
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in **public education**
E.13 Support the development of **innovative** broadband technologies and applications
E.15 Tailored education and access programs for **disadvantaged groups**

2. Programs considered necessary to achieve the desired social and economic effects of broadband electronic communications (focusing primarily on content development)

E.19 Support the development of **e-administration**
E.20 Support **e-business** development projects for SMEs
E.21 Support **e-culture** programs

3. E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority

We propose that in the Strategy the summary term "**BROADBAND INFRASTRUCTURE** program" should be used for the **measures belonging to the first group**. In a broader sense, this also includes the proposed public policy and fiscal measures which, according to currently available information, cannot get EU co-financing (strategy compilation, orientation; targeted information campaigns; demand aggregation; support of participation in central EU programs; "Közháló" /"PublicNet"/; tax concessions).



Enforcement of development considerations of the information society as horizontal priorities within the National Development Plan programs for 2007 to 2013

For the majority of support types, resources will be provided by the **Structural Funds**. However, in the case of certain fiscal measures, the **Cohesion Funds** (infrastructure deployment) and the **Social Fund** (digital inclusion) may also play an important role. Another differentiating factor is whether the different types of support are granted **in the form of a central program** or in a **tender**. **Central programs** seem practical in **e-administration** and **e-culture** development projects. As planning is currently in its infancy, there are uncertainties in these areas. It is important to emphasises, however, that **the compilation of programs for the above measures should be independent of the actual form of implementation and the body which is responsible for the same**.

NETWORK OF INSTITUTIONS, MONITORING

According to international experience, **the success of broadband development policies is primarily determined not by the actual institutions that manage their implementation** but by the following **(i) the extent to which the given system of institutions** can make the development of the information society a key government, economic and social **priority**; (ii) whether the given organisation is given an exclusive mandate for strategy compilation and program development; (iii) the level of efficiency of **coordination** between state bodies responsible for the implementation of the development policy and (iv) how capable are such bodies of **planning, programming and implementing the objectives set**.

As broadband development programs fundamentally determine competitiveness and have a high social importance we – following the example of several countries including **England, Canada, Italy and Holland** – propose, as part of the strategy, that a **"Broadband Task Force" be assembled in a Government decree**. Important requirements for the operation of the Task Force are **operative nature**, **cost efficiency** and **broad publicity**.

The **monitoring system** is used to monitor the achievement of strategic objectives and the implementation of development programs.

"NSZS 2005": key monitoring indicators

Priorities	Areas of influence	Code	Specific objectives	Networking indicators	HU	EU	EU15
1. Increasing broadband Internet penetration	Residential Companies Public institutions	C.1	Broadband Internet penetration (number of broadband subscriptions per 100 residents) reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	Number of broadband subscriptions per 100 residents	X	X	X
2. Extending relevant content on offer	Public institutions	C.2	Use of e-Administration services reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	The proportion of residents seeking information on a governmental page	X	X	X
				The proportion of residents downloading a form from the governmental page	X	X	X
				The proportion of residents submitting a form via the governmental page	X	X	X
	Companies	C.3	e-Commerce share reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	The proportion of persons (residents) who have purchased products/services via the Internet (during the past 3 months).	X	X	X
3. Providing equal opportunity	Disadvantaged groups	C.4	90 percent broadband residential coverage by the end of 2008, complete coverage by 2010	Proportion of residents receiving broadband service (who have the opportunity to subscribe at a price more accessible than the average market price)	X		
		C.5	Proportion of "digitally illiterate" residents (without Internet of computer experiences) less than 50 percent by 2008, and less than one third by 2013	Proportion of digital illiterates (without Internet of computer experiences) within the population as a whole.	X		

The most important input data required for the monitoring of the achievement of strategic objectives must be supplied by the monitoring system of the Hungarian Information Society Strategy ("MITS") (national data, international indicators for comparisons). These have to be supplemented with the findings of the targeted surveys carried out by the Broadband Task Force.

The monitoring of development programs is extremely important in the case of subsidies granted under the Second National Development Plan ("NFT II"). The institutions to be used for this purpose have not yet been identified. From 2007, the operation of the program monitoring system will be the responsibility of the organisation that will play the role of the authority. However, the proposal for the subsidy program monitoring system should be part of the strategic document that will be used as the basis of professional planning. In accordance with EU practice, a proposal is hereby made for the "output", "effect" and "result" indicators of the broadband infrastructure programs recommended to be included in the Second National Development Plan ("NFT II"):

Broadband Infrastructure Program – recommended indicators for the Second National Development Plan ("NFT II")

"Broadband public utility" support programs in the 2nd **National Development Plan**	**INDICATORS** Output	Impact	Result
E.10 Support of the construction of broadband infrastructure in villages and small settlements	number of supported projects	increase of broadband coverage in relevant settlements	increase of broadband internet penetration in small settlements
E.11 Installation of community access points in villages and small settlements	number of relevant settlements	households serviced by community access points	growth of broadband Internet use, decrease of digital illiteracy in small settlements
E.12 Broadband infrastructure development support in public education	number of supported education institutions	number of regular users of broadband school infrastructure	growing broadband Internet penetration and use in families with children
E.13 Support of innovative broadb and technology and application development	number of projects supported	development results put to commercial use	growing broadband penetration and use
E.15 Targeted training and access programs for disadvantaged groups	number of relevant persons and households	persons learning Internet and/or computer skills	decrease of digital illiteracy

FINANCIAL PLANNING

The starting point of financial plans is **the estimated resource requirement of the equipment proposed to be used**. The strategy's estimation of financial needs takes into account the subsidies recommended to be granted under the **Broadband Infrastructure Program** and the costs incurred for the recommended **public policy measures** but **does not take into consideration** any programs aimed at the development of content (**e-administration, e-business, e-culture**) as these areas are outside the scope of the broadband strategy. The estimated costs of the proposed **public policy measures** are displayed in the table under the **Broadband Task Force.** The methods used to estimate resource needs are described in the "Notes" made on the indicative financial table (**Section 8.3**).

Broadband Infrastructure Program: estimated resource needs of the fiscal and public policy measures; 2006 and 2007–2013 (data in million HUF)

	2006	2007–2013
E.10 Support the deployment of the broadband infrastructure in villages and small towns	3100	45 000
E.11 Support the installation of community access points in villages and small towns	Development (HUF 1200 million) will be covered by the Közháló program (E.17). Annual maintenance costs will amount to HUF 700 million and will be aid from the state budget.	As part of subsidies granted for infrastructure deployment in villages and small towns (E.10)
E.12 Support the deployment of the broadband infrastructure in public education	As part of the "Közháló" ("PublicNet"; E.17) program	210 000
E.13 Support the development of innovative broadband technologies and applications	225	28 000
E.15 Tailored education and access programs for disadvantaged groups	500	7000
E.16 Support participation in central EU programs	370	Not part of the Second National Development Plan ("NFT II")
E.17 "Közháló" ("PublicNet")	7 200	
E.18 Tax concessions	5 100	
Of these:		
Tax concession after infrastructure deployment	4 250	
Employees' PC program	850	
Direct consumer subsidies after residential Internet subscriptions	12 500	
Broadband Task Force (E7., E8., E9)	850	
Increase in the overhead expenses of the ministry of IT and Communications due to the planning activities of the Second National Development Plan ("NFT II")	350	
Total::	**30 895**	**290 000**

In the 2006 budget year, some HUF 30 000 million is required to finance the Broadband Infrastructure Program. Due to allocations ("Közháló", Economic Competitiveness Operational Programme /"GVOP"/), about HUF 10–11 000 million of this amount will be available partly in the budget of the Ministry of IT and Communications and partly in the 2004–2006 National Development Plan ("NFT I"). The estimated resource need of existing tax concessions is around HUF 5,000 million. According to preliminary calculations, the proposed 20 percent tax concession after Internet subscriptions would decrease state revenues by another HUF 12–13 billion in 2006. According to the indicative financial table, another app. HUF 2,000 million will be needed from the 2006 budget of the Ministry of IT and Communications to finance deployment programs in the following areas:

– Programs aimed at digital inclusion
– Programs to support successful participation in info-communication EU tenders
– Finance PPP-based information campaigns
– Finance other public policy measures that support the spreading of broadband electronic communications (Broadband Task Force)
– Additional overhead expenses incurred by the Ministry of IT and Communications due to the planning activities of the Second National Development Plan ("NFT II").

For the 2007– 2013 development phase, the „Broadband Infrastructure" program focuses on the following areas:

– infrastructure deployment
– innovation
– public education
– digital inclusion

For the seven-year period between 2007-2013, the estimated resource need of the proposed programs amounts to HUF 290 billion. This amount includes the private, EU and state resources expected to be available. According to preliminary calculations, the resource needs of the measures required to support the spreading of broadband electronic communications are the highest in public education. The „Intelligent School" Program takes away over 70 percent of the funds required for the Broadband Infrastructure Development Program. This fact indicates that the planned developments cover a long period in the future.

THE STRATEGY: CONSISTENCE AND COHERENCE

The examination of the **strategy's consistence** means the examination of whether it is in line with **EU and national strategic objectives**. The new strategic approach being formulated in the EU (Kok Report, PwC Study, revision of the Lisbon goals, etc.) – in accordance with the approach taken in the 2005 National Broadband Strategy – focuses on the positive effects of the production and use of the info-communication technology on **competitiveness and cohesion**; at present, broadband network communications is the most efficient means to realise these effects.

As for consistence between the broadband strategy and national programs, the most important aspect of the strategy is its alignment with and contribution to the finalisation of the **Second National Development Plan**. At the highest level, the development objectives for the period between 2007-2013 will be defined in the **National Development Policy Concept ("OFK")** prepared by the National Development Office ("NFH") and in the **Competitiveness Strategy** prepared by the Ministry of Economy and Transport ("GKM"). Both documents are being finalised now, thus, in the course of strategy compilation, we could only use the preliminary concepts and ideas as starting points. The proposed objectives, measures and expected impacts of the broadband strategy **are aligned with the focus areas of the national development policy being formulated now**. To ensure consistence with the Second National Development Plan ("NFT II"), alignment must be created between the **Hungarian Information Society Strategy ("Magyar Információs Társadalom Stratégia"; MITS)** and the 2005 National Broadband Strategy. The objectives and methodology of the 2005 National Broadband Strategy enable it to serve as the foundation for the updating and program definition of the broadband chapter of the Hungarian Information Society Strategy ("Broadband Infrastructure") and as a starting point for the identification of the **„content development focus points"** (e-administration, e-business, e-culture).

To ensure the strategy's internal coherence, the highest emphasis was laid on the requirements defined in the **Government Requirements for Strategy Compilation ("Kormányzati Stratégia-alkotási Követelményrendsze**re"; **"KSaK")**. Besides, the conclusions of the "**Consistence Project**" (launched by the Development Policy Vice Presidency of the National Development Office) regarding the 2004 National Broadband Strategy were also taken into account – to ensure that the 2005 National Broadband Strategy is fully integrated into the future planning and programming phases of the Second National Development Plan ("NFT II").

Introduction

1.1 ANTECEDENTS

1.1.1 Reasons for issuing the planning mandate

Broadband electronic communications gradually became a priority in the second half of the 1990-ies. This trend was the result of the recognition that knowledge-based society and info-communication have a significant impact on competitiveness, the rapid development of communications and IT technologies, the liberalisation of the telecom markets and – in the European Union – the definition of the political objectives of the **eEurope 2005 Action Plan**. The importance of broadband electronic communications is also shown by the current evaluation of the implementation of the action plan, the plans for its future and the efforts made to revise and ensure the implementation of the **Lisbon goals**[2]. This importance is proven by the fact that a clear political aim in EU member states is to improve the infrastructure and contents required for the proper operation of broadband communications – thus supporting the strengthening of **economic competitiveness** and **social cohesion.**

Hungary's EU accession has made it possible for the country to actively participate in the formulation of community strategies. This opportunity has to be seized now, during the planning and program development phases of the utilisation of the **Structural and Cohesion Funds available in 2007-2013**. The primary objective of the **National Broadband Strategy**, therefore, is to successfully integrate into the **Second National Development Plan** ("NFT II"), which determines the use of EU funds and Hungarian financing opportunities in the long run, the consistently defined, long-term objectives of the development of broadband electronic communications.

1.1.2 The planning mandate

The foundation of the Ministry of IT and Communications in May 2002 was the first time that the cause of the information society had been given the responsibility of a separate ministry. The mission of the Ministry of IT and Communications is to address the challenges of the new information era and, to this end, to support and accelerate the establishment of a knowledge-based economy and the information society in Hungary.

Within the Ministry, the Market Analysis Department of the Office of the Deputy Under-secretary of State for Info-Communication Regulations is responsible for the planning and supervision of the subsidy programs promoting the spreading of broadband electronic communications ("HHÁT-2", "HHÁT-3", "GVOP 4.4.1", "GVOP 4.4.22). Besides the activities related to broadband electronic communications, the responsibilities of the Market Analysis Department include the following:

– operate a statistical information system
– monitor the situation of communications and IT services
– supply data on the communications and IT markets

1.1.3 Initiatives prior to the strategy

In order to align the efforts of the EU and its member states, the European Commission requested the member states to elaborate their own **national broadband strategies** by the end of 2003. Using these national strategies as a starting point, the Commission submitted a position statement to the Council of Ministers. This document contains preliminary descriptions of the conclusions that determine

[2] Kok, Wim (2004): Facing the challenge: The Lisbon strategy for growth and employment. http://europa.eu.int/comm/lisbon_strategy6index_en.html
Price Waterhouse Coopers (2004): Rethinking the European ICT agenda: ICT breakthroughs to reach the Lisbon Goals. Amsterdam, Ministry of Economic Affairs

the medium-term development of broadband electronic communications. For the new member states – including Hungary – this obligation entered into force on 1 May 2004.

For the elaboration of the first version of the National Broadband Strategy ("**NSZS 2004"**) the Office of the Deputy Under-Secretary of State of the Ministry of IT and Communications for Communications ("HHÁT" – later renamed "ISZHÁT") and the Office of the Deputy Under-Secretary of State for the Information Society Strategy ("ITSHÁT") assembled a Task Force in November 2003. As a result of the activities of this Task Force:

- in January 2004, a detailed study was finalised that prepared the national concept for the spreading of state-of-the-art applications and services to be implemented on broadband systems.
- a presentation was delivered at the EU's ministerial conference held in Budapest in February 2004 under the title "Broadband in Hungary" („Szélessáv Magyarországon") in English and Hungarian.
- At the Ministry's internal meeting in February 2004, the concept of the National Broadband Strategy was discussed and a work plan was put together for the further steps of elaboration.
- By 1 May 2004 the Market Analysis Department of IHM HHÁT had elaborated and, after discussions in May-June, finalised the Hungarian National Broadband Strategy ("NSZS 2004").
- In August 2004, the Department issued an open, public tender invitation (title: „ Laying the Foundation for the Fiscal and Public Policy Measures Required To Support the Spreading of Broadband Electronic Communications and the Implementation of the National Broadband Strategy".

The public bidding process – with 6 corporate and consortium bidders – was won by the consortium of **Telkes Tanácsadó Rt., Colosseum Budapest Kft**. and **Ariosz Kft**. Project implementation was scheduled for the period between November 2004 – March 2005.

The 2005 National Broadband Strategy handles the 2004 Strategy as an important starting point. It considers the concept and orientation of the 2004 Strategy appropriate and, therefore, focused on the updating and program rollout of this previous Strategy.

1.2 THE PROCESS OF STRATEGIC PLANNING

1.2.1 Strategic planning: principles

The **Government Requirements for Strategy Compilation ("Kormányzati Stratégia-alkotási Követelményrendszere"; "KSaK[3] ")**, a document prepared by the Prime Minister's Office, was used as a guideline to define the principles of strategic planning. The KSaK is based on the New Public Management ("NPM") concept. The importance of the NPM is rooted in the fact that, internationally, this methodology and concept is the most widely used starting point of strategies for public administration systems and it seems likely that, in the long run, it will also become widely used in Hungarian public administration.

The 2005 National Broadband Strategy took into account the recommendations of the "KSaK" for content-related and formal requirements and for the process of strategy compilation.

The content-related criteria of the KSaK create a consistent system and logic for government strategies which enables the compilation of a fully coherent strategy. An important expectation is that the application of these criteria will make government strategies clearer and easer to monitor for politicians, the society and, last but not least, those involved in the planning of other strategies. If this is successful, it will be easier to identify interface points between strategies – with special respect to their objectives, the means and measures applied and the institutions of strategy implementation.

[3] A document on the definition of the uniform set of requirements for government strategy compilation and coordination (issued by the Prime Minister's Office, 2004)

In accordance with the above, this Strategy follows the structure defined in the KSaK and applies its content-related criteria, as follows:

1. **Introduction**
2. **Situation Analysis**
3. **SWOT**
4. **The targeted situation**
5. **Strategic directions**
6. **Goals and objectives**
7. **Means and measures**
8. **Implementation and monitoring**
9. **Financial plan**
10. **Consistence and coherence**
11. **Ex-ante evaluation**[4]

1.2.2 Strategic planning – participants

The members of the Project Management Committee ("Projekt Irányító Bizottság") and the consultants and external experts hired by the Ministry of IT and Communications participated in the activities of the Strategic Task Force of the 2005 National Broadband Strategy:

Project Management Committee

Dr. Bánkúti, Erzsébet – Deputy Under-secretary of State, IHM ISZHÁT
Sere, Péter Head of Market Analysis Department, IHM ISZHÁT
Vári, Péter – Head of Market Development Department, IHM ISZHÁT
Tóth, László Strategy Director, National Communications Authority
Both, Vilmos – General Director, Telkes Tanácsadó Rt.
Karajánnisz, Manolisz Managing Director, Ariosz Kft.
Dr. Ludányi, Arnold – Managing Director, Colosseum Budapest Kft.
Iványi, Péter – Project Manager, Telkes Tanácsadó Rt.

Consultants – Ministry of IT and Communications, National Communications Authority

Csókay, Ákos – consultant for the Political State Secretariat, Ministry of IT and Communications
Dr. Kovács, Oszkár – partner, EU Coordination Department, Ministry of IT and Communications
Gál, András – partner, Market Analysis Department, Ministry of IT and Communications
Dr. Derzsényi, Éva Head of "IHM ISZHÁT" Department
Dr. Puskás, Margit – partner, Department of Economy and Budgeting,
Ministry of IT and Communications
Dr. Bálint, Ákos – Head of Subsidy Management Department, Ministry of IT and Communications
Csapó, Noémi – partner, Market Analysis Department, Ministry of IT and Communications
Sashegyi, Zsuzsanna Head of Communications and PR Office, Ministry of IT and Communications
Fukker, Gabriella Deputy Head of National Development Plan Department,
Zeke, László "Közháló", Ministry of IT and Communications
Simon, Dávid – Consultant, Political State Secretariat, Ministry of IT and Communications
Vinczellér, Erika Strategy Division, National Communications Authority
Dr. Schmiedeg, Iván Consultant, National Communications Authority

Experts hired by the consortium of consultants

Dr. Gáspár, Pál Director, ICEG EC
Dr. Sallai, Gyula Head of Telecom and Media IT Department, Budapest Technical University

[4] This strategic document excludes the ex ante evaluation: the compilation of this chapter will be topical after finalisation, which should follow social and professional discussion.

1.2.3 Strategic planning: contents and time schedule

The strategic document has been compiled and finalised as a result of six carefully coordinated subprojects:

Subproject 1: updating and supplementation of the situation analysis about broadband electronic communications, using international benchmarks and empirical data

Subproject 2: elaboration of market and technology development scenarios, taking into account info-communication convergence processes and based on the expectations of market players

Subproject 3: Estimation of the macroeconomic impacts of the broadband development policy – internationally and in Hungary

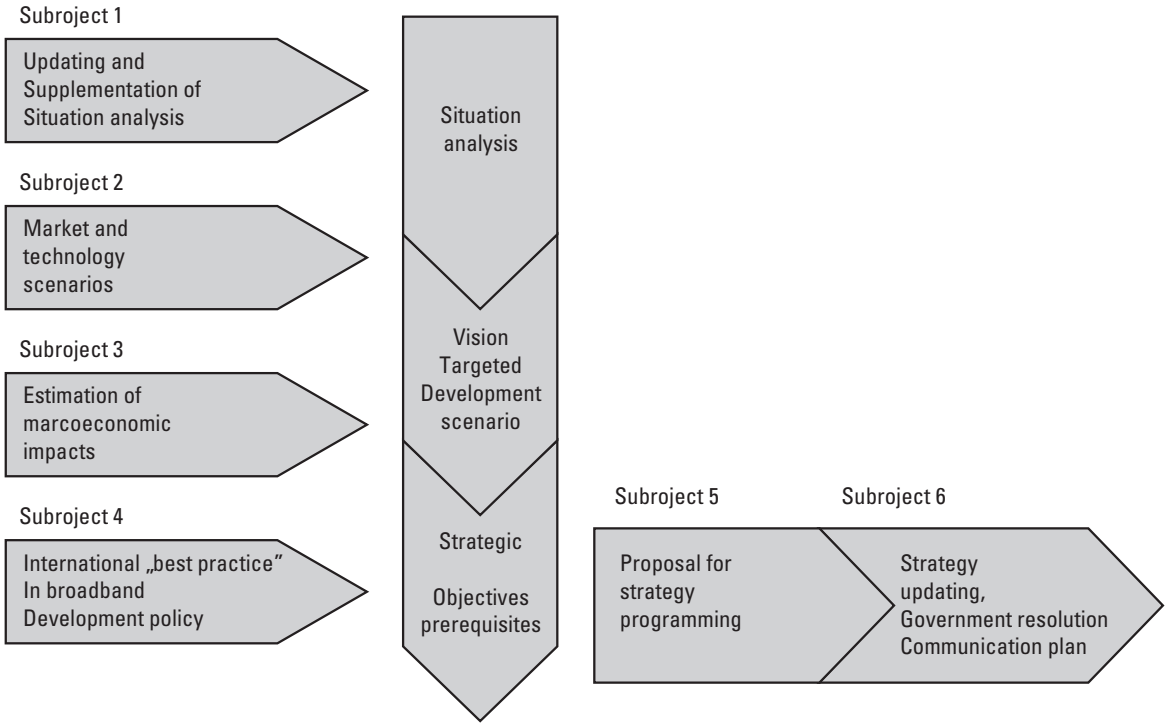
Subproject 4: international „best practice" in broadband development policy

Subproject 5: proposal for the updating/supplementation of the objectives, measures and prerequisites of the strategy and for the monitoring system.

Subproject 6: strategy updating, compilation of a communication plan and a draft Government resolution.

The interface points between the subprojects and the structure and logic of the "NSZS 2005" project are described by the following chart:

Structure of the "NSZS 2005" project



Strategic planning began in November 2004 and was completed in March 2005. Professional and social discussions on the strategy and strategy finalisation will take place during the 2 months following the completion of the "NSZS 2005" project.

1.3 DEFINITIONS

1.3.1 Identification of strategy coverage

International broadband strategies do not apply the same definition for strategy coverage. According to experience, three different approaches can be applied:

1. Strategies that focus exclusively on broadband infrastructure development (e.g. Sweden, Holland, Finland).
2. Strategies that integrate broadband infrastructure development and the related content development.
3. Strategies that reach beyond infrastructure and content-related issues (e.g. digital literacy, security issues) (e.g. Portugal, Ireland).

Areas of broadband strategy coverage in certain EU countries

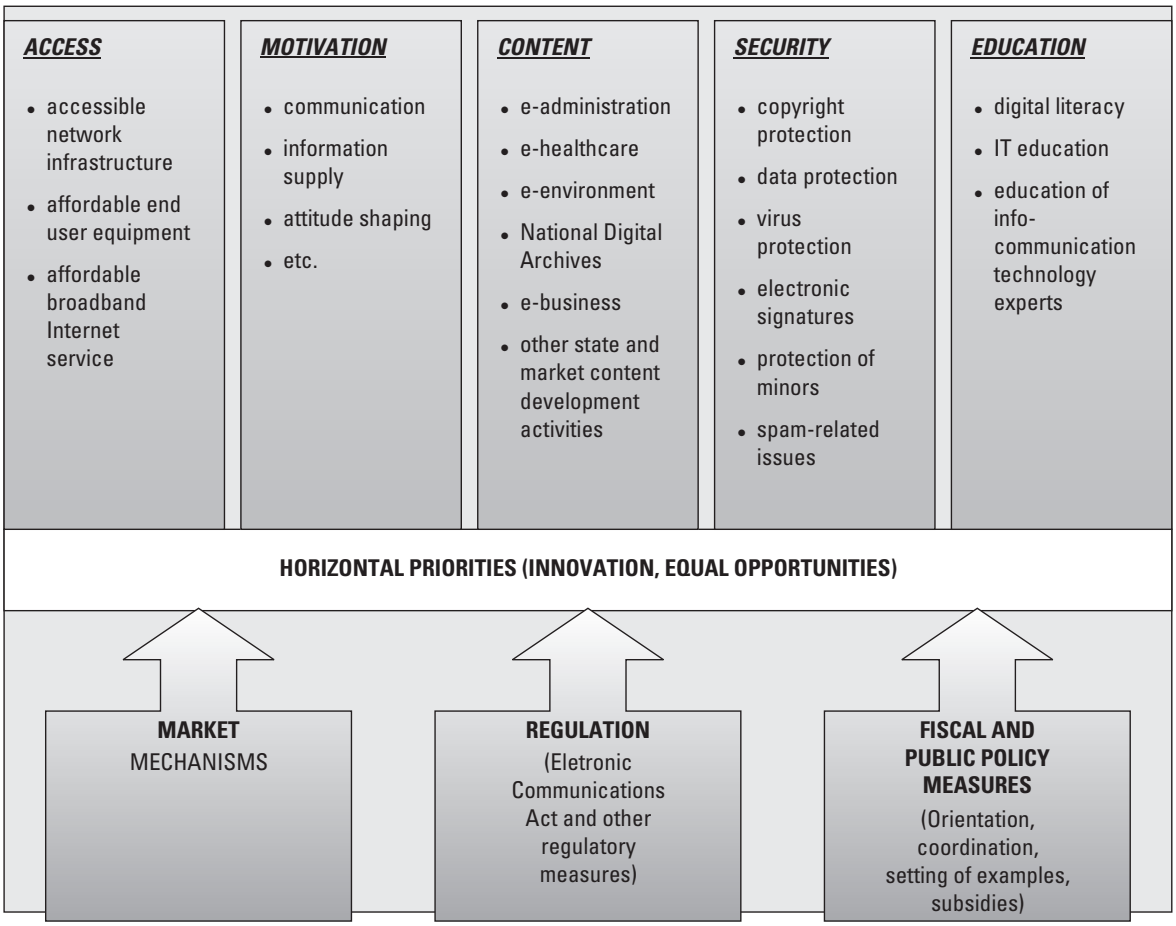
Country	Infrastructure	Content	Motivation	Education	Security
Portugal	+	+	+	+	+
Denmark	+	+			
Ireland	+			+	+
Austria	+	+			
Poland	+	+			
United Kingdom	+	+			
Holland	+				
Sweden	+				

Source: International best practice in development policy (2005); "NSZS 2005", Subproject 4

Based on the experience and approach of the 2004 National Broadband Strategy ("NSZS 2004"), this document fits best into the third group: the strategy focuses primarily on broadband access but, in its situation analysis, also covers content, motivation, education and security issues and makes proposals for the regulatory, public policy and fiscal measures to be taken in these areas. Besides, as a horizontal priority, it also covers equal opportunities (e-inclusion) and innovation. The key areas and the horizontal priorities together form the pillars of the strategic situation analysis.

For the purposes of the "KSaK", "pillars" are the aggregated areas which determine the situation in the given area and which can be used to describe the most important processes and interrelations in the given area.

Pillars of the strategy



Source: NSZS 2004

Of the above-described key areas (pillars) of development, the spreading of broadband technologies is primarily supported by a two-pole spiral forming as a result of the development of the broadband infrastructure (**access**) and the widening of the content portfolio (**content**). This broadband spreading model can be described as a recurring cycle comprising the following phases:

Phase 1 Creation of a broadband infrastructure providing national coverage though with white spots + provision of attractive contents via this network. An ever growing number of users convinced by early adopters connect to the network.

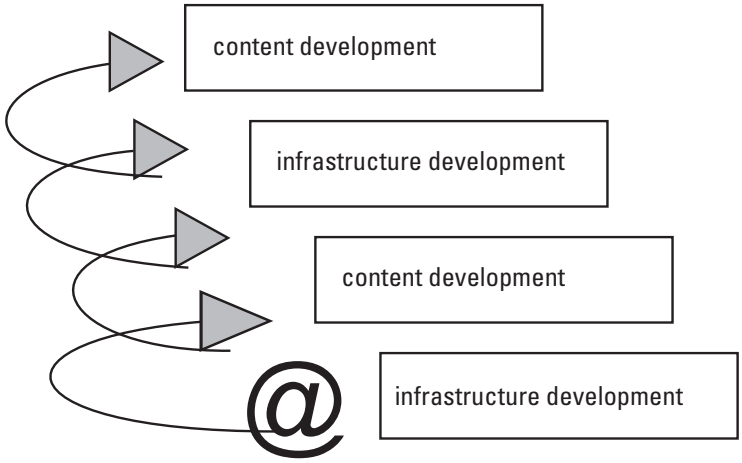
Phase 2 New contents and applications become available on the existing broadband infrastructure (e-administration, e-commerce)

Phase 3 Increase of infrastructure coverage, density and capacity, application of new technologies and infrastructures

Phase 4 The cycle restarts from Phase 2

The rollout of broadband development, triggered by interaction between the availability of new applications and infrastructure opportunities, requires that the said positive processes are not hindered by the lack of motivation/education or by security considerations.

Broadband spreading model



Source: NSZS 2004

The above model reflects the concept also described in the eEurope 2005 Action Plan, i.e. "infrastructure development and the launch of new services should be supported in a concerted manner". When strategic priorities are identified, the above model and its logic set the basic direction.

1.3.2 Definition

The gist of the 'broadband' concept can be best understood if considered as a set of technological opportunities which enable the fast transmission of large data volumes in order to provide access to a wide portfolio of digital services.

Due to the dynamism of technological development, the different levels of development and infrastructure coverage in different countries and the varying popularity of applications, it is currently impossible to give a uniform international definition for broadband electronic communications.

The bandwidth needs of different on-line services may differ significantly and the minimum and optimum data transmission needs of a given service may also be far apart.

Minimum and optimum bandwidth needs of some applications

	Minimum (kbps)	Optimum (kbps)
e-working	110	7000
video conferencing	110	800
e-education	110	7000
video telephony	70	200
DVD download	1000	7000
audio download	110	700
online games	40	600
teleshopping	40	7000
online banking	40	400
online magazines	40	2000
digital TV	1000	7000

Source: Plannedapproach Inc.

It is impossible to give a general definition of "broadband" primarily because needs are dynamically growing over time. A few years ago even the 64 kbit/s data transmission capacity of a simple phone line counted as revolutionary. However, the spreading of interactive video services would require a minimum symmetric bandwidth of 1.5 Mbit/s.

Ideally, broadband communication is supported by a technological environment that enables the transmission of digital contents, while offering interactivity. According to experience in most EU and OECD countries, this requires a download bandwidth of at least a few hundred kbit/s in the case of private users. However, as development unfolds, this requirement may relatively shortly reach the order of magnitude of several Mbit/s and upload capacity needs are also bound to increase. In accordance with the position of the ITU and OECD, the lowest download and upload speeds of "broadband" technologies are considered 256 kbit/s and 64 kbit/s (respectively) in Hungary today. In other words, the floor of "broadband" is somewhat above the base-band ISDN transmission capacity and, according to 2005 Hungarian broadband infrastructure subsidy programs ("GVOP 4.4.1", "GVOP 4.4.2"), broadband transmission shall meet the following criteria:

– Minimum speed from the service provider to residential subscribers: 256 kbps (512 kbps also being possible). Minimum speed from the residential subscriber to the service provider: 64 kbps;
– Monthly service availability to residential subscribers: at least 98 percent.

As to regulatory and deployment-funding measures related to broadband infrastructures and broadband access we must emphasise that a fundamental government principle in Hungary is technology-neutrality. This is true for both network solutions and end-user equipment. This approach is justified by the obligation to be unbiased in competition, the relative infancy of broadband solutions and the dynamism of technological development.

1.4 POSITIONING OF THE STRATEGY

As for its nature, the Strategy is a "thematic specialised strategy" (a category used in the "Government Requirements for Strategy Compilation"; "KSaK"). The broadband electronic communications strategy is a horizontal strategy which covers a comprehensive and highly important interdisciplinary and inter-ministerial area. Due to it national role, a public government resolution (i.e. one in the "1000 series") will be compiled for the strategy.

The implementation of the strategy will impact potential users of info-communication equipment in the residential sector, in businesses and in public institutions. For this reason, the strategy reaches beyond the limits of the telecommunications and info-communication sectors.

Positioning of the strategy (using the requirements of the KSaK)*

	To be approved by Parliament	To be approved by the Government	To be approved by the sector
Overall policy	Economic policy		
Professional policy	Landed property policy	Energy policy	
Overall strategy	General Development Plan, National development Plan	Hungarian Information Society Strategy ("MITS")	
Professional strategy	Against violence in the family	NSZS 2005	Forestry Strategy
Program Action Plan		Sulinet Program	Agriculture Development Program

The strategy covers the period between 2005–2013 – the latter being the last year of the next plan cycle of the European Union. Through the application of the "n+2" rule used for EU planning programs (i.e. resources are available for two years from the year when the given financial commitment is made /"n"/), implementation may last until 2015.

2. Situation Analysis

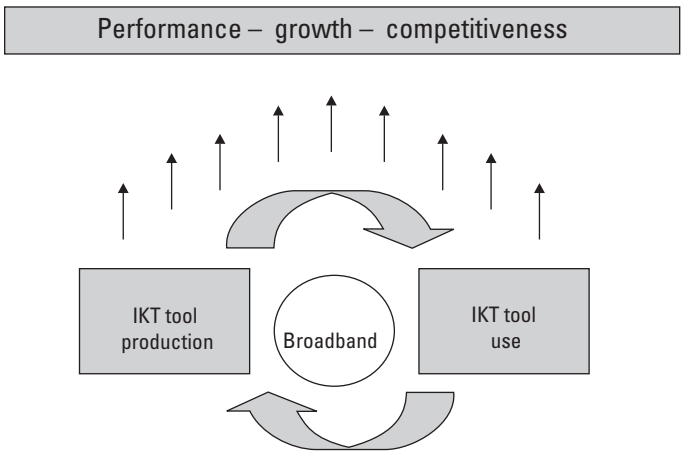
2.1 THE IMPORTANCE OF THE AREA

With regard to the rate of economic growth, competitiveness and the improvement of productivity, the European Union has been significantly behind the United States over the past 10 years. This has been caused, among several other circumstances, by problems with the use and spreading of info-communication equipment.

According to economic literature, the info-communication sector has contributed to the increase of productivity by 1.5 percent in the USA but only by 0.75 percent in the EU over the past ten years[5]. One of the primary reasons for this difference is the fact that in Europe the increase in info-communication technology investments has not been accompanied by an increase in overall productivity or the productivity of work. Problems have been encountered not in the manufacturing of info-communication equipment but its actual utilisation.

Europe's backwardness in the impacts of the growth of the supply side of the info-communication technology sector is not too significant (production of info-communication equipment) – but on the demand side (i.e. the use of info-communication equipment and services) American economy has a major advantage. This is very unfavourable as, according to international experience, significant growth can be achieved even without a strong info-communication sector (examples include the Benelux states, Canada, Australia and New Zealand) but the logic does not work the other way round: in countries where the production of info-communication equipment is strong but the all-purpose use of info-communication equipment and services is not widespread the contribution of the info-communication technology to economic growth and competitiveness is negligible.

Broadband: transmission mechanism to competitiveness



One of the main reasons for giving broadband a priority is the fact that it is through the spreading of broadband electronic communications that the positive macroeconomic changes, at which the development of the info-communications sector aims, can be achieved with the highest efficiency (enabling nature). Broadband electronic communications can be considered a transmission mechanism through which the production and use of info-communication equipment can increasingly contribute to improving competitiveness, especially in the following areas:

[5] OECD (2003) Sources of Economic Growth, Paris

– investment activities and, through those, investment rates,
– growth in production,
– acceleration of economic growth,
– increase in R&D expenses and activities,
– changes in retail profit rates,
– impacts on the labour market,
– changes in state revenues and expenditure,
– changes in the structure of the economy.

For the above reasons, supporting the spreading of broadband electronic communications is an issue related to competitiveness both in the European Union and in Hungary. It is, therefore, desirable to give this area a priority in long-term development policy concepts.

2.2 METHODOLOGY – INTRODUCTION

When putting together this situation analysis, both primary and secondary data sources were used. The first step was the processing of the findings of international and Hungarian research projects. The table that follows presents the main Hungarian databases used – based on the pillars defined in the 2004 National Broadband Strategy ("NSZS 2004"), broken down according to their relevance to the residential, corporate and public institution segments.

Hungarian databases – summary table

Segment		access	content	skill level	motivation	security
Residential	WIP–MITS	x	x	x	x	x
	Quick reports (Tárki, followed by Medián)	x	(x)	(x)	x	x
	ITC Report – Residential segment	x	x	–	(x)	x
	National Media Analysis	x	–	–	–	–
	Interbus	x	–	–	–	–
Company	MITS monitoring – Companies	x	x	x	x	x
	ITC Report – Business segment	x	(x)	–	–	x
	InterBusiness	x	–	–	–	x
Public institution	MITS monitoring – Local governments, state administration	x	x	(x)	–	x
	ITC Report – Institutional segment	x	(x)	–	–	x

x: suitable for a secondary analysis
(x): suitable for a secondary analysis with limitations
- : does not contain data relevant to the area

Main international studies used:

– eEurope – Eurostat
– Eurobarometer surveys
– OECD sources
– SIBIS sources
– ECTA sources
– ITU reports

References to sources used are given in footnotes.

Following the review of secondary data sources, we identified the missing data and information which are indispensable for the reliable, accurate and detailed analysis of the current status of broadband electronic communications. To collect the missing information, we organised structured deep interviews (corporate segment, public institutions) and carried out a representative targeted survey of the residential market, covering 1800 households[6]. References to the results of the „empirical survey" in this Strategy actually mean the following residential survey carried out by Ariosz Kft. in the framework of the "NSZS 2005" Project.

Residential questionnaire survey – main parameters

Total survey coverage	Households in Hungary (3.863 million)
Unit of survey coverage	Household
Number of sample elements	1800 households
Sampling method	Multiple layer, proportionate, likelihood
Type of sample	National representative
Number of towns covered by sampling	132 towns + 23 districts in Budapest
Method of data recording	Personal interviews with a structured questionnaire
Time of data recording	29 November – 16 December 2004
Interviewees	Heads of households
Corrective weighting	Multi-dimensional iteration factor weighting according to the size of the household, the level of education of the head of the household, the type of town and fixed line telephony penetration
Base of weighting	Household statistics data of the 2001 census

Source: Ariosz Kft.

In the course of the survey, we tried to identify population segments based on the level of integration of the households and their members into the information society. Eight segments were defined already during questionnaire compilation. These segments differ by IT equipment penetration, Internet penetration and digital literacy. One of the most important aims of the survey was to get a clear picture of the following: the respective quantity of each of these segments, the demographic features of the households belonging to the different segments and their members, their attitude towards the Internet, their chances of integrating into or exclusion from the information society and the place and depth of the digital gap. Segments were defined primarily at the level of households, though they can also be examined at the level of the individuals living in these households. Each segment was given a „nickname" to make reference to them easier. The segments are described according to the criteria of their identification, as follows:

– **Segment I („Broadband at home")**: households with a broadband Internet access and Internet users who live in such households.
– **Segment II („Narrowband at home")**: households with a narrowband Internet access and Internet users who live in such households.

[6] Situation analysis to lay the foundation for the broadband electronic communications strategy: the residential segment (Ariosz Kft, NSZS 2005 RP1)

– **Segment III („PC AT HOME, INTERNET ELSEWERE"):** households with a PC but no Internet connection, though at least one member of the household uses the Internet outside the home. As for individuals, those belong to this segment who live in a household with an „offline" PC but use the Internet somewhere else (e.g. at home, at the workplace).
– **Segment IV („PC AT HOME, INTERNET NOWHERE"):** households with a computer but with none of the household members using the Internet either at or outside home. As for individuals, those PC users belong to this segment in whose household there is an offline computer but do not use the Internet even outside their home.
– **Segment V („PC AND INTERNET ELSEWHERE"):** households with no computer but at least one of the household members using a PC and the Internet outside the household. As for individuals, those belong to this segment whose household does not have a computer but who use the Internet somewhere else.
– **Segment VI („PC ELSEWHERE, INTERNET NOWHERE"):** households with no computer but at least one of the household members being a PC user elsewhere (i.e. outside the household), though none of the household members is an Internet user. As for individuals, those belong to this segment who do not have a computer at home but use a computer somewhere else, though never the Internet.
– **Segment VII („DIGITALLY ILLITERATE, WITH YOUNGSTERS"):** households without a computer, with none of the household members using a computer anywhere else, either, and at least one member of the household being under the age of 35. As for individuals, those youngsters under the age of 35 belong here who do not have a computer at home and do not use a PC anywhere else, either.
– **Segment VIII („DIGITALLY ILLITERATE, ELDERLY"):** households without a computer, with none of the household members using a computer anywhere else, either and no member of the household being under the age of 35. As for individuals, those at or above the age of 35 belong here who do not have a computer at home and do not use a PC anywhere else, either.

In accordance with the general approach of our situation analysis, we focus on the household as the actual or potential place of Internet use. As the above criteria show, households get the classification of the "best" member of the household. This is motivated by the consideration that "better prepared" household members take the lead in improving the position of the household in the info-communication society (purchasing a home PC, having an Internet connection installed at home or getting a home broadband subscription). The person who acts as the driver for such development is usually someone else than the head of the family – typically school children.

2.3 ANALYSIS BY PILLARS

The "pillars" of the strategy are the key areas defined in the first version of the 2004 National Broadband Strategy:
– Access
– Content
– Education
– Security
– Motivation

From the point of view of strategy compilation, the "pillars" are aggregated areas which determine the status of broadband electronic communications. These pillars were used to describe the most important processes and interrelations which lay the foundation for strategy programming.

The cornerstones of each pillar are the statuses of the main user segments. The pillar-based analysis uses the following breakdown:
– Population (residential segment),
– Companies (corporate segment),
– Public institutions (institutional segment).

Specific aspects of the strategy are the indicators of the user segments which, within the pillars,

– Present the results of the processes which are considered strategically important
– Can be measured with relative accuracy
– Can be compared to international indicators.

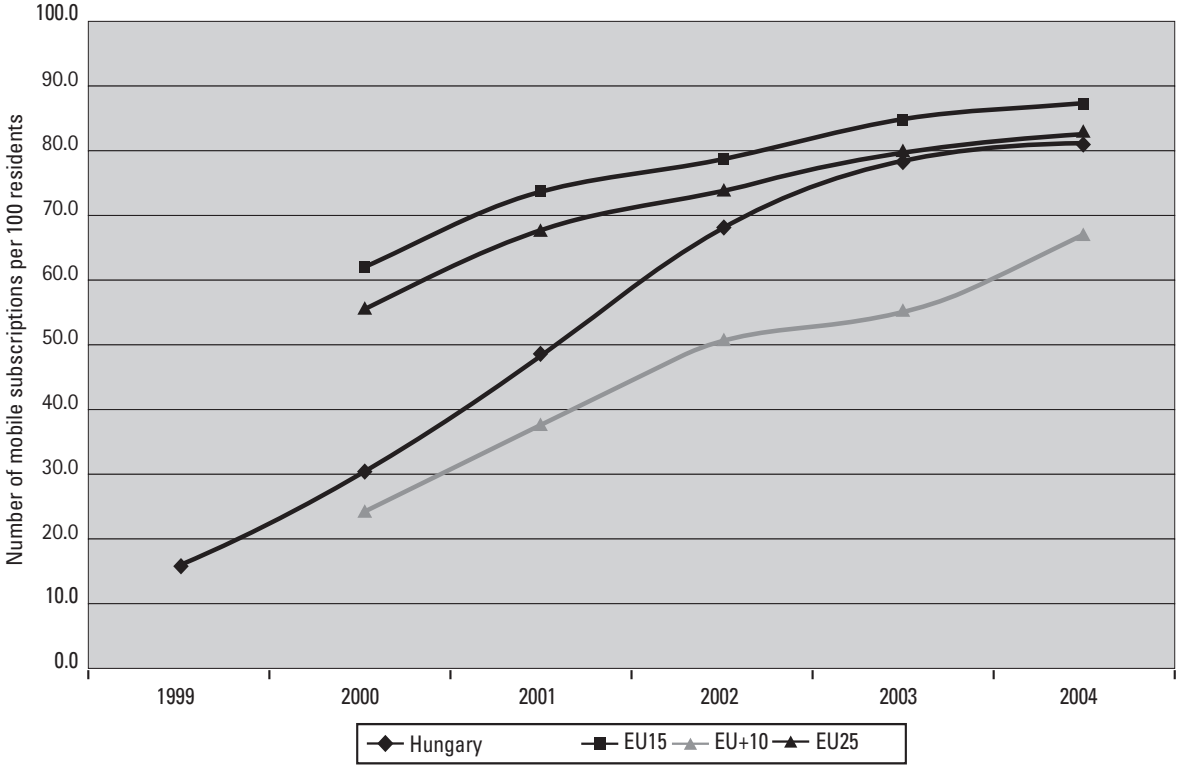
2.3.1 Access

2.3.1.1 The supply side

Heterogeneous networks. The level of development of the broadband infrastructure is uneven in Hungary's territory both as regards density and the actual technologies used. The backbone endpoints and the BIX (Budapest Internet Exchange) are located in Budapest and, as a result, ISPs operating outside the capital incur major extra costs to connect to the backbone network. The backbone network, which connects municipalities, covers only one quarter of the country's 3,143 towns and cities – and not even all of these have an access connection. At the backbone network level of the broadband infrastructure there is a capacity surplus, while the distribution network and the local network (last miles) are heterogeneous as to their level of development and transmission capacity.

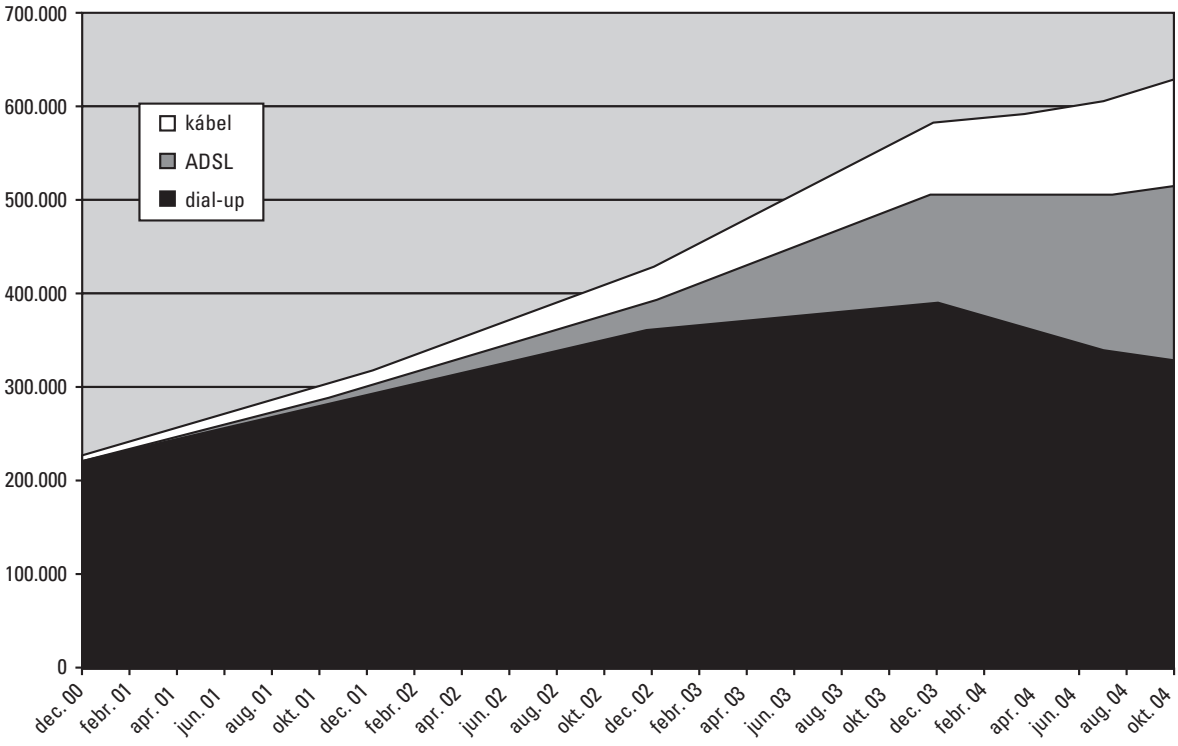
Competing technologies. Territorial differences may be diminished by the fact that the data transmission market is one of the most dynamically developing markets of Hungary's telecommunications sector. Besides the services available through the most commonly used DSL and CATV networks, several alternative electronic communication technologies are available or being deployed which can be substitutes or supplements of the said two electronic communications network types in the long run. In the short run, DSL and cable modem access will remain the primary broadband Internet technologies used – but the fast deployed wireless solutions (WiFi, WIMAX) and the enabling of mobile networks to handle broadband data transmission (EDGE, UMTS) may gradually change the technology map. As for this aspect, a positive factor is that Hungary is among the leaders in Europe in mobile penetration. The expansion of the mobile data market is boosted by the strong competition between the three mobile companies operating in the country – not only in price and quality but also in the marketing of new services.

Mobile penetration trends (from 1999 to the end of 2003, middle of the year in 2004)



Source: T-Dir, National Communications Authority ("NHH")

Changes in the number of Internet subscriptions – by connection types Hungary, 2000–2004



Source: Central Statistical Office ("KSH") "Telecom, Internet" („Távközlés, Internet"), quick report

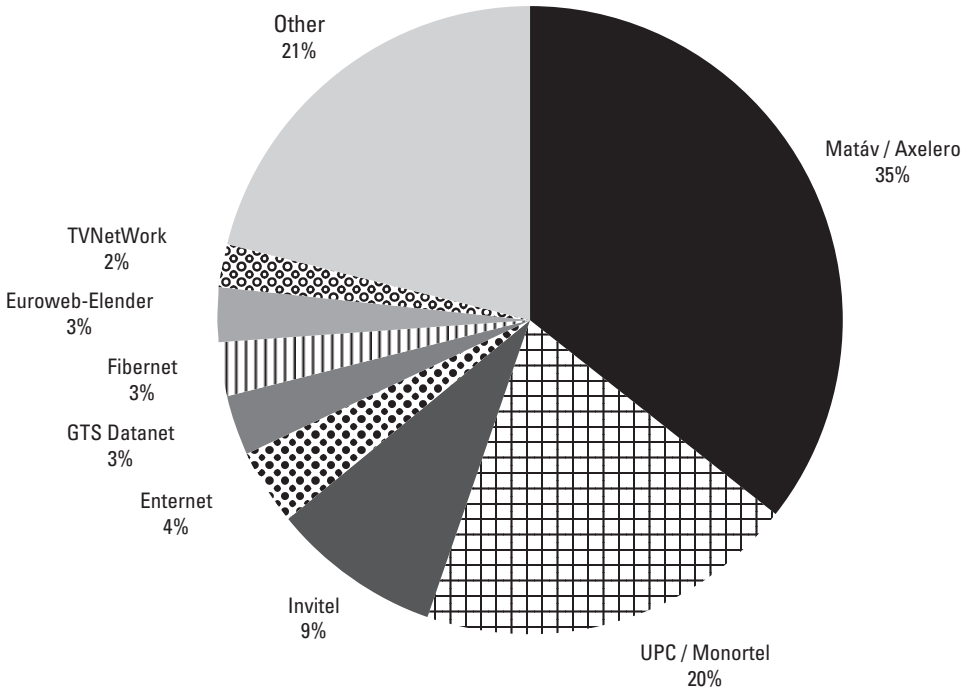
As of the end of 2002, the two leading broadband technologies (ADSL and cable) were used by roughly the same number (31/32 thousand) subscribers to access the Internet. However, the rate of increase of DSL subscriptions then became higher: in the course of 2003 this increase was 83 thousand and 121 thousand in 2004. During the same two years, CATV Internet subscriptions increased by 46 and 59 thousand (respectively).

The number of DSL subscribers is likely to remain higher than cable modem subscriptions also in the long term. The primary reason is that CATV networks do not work as an alternative for businesses and in poorly populated rural areas. At the same time, in cities where cable networks are enabled to handle bidirectional communication in time, technology competition is likely to survive in the long run. In its coverage areas, cable modem Internet access can be an alternative to ADSL in the long term and, thus, competition in this market segment can be a quality and price reference point for the whole broadband market. For this reason, Hungary's high CATV coverage (75%) and subscriber base (52 %) are clearly favourable for the spreading of broadband electronic communications.

Retail market. On the retail market of broadband Internet services, the two largest players are Matáv/Axelero and UPC. The former has around a 50% market share on the DSL market, while the latter has a similar share of the cable modem market. At the same time, these players have significant shares of the each other's main markets: Matáv/Axelero has an interest on the cable modem market through its Internet services supplied via the MatávkábelTV network (being the second player of that market with its 11% share), while UPC, as an owner of Monortel, has an interest – though somewhat slighter – on the DSL market. On the DSL market Invitel is the second largest player (14%), followed by three service providers (Enternet, GTS-Datanet and Euroweb-Elender) whose shareholders do not include any network owner telephone company.

Network owners also dominate the cable modem market: UPC and MatávkábelTV (mentioned above) are followed by Fibernet. The 35% market share of Matáv/Axelero is significantly higher than that of UPC/Monortel (20%).

Broadband subscriptions by ISPs (as of 31 December 2004)
(DSL + Cable: 371 772)



Source: calculations of Ariosz Kft., estimates by experts

Changes in coverage[7] . As a result of the development of the broadband Internet infrastructure, 721 of Hungary's 3,143 municipalities were covered by some broadband technology as of December 2004[8] . These municipalities have 76.3% of the population:

– number of municipalities with access to the ADSL service: 642,
– number of municipalities with cable Internet access: 259.

Municipalities with ADSL/cable Internet service access

		Has cable Internet in some part of the settlement		Total
		no	yes	
Has ADSL service in the settlement	no	2422	79	2501
	yes	462	180	642
Total:		**2884**	**259**	**3143**

Source: calculations of Ariosz Kft, based on the processing of data supplied by service providers (December 2004)

[7] Coverage and access are closely interrelated. The former means the number/ratio of households and businesses which, due to the available technical and infrastructural conditions, could potentially use broadband Internet for an affordable price (i.e. not significantly higher than the average price), while the latter stands for the number/ratio of citizens, households, businesses or institutions which actually have access to the Internet (or which have broadband Internet access).

[8] Broadband coverage means access to the Internet via the two most commonly used technologies (DSL and cable, which are used by 92 of the population). Due to the lack of information, coverage of other technologies could not be measured.

The increase in the number of municipalities with ADSL coverage is especially conspicuous: during the only nine months since March 2004, this number went up from 265 to 642, while the ratio of the population covered with the ADSL service increased from 58 to 70 percent.

Broadband Internet services are available in Budapest and all county seats. However, the total coverage of the country's other municipalities is only 86 percent. The smaller a municipality is the lower its coverage ratio becomes. Only 8 percent of villages with a population of less than 1,500 have access to any broadband Internet service.

Broadband coverage of municipalities (ADSL and cable modem) by municipality type

		Number of residents	Broadband service available
Settlement type	Budapest	1 719 342	100,0%
	County seat	1 788 770	100,0%
	Town	2 877 420	86,1%
	Village 3000+	1 334 353	61,8%
	Village 1501 – 3000	1 181 933	32,0%
	Village - 1500	1 238 119	8,0%
Total:		**10 142 362**	**22,9%**

Source: calculations of Ariosz Kft, based on the processing of data supplied by service providers (December 2004)

Broadband coverage also largely depends on the density of population. 99.6% of those living in large cities and their conurbation areas have access to some broadband Internet technology, while this ratio is only 87% in towns and 41.3% in rural (poorly populated) areas.

Percentage of population covered with broadband services by density of population categories

		Number of residents	Number of residents covered
Population density	501–x persons/sq. km.	3 423 507	99,6%
	100–50 persons/sq. km.	3 402 247	87,0%
	x–99 persons/sq. km.	3 316 608	41,3%
Total:		**10 142 362**	**76,3%**

Source: calculations of Ariosz Kft, based on the processing of data supplied by service providers (December 2004)

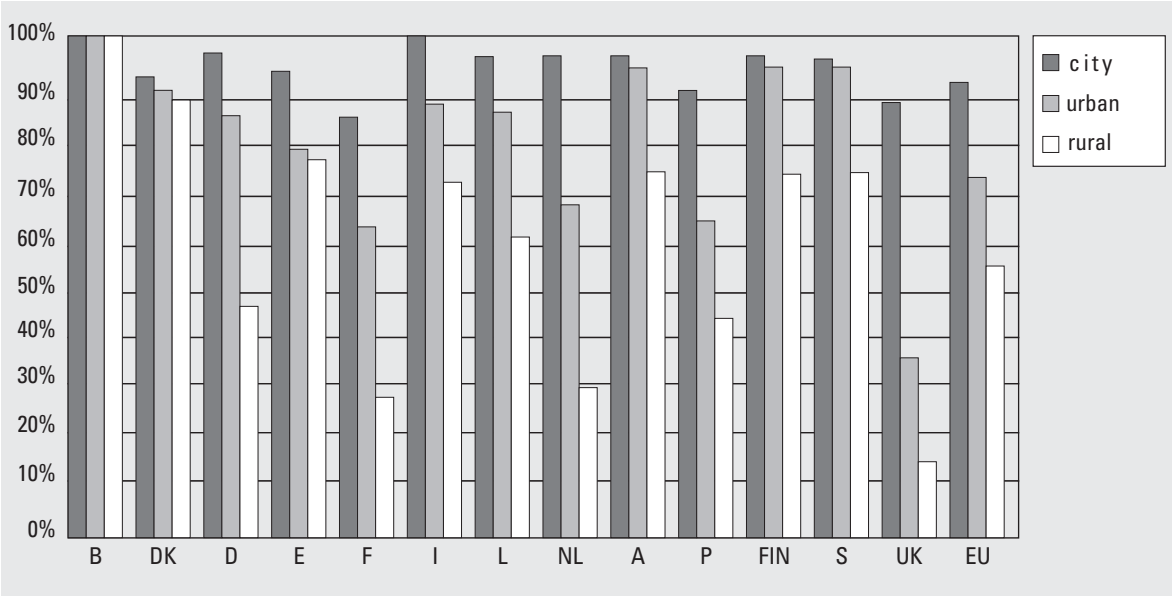
Major differences exist also in the coverage ratios of municipalities in Hungary's different regions (Nomenclatur des Unités Territoriales Statistiques – NUTS2). 82.3 percent of the municipalities in Hungary's Middle Region ("Közép-magyarországi Régió") is covered with such services, making it the best among the country's regions in this respect. This high ratio is due to the presence of Budapest and the low number of small villages. The 67.3 percent coverage of the municipalities of the South Plain Region ("Dél-alföldi Régió") is also surprisingly high: in the country's other 5 regions coverage is only between 10–20 percent. The exceptionally high ratio is explained by the high number of small towns (with a population of more than 3,000), as the installation of ADSL exchanges in such towns is (now already) profitable.

Broadband coverage of municipalities in a regional breakdown

		Broadband service available
Region	Central Hungary	82,3%
	Central Transdanubia	20,1%
	West Transdanubia	11,1%
	South Transdanubia	11,9%
	North Hungary	17,9%
	North Plains	14,7%
	South Plains	67,3%
Total:		**22,9%**

Hungary's backwardness compared to the average of the European Union is the largest in rural areas. This is due to bottlenecks in the telecom infrastructure and in demand on the one hand and to the relatively high ratio of the rural population on the other: at present, over half of the 3.3. million people living in such areas and over three quarters (78%) of the 2.4 million people living in small towns and villages (with a population of less than 3,000) have no access to any broadband electronic communications service.

DSL coverage in EU member states, 2003



Source: IDATE

3.2.1.2 The residential segment

Penetration indicators, trends. Residential Internet penetration in Hungary is still far lower than that in the EU and in economically strong countries outside the European Union. At the end of 2004, only 17% of the country's households[9] had an Internet connection: this is less than half of the EU average (45%). Looking at the number of broadband subscriptions per 100 citizens the situation is no better: the Hungarian index is below half of the EU average:

– In Hungary in December 2004 the number of broadband subscriptions per 100 citizens was 3.6,

– as opposed to 8.6 in the 25 EU member states at the same time.

[9] Includes the app. 2.5 percent of households that use the so-called "Open Internet" service (i.e. access to the Internet w/o an Internet subscription).

Current values of the most important indicators in the residential segment

	NSZS 2005 Dec 2004	WIP Oct 2004	Media Analysis Q2-Q3 2004	ICT Report May 2004
Internet use				
Number and proportion of those **persons 14** or older who use the Internet (with some regularity) somewhere (either at home or elsewhere)	2 434 000 28,4%	29,0%	–	21,3%
Number and proportion of those **persons 18** or older who use the Internet (with some regularity) somewhere (either at home or elsewhere)	2 084 000 26,0%	25,0%	24,2%	–
Number of **households** where there is a person who uses the Internet (with some regularity) somewhere (either at home or elsewhere)	1 396 000 36,1%	–	–	–
Number of **households** where the **head of the household** uses the Internet (with some regularity) somewhere (either at home or elsewhere)	856 000 **22,1%**	–	–	–
Internet coveragee				
Number and proposition of those **households** where the Internet is being used at home	**665 000** **17,2%**	14,0%	–	15,4%
Number and proposition of those **households** where a home **Internet subscription** is available	**569 000** **14,7%**	–	–	–
Number of those **households** (and proportion within home Internet users) where a **broadband** home **Internet subscription** is available	**318 000** **(47,8%)**	(44,0%)	–	(41,5%)
Number and proportion of those **persons 14** or older who live in a household where the Internet is used at home	**1 787 000** 20,9%	–	–	–
Number and proportion of those **persons 18** or older who live in a household where the Internet is used at home	**1 613 000** 20,1%	–	13,8%	–
Composite indicators				
Number of persons 14 or older who have the Internet in their home but do not use it	**350 000**	–	–	–
Number of persons 14 or older who have the Internet in their home but use it elsewhere	**997 000**	–	–	–
Number of desktop PC-s connecting to the Internet (as well as their proportion within the total amount of home desktop PC-s)	**774 000** **(51,9%)**	–	–	–

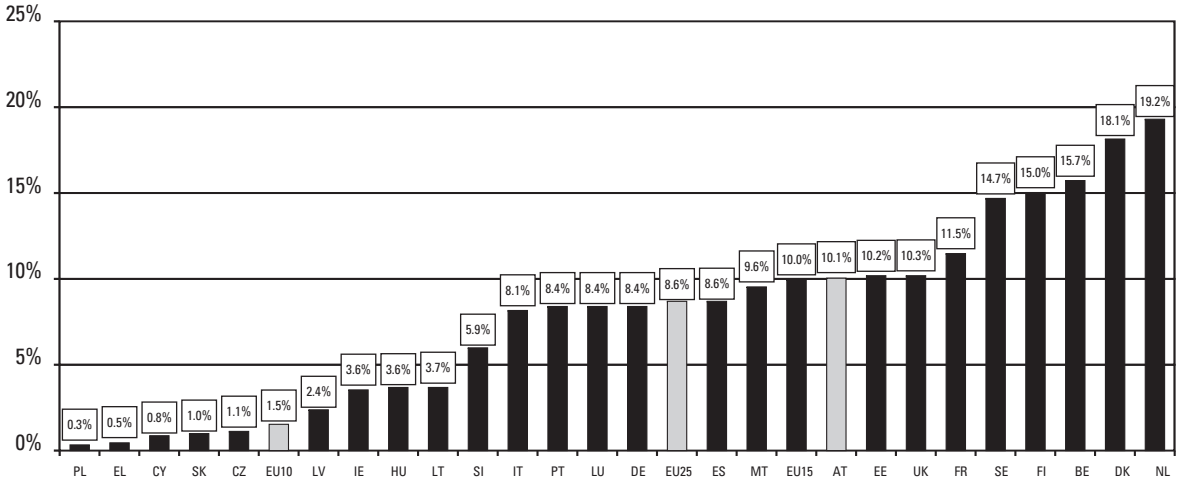
Source: NSZS 2005 Residential survey (Ariosz Kft.)

As of the end of 2004, 665 thousand households (i.e. 17.2% of households) had access to the Internet. This figure is relatively high compared to the similar indicators of other surveys carried out in the same year. We must emphasise, however, that this figure (665 thousand) is not the number of Internet subscriptions. 2.5% of households access the Internet via an "open Internet" connection (i.e. without a subscription). If this is taken into account, the number of residential Internet subscriptions was 569 thousand, i.e. 14.7% of households have an Internet subscription. Of the 665 thousand households with Internet, 318 thousand have broadband Internet access. This makes up 48% of the total number

of households with an Internet connection. 26% of the adult population have used the Internet in the past six months. Of the population above the age of 14 this ratio is somewhat higher, i.e. 28.4 percent.

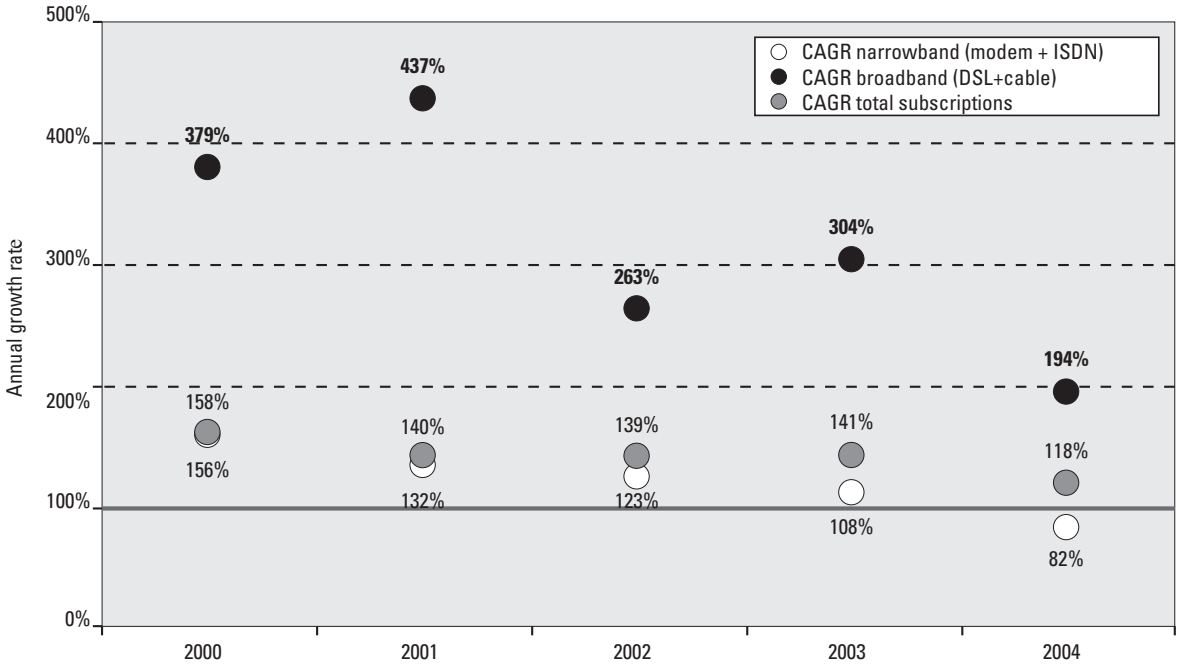
As of the time of the survey, 1.78 million people older than 14 years lived in a household where the Internet was used. Interestingly, every fifth such person (i.e. 350 thousand people) do not use the Internet anywhere – including their Internet access at home. The ratio of households with a PC and an Internet connection continues to be very low. Hardly more than 50 percent of home PCs have access to the Internet.

Broadband penetration in the 25 EU member states
1 January 2005, disregarding wireless connections



Source: European Electronic Communications Regulation and Markets 2004. Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions. COM(2004) 759 final. Brussels, 2.12.2004.

Annual growth rate of Internet subscriptions (CAGR)



Source: data supplied by the Central Statistical Office ("KSH")

Hungary's backwardness could not be significantly diminished in spite of the fact that Internet penetration steadily increased between 2000 and 2003. Another warning sign is the fact that the dynamism of the increase in the number of subscriptions decelerated in the year 2004: the annual 140-160 percent annual increase rate of the period between 2000-2003 dropped below 120 percent.

One of the reasons for the said deceleration may be that in Hungary we have not seen the strong network effect in Internet penetration which – similarly to the spreading of other info-communication equipment – would result in a strong penetration growth even if all other circumstances remained the same. According to the results of the empirical survey, the network effect is experienced only within households: family members with a higher "info-communication technology status" try to convince their relatives about the advantages of Internet use. According to the actual survey results, in such efforts,

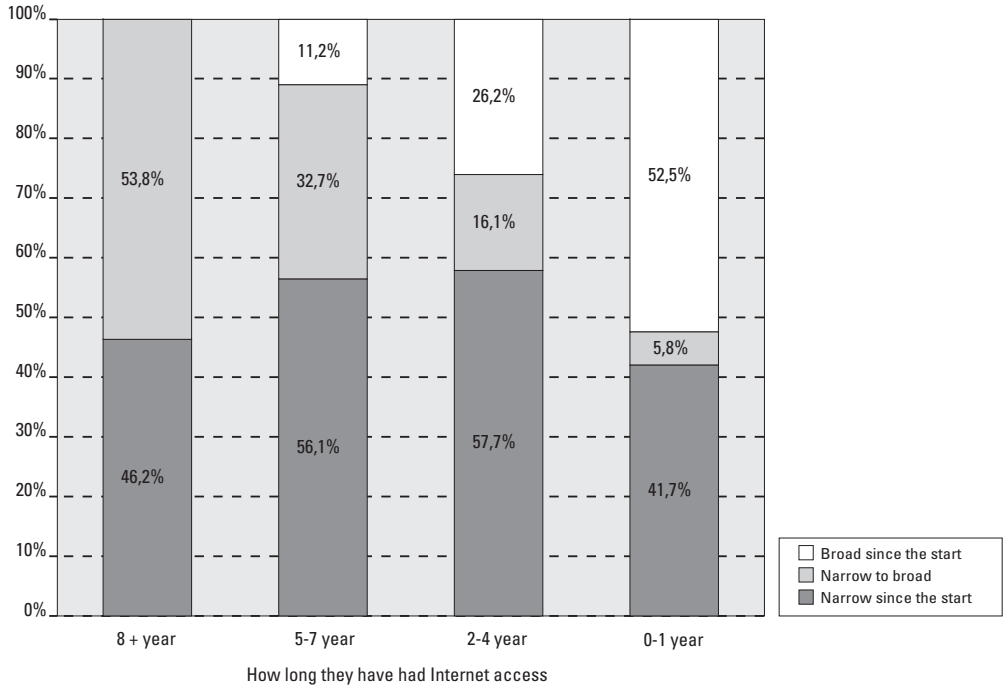
– the 18–39-year age group
– and family heads with children under 18 are the most active.

Among those who have been successfully convinced, the following groups are overrepresented:

– those between the ages of 30-49 and
– again, family heads with children under 18.

A positive change, on the other hand, has been the growth in the number of broadband subscriptions over the past 2-3 years. As a result of this change, broadband subscriptions now make up almost half of all subscriptions. This ratio is far higher than the EU average (app. 33%). The following chart, which was made using the results of the empirical survey, shows that the longer time ago a household started to use the Internet the more likely it is that it has switched from narrowband to broadband. On the other hand, new entrants tend to chose broadband to start with: in the past two years, 52% of new subscribers had a broadband connection installed and less than 6 percent of them have gone through the „dial up phase" (i.e. had a narrowband connection first and then switched to broadband). This result is in conflict with the earlier assumption that the increase in the number of broadband subscriptions is caused primarily by internal migration within the "Internet population" (i.e. switching from narrowband to broadband) and is promising in that in Hungary the narrowband phase can be "skipped" (if competition is efficiently regulated, communication is intensive and business models which focus on the spreading of broadband communications are applied).

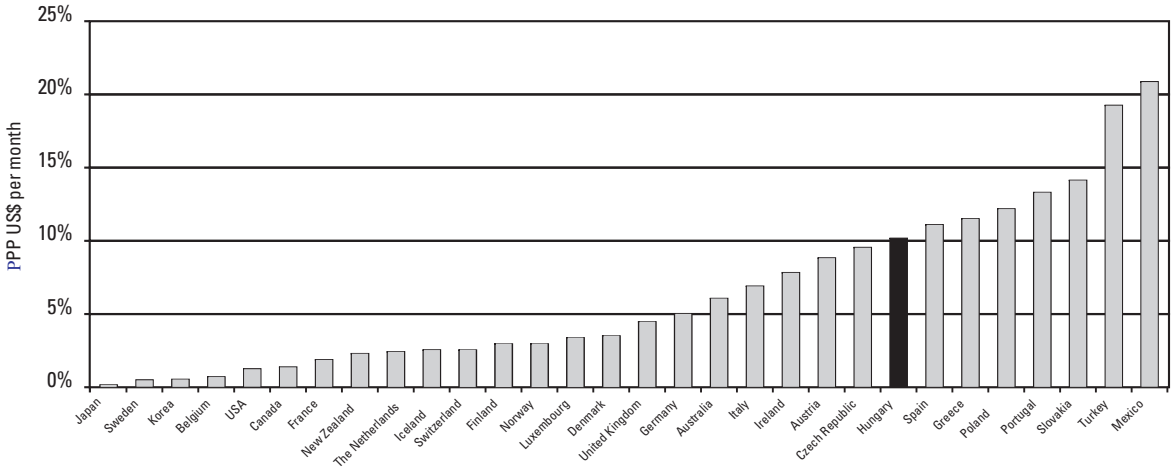
The connection type chosen – according to the time of entry into the "Internet population"



Source: "NSZS 2005" residential survey (Ariosz Kft.)

Price of broadband Internet. Calculating at current prices, Hungary is at the average level among OECD countries with regard to the price of DSL subscriptions. If the calculation is made based on purchasing power, the country's situation is worse. In this comparison, DSL was cheaper in 22 OECD countries and was more expensive only in 7 in the year 2004.

Minimal DSL prices in OECD countries
(unlimited access normalized for 1024 kbps) PPP US$ per month



Prices as of November 2004 Source: OECD

In Hungary, in other words, a broadband subscription took a higher part of the average income than in EU member states and in better developed OECD economies. This statement is also supported by the fact that, according to survey results, connecting to the Internet was "a minor financial burden" for only one third of households and every fourth household qualified the service as "a major financial burden".

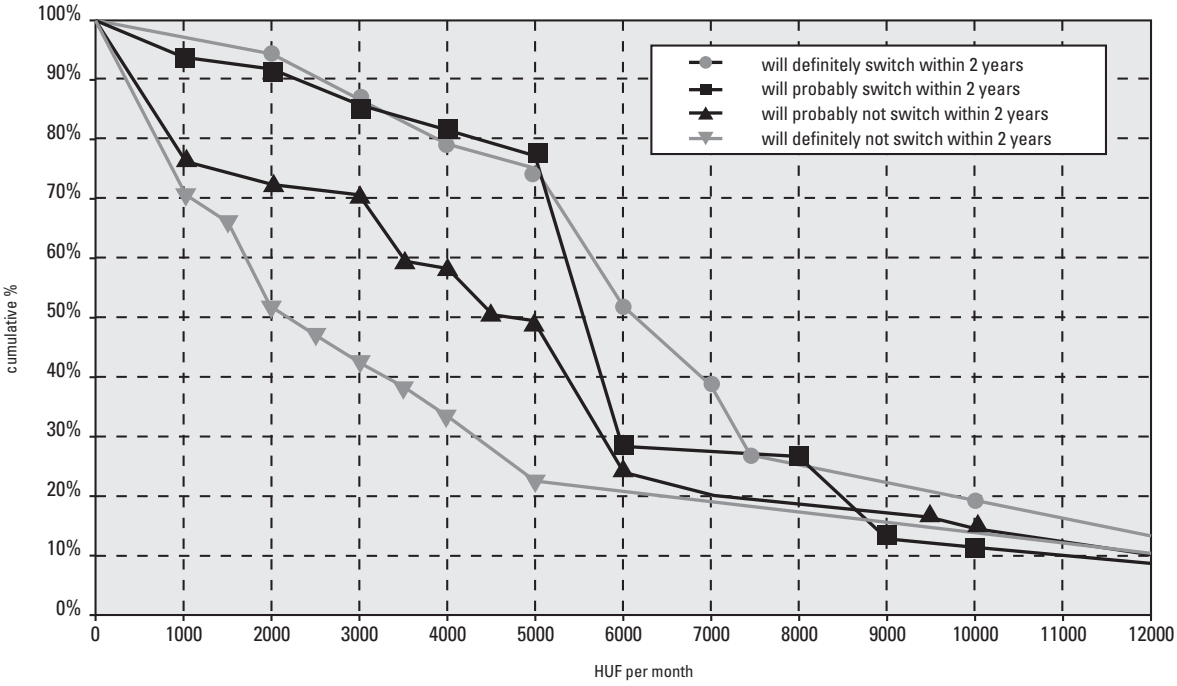
Connecting to the Internet – financial burden, depending on the time of installation

Financial implications of introducing the Internet	How long they have had access at home					Total
	0 to 1 year	2 to 4 years	5 to 7 years	8+ years	does not know / will not reply	
N (thousand people)	224	307	97	26	13	667
represented low financial burden	38,9%	34,2%	25,7%	19,2%	30,8%	33,9%
represented medium financial burden	33,5%	46,3%	46,4%	38,5%	38,5%	41,5%
represented high financial burden	27,7%	19,6%	27,9%	42,3%	30,8%	24,5%
Average burden	**1,89%**	**1,9%**	**2,0%**	**2,2%**	**2,0%**	**1,9%**

Source: "NSZS 2005" residential survey (Ariosz Kft.)

The broadband Internet demand curve, drawn based on the results of the empirical survey, shows that for those who would definitely or likely switch to broadband the limit price is around 5,000–6,000/ month (80% of the interviewees stated that they would seriously consider having a broadband connection installed in their home for this price).

Demand curves for broadband connections among current narrowband subscribers – likelihood of switching (at what monthly price would you seriously consider switching to broadband?)



Source: "NSZS 2005" residential survey (Ariosz Kft.)

Assumed broadband prices and „outstanding" price limits – likelihood of buying an Internet subscription

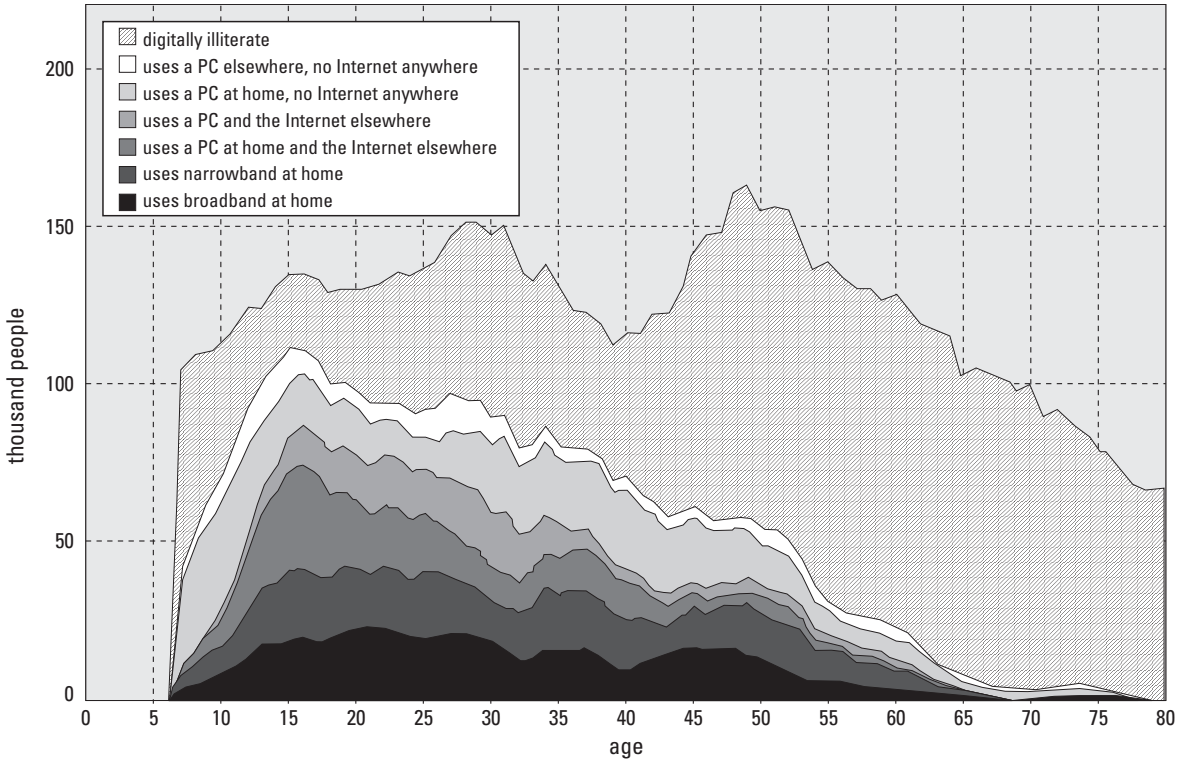
Average amounts (HUF)	How likely is it that you will have Internet connection in your home within the next 2 years?			
	definitely will have	probably will have	definitely will not have	probably will not have
What is the average monthly cost of broadband Internet access?	9888 Ft	10 535 Ft	9894 Ft	11 298 Ft
What would be the monthly cost at which you would seriously consider to establish a broadband connection at home?	6428 Ft	6126 Ft	3919 Ft	6169 Ft
What would be the monthly cost at which you would definitely establish a broadband connection at home?	5313 Ft	5433 Ft	3228 Ft	4421 Ft

Source: "NSZS 2005" residential survey (Ariosz Kft.)

Digital division. A major challenge from the point of view of long-term growth prospects is the fact that nearly 60% of Hungary's population is digitally illiterate: has no experience in Internet or PC usage.

Digital illiteracy is significantly overrepresented in the 45–year+ age group: digital illiteracy is 65 percent in the 45–54-year age group, 83 percent in the 55–64-year age group and 97-98 percent among those over 65. The chart below shows that the highest level of digital literacy is in the young (15–17-year) age group, as a result of Internet usage at school by 7–14-year-old youngsters („the Sulinet generation"). However, as we go up the age pyramid, the digital illiteracy rate rapidly increases.

"Info-communication age pyramid" in the Hungarian society



Source: "NSZS 2005" residential survey (Ariosz Kft.)

Naturally, this digital division is experienced not only by age but also in other social/economic factors. According to the findings of international surveys, Internet usage is higher:

– in cities
– in families with children
– among those with a higher level of education
– among economically active members of the society,
– among those in a better financial position,
– among those speaking foreign languages.

Existing and new narrowband and broadband subscribers – demographic chart

	Internet access of households		
	December 2004		December* 2006
N (thousand households)	665	→	1000
Proportion within population (%)	17,2%	→	25,9%
By settlement type			
Budapest	37,5%	→	47,7%
county seat	19,5%	→	29,5%
city	10,7%	→	18,8%
Village 3000+	11,2%	→	18,6%
village 1501 3000	10,6%	→	17,2%
Village -1500	7,3%	→	15,7%
By household headcount			
1 person	7,4%	→	9,4%
2 persons	11,8%	→	17,2%
3 persons	24,1%	→	37,2%
4 persons or more	28,1%	→	44,1%
By the education of the head of the household			
up to 8 grades in school	2,0%	→	6,4%
vocational school	12,4%	→	24,8%
high school graduate	29,8%	→	42,9%
college, university	51,0%	→	59,3%
By the economic activity of the head of the household			
active worker	30,8%	→	45,1%
unemployed	6,5%	→	17,2%
retired	3,5%	→	5,7%
other inactive	24,0%	→	34,8%
By subjective financial situation			
unfavourable	3,1%	→	9,4%
medium	11,7%	→	19,2%
favourable	30,1%	→	41,1%
By language skills of the head of the household (at least medium level)			
yes	11,6%	→	20,3%
no	45,9%	→	54,7%

**forecast*

Source: "NSZS 2005" residential survey (Ariosz Kft.)

It seems that age and financial position are the two major factors that determine the digital division. Regional differences may significantly lessen as a result of the deployment of broadband networks. The increase in the amount of popular content available in Hungarian may make the Internet more attractive to potential new users with a lower level of education. A result of the past 1–2 years is the slow "leaking down" of the Internet, i.e. members of relatively lower social groups appear among new users. According to our forecast, this trend is going to strengthen in the next two years.

Broadband community access points. For consumer groups whose members do not yet use broadband services due to financial problems, free or low-price community access points may be the solution. Besides ensuring e-inclusion, another advantage of the development of the broadband community access infrastructure is the arousing of the interest of individual (residential) users and the resulting increase in their number. Services and equipment tried out at community access sites are more easily "taken home" and help users judge the price/value ratio of broadband communications.

As regards the number of public access lines per 1,000 people (telehouses, library information and network points, telepost houses, Internet cafés and web terminals) Hungary is among the first of the recently accessed EU Countries and is at the average of the whole EU community. The purpose of community access sites, installed for different purposes and with different features, is to ensure the shared use of network access. Among public Internet access sites, the so-called "eHungary" ("eMagyarország") points are a separate group. These community access points have the following features:

– The operator of the service is motivated primarily by social objectives and values (solidarity, social considerations, etc.) rather than business aspects,
– They are operated by "embedded" organisations that are connected to the local community,
– The purpose of the service is not only to offer access to the Internet but also to enable the use of the service,
– Additional services are also available at the community access points.

In this sense, the "eHungary" points are a subgroup within the whole portfolio of public access sites that meet certain criteria and have a uniform image. According to data published by the Ministry of IT and Communications, there are "eHungary" points in already 1,500 towns and cities. In these 1,500 municipalities some 3,000 "eHungary" points are in operation – of which nearly 2,000 are located in villages and small towns. According to plans, the number of "eHungary" points will reach 3,200 by the end of 2005 and 4,000 by the end of 2006. The majority of "eHungary" points use some broadband connection – but at least 128 kbps even in municipalities where there is no coverage by higher bandwidth infrastructures yet.

2.3.1.3 The corporate segment

Penetration indicators, trends. As for corporate Internet usage, the international arena is far more homogeneous than in the residential segment: relating EU15 data are between 77 and 97 %, in a 20% range. Penetration in the 15 old EU member states was 90 percent in 2004 – but was above 95% in countries at a higher level of development in this respect (Sweden: 96%, Finland: 97%, Denmark: 97%).

According to eEurope[10] data, 78% of Hungarian companies with over 10 employees had an Internet connection. In European comparison, this figure is low (of old EU member states, only Portugal was below this level /77%/) – yet our backwardness is not so significant as in the residential segment.

As regards broadband Internet connections, however, our relative backwardness is bigger. According to data supplied by Eurostat (December 2004), 38% of Hungarian companies with over 10 employees had some kind of broadband Internet connection (including all such companies, i.e. even

[10] eEurope+ 2003 Data Collection Monitoring and benchmarking, Final Progress Report, July 19. 2004

those with no Internet). In contrast, 55% of old EU member states were using broadband Internet communication in the same year. Denmark and Sweden were outstanding in this respect (80 and 75 percent, respectively), while Greece and Ireland were at a very low standard (13[11] and 32 percent, respectively).

Corporate Internet communication – comparison with EU member states (2004)

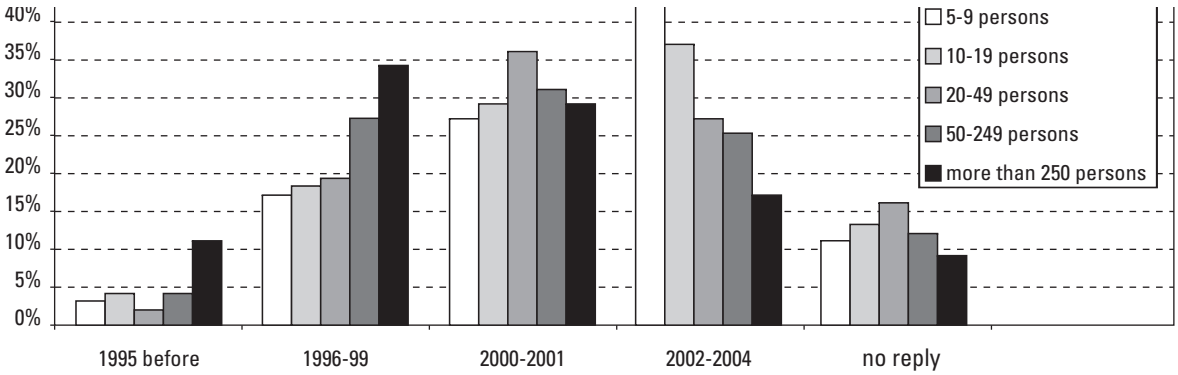
	Hungary	EU 25	EU 15
Companies with an Internet subscription / all companies	78 %	89 %	90 %
Ratio of broadband subscriptions	38 %	53 %	55 %

Source: eEurope+ Final Progress Report

Corporate Internet penetration is directly proportional to company size and started to increase dynamically earlier in the transportation, warehousing, post, telecom and bank sectors than in the processing industry.

In Hungary, many (36% of) companies with Internet have decided to buy an Internet connection in the course of the past two years. The first Internet contracts were signed by 29% in 2000-2001, 19% in 1996-1999 and 3% before the year 1996 (13% did not answer this question)[12] . The size of a given company also significantly impacts the time of start of Internet use. 11% of Internet user companies with a 250+ headcount had Internet before 1996 and 44% in 2000. In contrast, only 20% of small businesses (with 5–9 employees) with Internet access had Internet before the year 2000. 34% of companies with a 250+ headcount bought their Internet connection between 1996–1999, while 42% of businesses with 5–9 employees have connected to the Internet only in the past two years.

Time of start of Internet usage, depending on company size
(% of companies with Internet access)



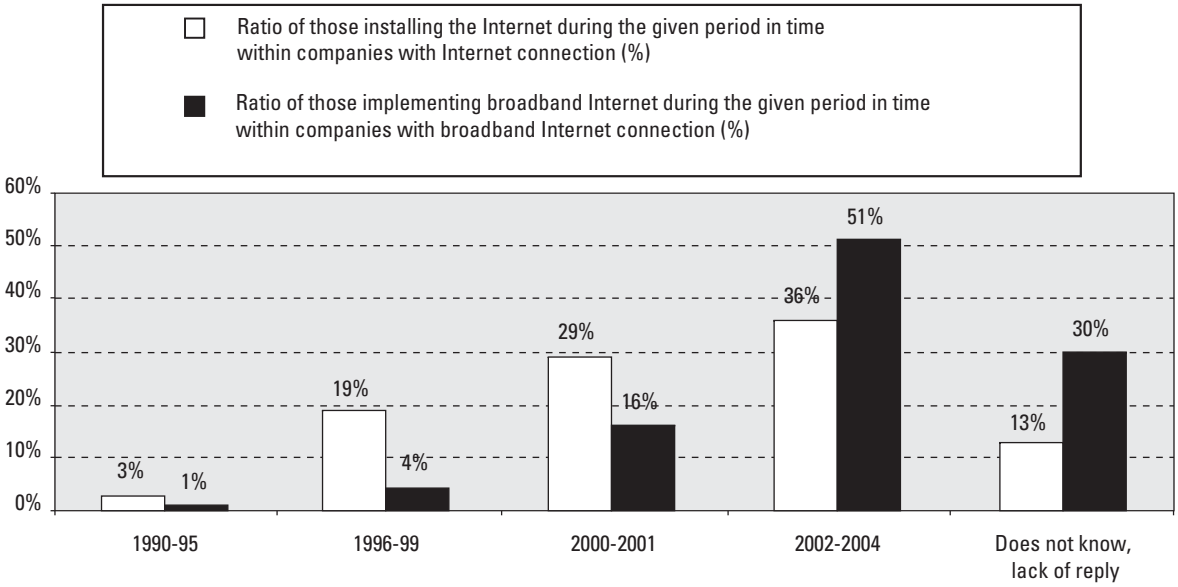
Source: GKI eNet Corporate monitoring survey, 2004

Spreading of broadband corporate Internet communication – from the beginning. The time schedule of the installation of broadband Internet connections follows the time pattern of first Internet installations – with some delay. Similarly to other Internet connections, the largest group of broadband Internet connections has been installed in the past two years – though proportions are even more extreme: Hungarian companies established over half (51 percent) of their broadband Internet connections between 2002–2004. In contrast, only 5% of broadband connections had been installed before 2000.

[11] Data from 2003

[12] Source: GKI eNet Corporate Monitoring Survey, 2004

Time of installation of Internet connections / broadband Internet connections



Source: GKI eNet Corporate monitoring survey, 2004

The above information about corporate Internet penetration is very telling: the establishment of an Internet connection is the first and most important step in the real utilisation of the Internet. Moreover, these indicators are useful because they enable international comparisons. Nevertheless, it is not possible the draw far-reaching conclusions from these items of information regarding the efficiency or frequency of Internet usage; the only meaning they convey is that a given company has at least one access endpoint. As the reader will see in the chapter on content, in the Hungarian environment – which is characterised by the lack of demand due to a low level of household Internet penetration and the lack of truly attractive Hungarian online business models – the majority of businesses use computers primarily to run their business office applications and accounting programs and use the Internet for mailing and to search for information.

2.3.1.4 Public Institutions

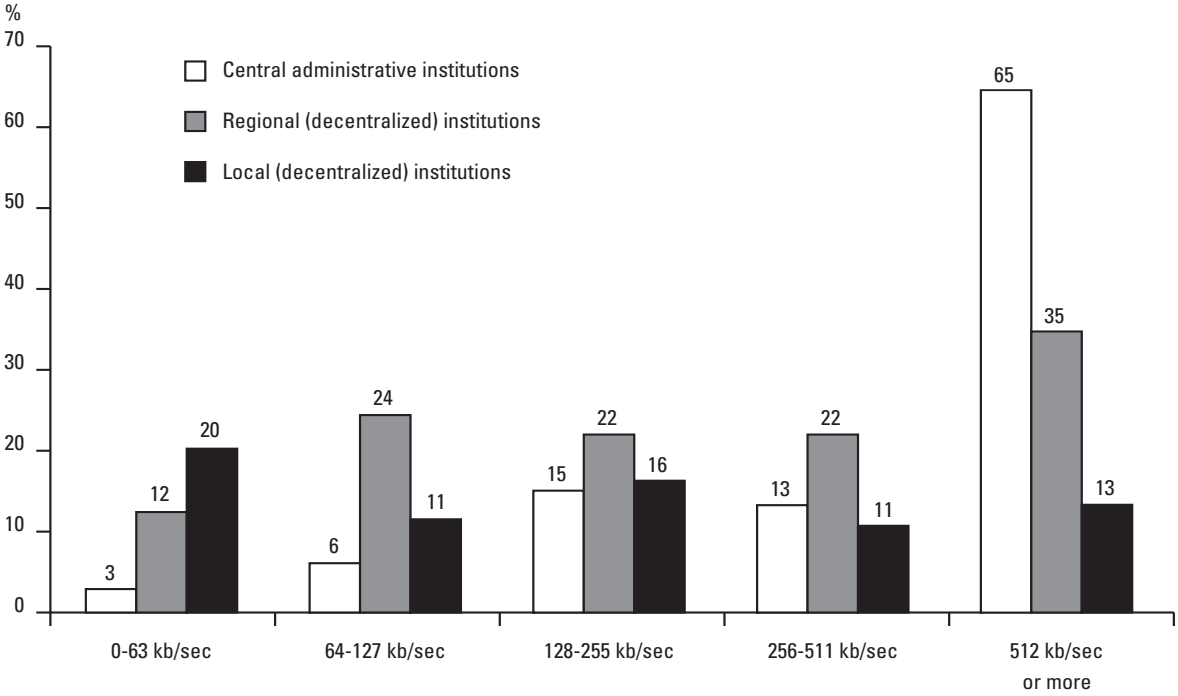
Broadband in state administration. The latest comprehensive survey on the Internet and IT penetration of state administration was carried out at the end of 2003[13] . The survey covered about half of the 869 state administration institutes with an IT budget (and an obligation to submit a basic IT report). The following types of state administration institutes supplied data:

– Central level (central public administration bodies with national competence): ministries, other (autonomous) organisations with nationwide competence, central offices, ministry departments, other central background bodies
– Regional level (with competence in one or more counties): regional (decentralised) state administration bodies, other bodies and institutions with county (regional) competence
– Local level: local decentralised bodies (e.g. unemployment centres, land registry offices, offices of the National Public Health and Medical Officer Service /"ÁNTSZ"/)

[13] Status of the Information Society in Hungary at the end of 2003,
Hungarian Information Society Strategy and Monitoring Reports No. 33.; prepared by: Kopint – Tárki.

In central and regional bodies, Internet penetration was 100 percent, while in the said local (decentralised) offices penetration rate was only 70 percent. Almost all of the above-described organisations had a local computer network and 81% even had an intranet. Broadband Internet access, however, was not so widespread. 93% of central public administration bodies, 79% of regional ones and only 40% of local, decentralised institutions had a connection which was considered a broadband connection in the survey (i.e. speed being above 128 kbps). Based on the dynamism of changes in the residential and, especially, in the corporate sectors these ratios may have improved since survey completion. This trend may have been further strengthened by the gradual connection of the said institutes to the universal government backbone network.

Bandwidth of Internet connections of institutions



Source: Kopint - Tárki Hungarian Information Society Strategy and Monitoring Reports, 2003

Broadband in local governments. As regards the IT infrastructure, Hungary's municipality and regional local governments are still far behind the local public administration bodies of old EU member states and Hungary's business organisations – says the Electronic Local Government Sub-Strategy of the Hungarian Information Society Strategy ("HISS")[14]. One of the main reasons for this backwardness is that financial resources available for IT development and operation are slender and their use is uncoordinated.

According to the most recent survey results, 90% of all Hungarian local governments had Internet access as of the end of 2004, which is a 5 percent increase in comparison to one year before[15]. At the same time, the majority (66%) of local governments do not yet have reliable and high-speed (broadband) Internet access. While all city local governments have access to the Internet, only 87% of small town and village local governments can use the World Wide Web.

24 percent of local government offices have at least one server (this figure is the same as one year earlier). However, the number of local governments with a LAN increased by 4 percent in one year.

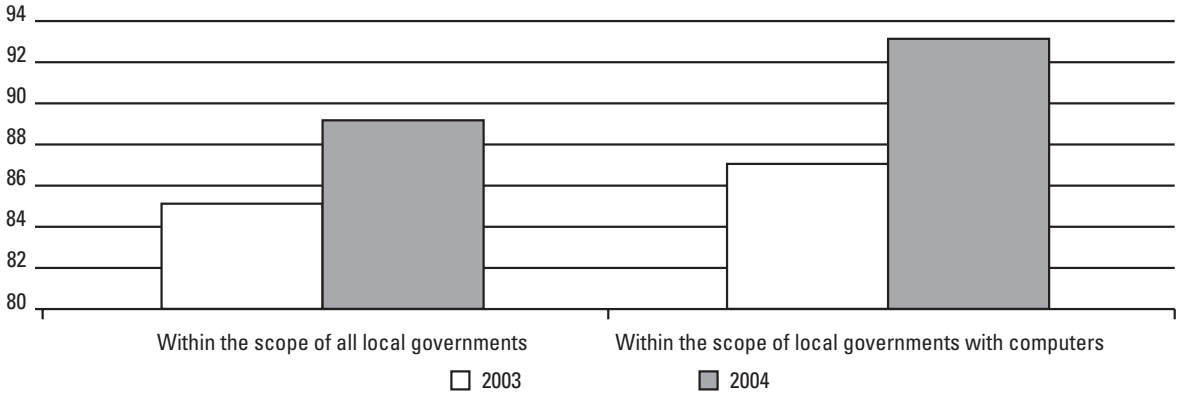
[14] Hungarian Information Society Strategy. Ministry of IT and Education, November 2003

[15] GKI Enet: Local Government Monitoring Survey (a national representative survey covering Hungarian local government offices), November 2004

38% of local governments using computers stated that they also had a LAN. In Budapest and big cities, the ratio of local governments with a LAN is far higher, 89 percent.

Only 7% of local governments use some intranet application and even fewer have an extranet: less than one percent. All local governments that use an extranet are in big cities.

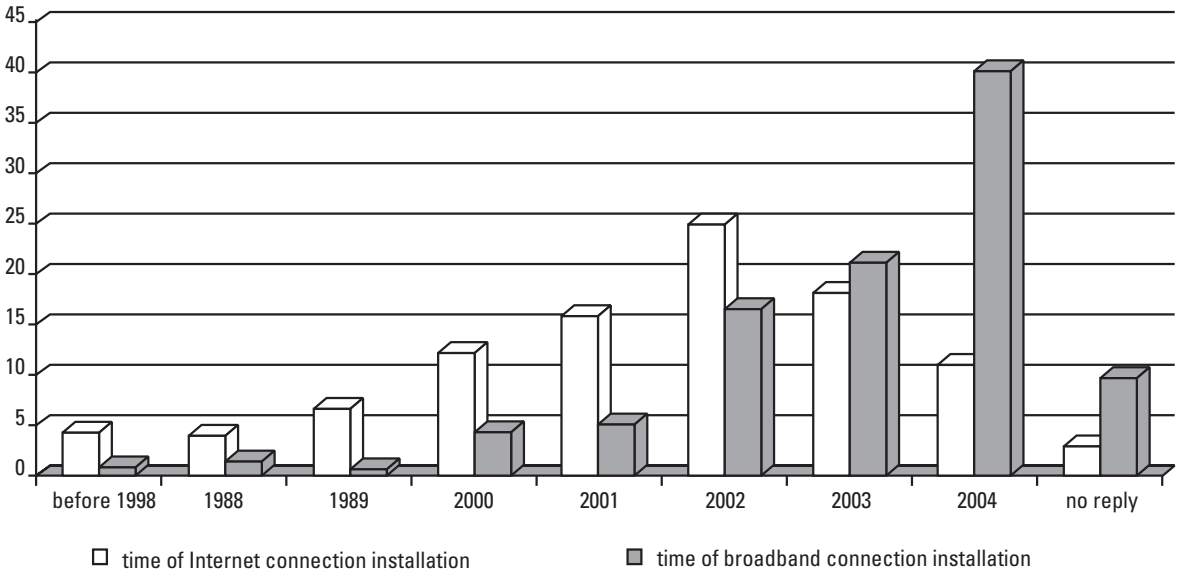
Local governments with Internet access: ratio to all local governments and to those using computers



Source: GKI eNet Local Government Monitoring Survey, 2004

4% of local governments had purchased their Internet connection back before 1998. Between 1998 and 2002, more and more local governments connected to the Internet – and the largest group (25%) of local governments that now have an Internet connection bought the same in the year 2002. Broadband connections started to spread in 2002. The year 2004 was outstanding in the increase of broadband Internet penetration: it was then that 40% of local governments started to use such connections.

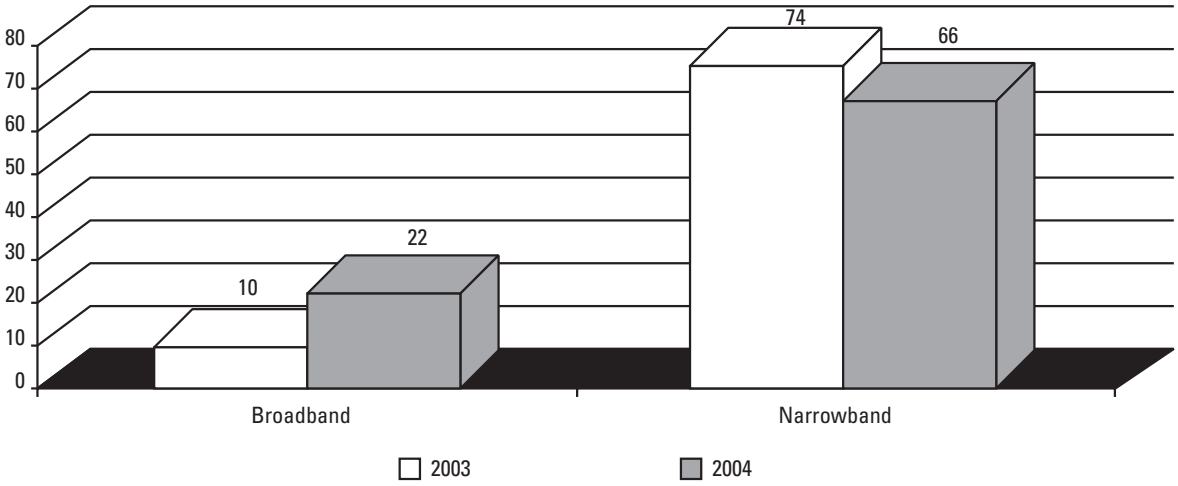
Start of use of broadband and narrowband Internet connections
(distribution in percentage – local governments with Internet access)



Source: GKI eNet Local Government Monitoring Survey, 2004

In 2004, 22% of local governments stated that they could communicate data at a speed over 128 kbps, i.e., had a broadband Internet connection (as the same was defined in the survey). Compared to the previous year (10 percent), this represents a 12 percent increase. The ratio of local governments with a narrowband Internet connection dropped from 74 to 66 percent. 12% of local governments either had no Internet connection at all (10%) or could not specify the bandwidth of their data communication (2%).

Broadband and narrowband Internet connections
(percentages, compared to the total number of local governments)



Source: GKI eNet Local Government Monitoring Survey, 2004

Broadband in educational institutes. The 2004 survey of the e-Europe Program (covering newly accessed countries) concluded that in Hungary's educational institutes the infrastructure-related conditions of the spreading of IT literacy were above the average of Middle and Eastern European countries.[16] As regards the computer and Internet penetration of institutes of secondary and higher education, Hungary is at the top of the list in Middle and Eastern Europe – such indicators showing a positive picture even in the light of the "EU15" average.

Availability of electronic equipment in public education institutes – comparisons with Europe

Indicator	Hungary, 2003	Average of the 10 new EU member states, 2003	Average of the 15 old EU member states, 2001
Number of computers per 100 elementary school pupils, 2003	6	4,3	7,7
Number of computers per 100 secondary school students, 2003	14,4	6,6	11,6
Number of computers per 100 students of higher education, 2003	20,5	11,1	n.a.
Number of computers with an Internet connection per 100 elementary school pupils, 2003	2,4	2,8	2,8
Number of computers with an Internet connection per 100 secondary school students, 2003	10,7	5,8	5,8
Number of computers with an Internet connection per 100 students of higher education, 2003	18,9	12,4	n.a.

Source: CEE Information Society Benchmarks. eEurope, Objective 2, Investing in People and Skills. Survey results, September 2004.

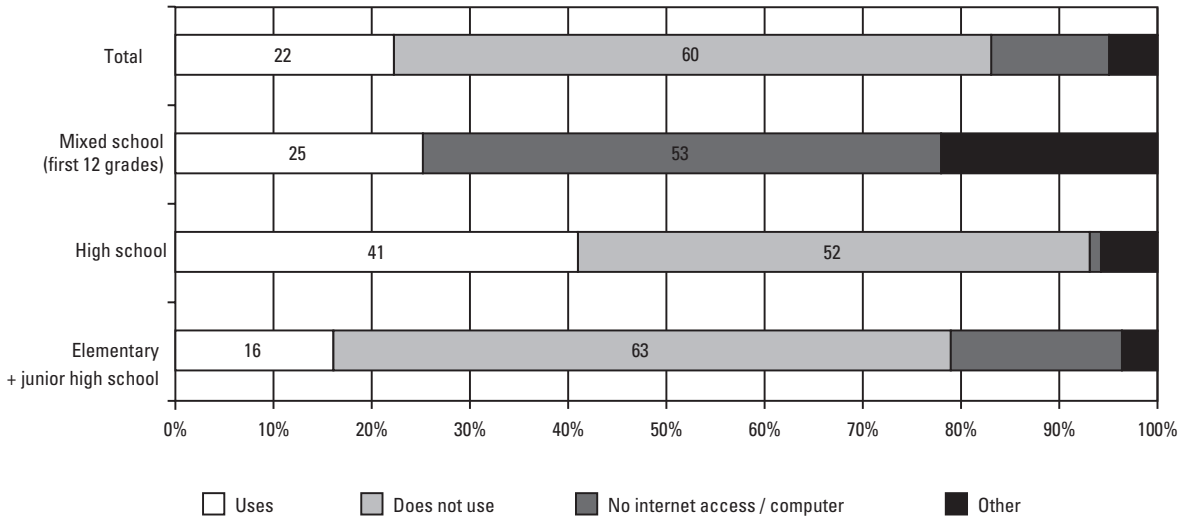
[16] CEE Information Society Benchmarks. eEurope, Objective 2, Investing in People and Skills. Survey results, September 2004. Source: http://europa.eu.int/information_society/eeurope/2005/doc/all_about/benchmarking/results_objective_2.pdf

All Hungarian institutes of higher education and the vast majority (88%) of elementary and secondary schools already had some sort of Internet access as of the end of 2004[17] . In *elementary schools* Internet penetration was lower (83 percent), while almost all *secondary schools* now have access to the Internet. A less positive data is that three quarters of elementary and secondary schools with Internet access only communicate with the Internet via some narrowband connection. A further problem is that the fact that a school has Internet access does not necessarily mean that its computers used as teaching aids can access the World Wide Web. In Hungary's elementary and secondary schools, only 71% of computers used in teaching have an Internet connection.

Of these,
– secondary schools are in a better position (83%),
– elementary schools are below the average (51%).

In every fourth school (26%) and in 16 percent of schools with Internet access there are no computers used in teaching which can also be used for Internet communication. On a countrywide basis, the number of computers with broadband Internet access (used in teaching) per 100 students is only two. This ratio will be significantly improved by the "Közháló" Program: by the year 2006, the Sulinet sub-network will reach all elementary and secondary schools. However, "Közháló" in itself will not suffice to not only "widen" but also "deepen" the Internet penetration of schools.

Ratio of schools using broadband Internet access in teaching (%-based)



Source: Kopint - Tárki Hungarian Information Society Strategy and Monitoring Reports, 2003

Key central programs. Three central programs play a key role in the provision of Internet connections for public institutions:
– Elektronikus Kormányzati Gerinc (EKG) ("Electronic Government Backbone"),
– Közháló ("PublicNet"),
– NIIF

"EKG". The "EKG" is a closed network using an infrastructure leased from service providers operating on the market. The purpose of the network is to replace the current government networks, often having insufficient capacity and security, with one uniform backbone network which has a high

[17] *Kopint-GKI – Tárki:* Quick Report about the 2003 Education and Local Government Monitoring Survey, *Hungarian* Information Society Strategy and Monitoring reports, January 2004

bandwidth, is secure in operation and offers countrywide availability and which is characterised by the security of data communication over the network, i.e. the security of communication between different public administration bodies and between public administration and citizens. To connect to the EKG, institutes need a licence, which is issued only after their IT systems are standardised. For public institutions connected to the EKG, the service is provided free of charge.

Potential users of the EKG include 1,600 facilities of app. 400 government institutions. Not all of these are connected to the EKG yet: as of the end of 2004, the total number of connected endpoints amounted to about 600[18] . According to plans, the number of EKG endpoints may reach 1,000 by the end of 2005.

"Közháló". The "Közháló" ("PublicNet") program, a priority program in the infrastructure intervention part of the HISS, defined the following objectives:

– install a network ensuring broadband access in all towns and villages of Hungary by end 2006;
– connect all public institutions and private non-profit organisations working for the public to this network by end 2006;
– launch model programs for local and small region network deployment.

According to plans, 7,300 endpoints will be connected to the "PublicNet" ("Közháló"), which will first use services available on the market, by the end of Q3 of 2005 (in the first phase), through public procurement tenders invited in 2003. Of these, some 5,000 endpoints will be used to connect elementary and secondary schools to the network. The other "Közháló" endpoints will be installed in the following types of public institutions:

– Local governments
– Telehouses
– Cultural institutes
– Community access points (e-Hungary points)
– Other public institutions.

In the course of the second phase – simultaneously with the first phase rollout – local and small region network deployment programs will be launched in areas with poor infrastructure development.

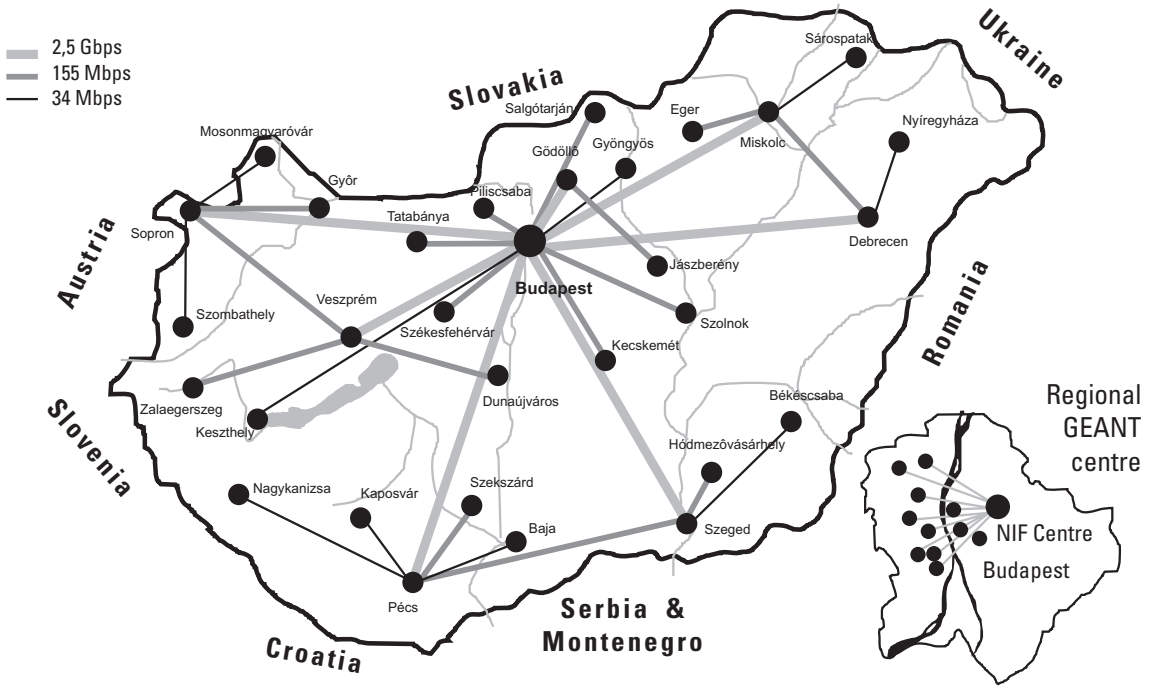
In the third phase, full national broadband network coverage will be reached and island networks will be connected, using the experience gained in the course of model programs.

The "Közháló" infrastructure has been created by the Ministry of IT and Communications and is operated by telecom companies, financing coming from a mixture of sources. The Ministry of IT and Communications and the Prime Minister's Office, which operates the EKG, are having negotiations with an eye to improving the technical solutions applied and the cooperation between the two networks.

NIIF. The National IT Infrastructure Development ("Nemzeti Információs Infrastruktúra Fejlesztési"; "NIIF") Program provides organisation services and funding for the installation of a national integrated computer network infrastructure to be used by educational and research institutes and public collections and for the applications and services available through this infrastructure and to be continuously developed. As of the end of 2003, nearly 700 education and research institutes and public collections – with a total of app. 600,000 users – had access to this state-of-the-art infrastructure, whose combined backbone network capacity was 500 Gbps and whose speed of communication to the GEANT (Multi-Gigabit pan-European Research Network) was 10 Gbps. The following map depicts the NIIF backbone network structure.

[18] "The Government Portal and the Electronic Backbone Network Have Hit the Road" ("Bemutatkozott a Kormányzati Portál és az elektronikus gerinchálózat"), 18 November 2004 http://www.meh.hu/tevekenyseg/minszerepl/ekk20041119.html

HBONE network of the NIIF Program, as of the end of 2003



Source: NIIFI

2.3.2 Content

2.3.2.1 The residential segment

According to the results of the empirical residential survey, the content usage patterns of households show the signs of the early stage of development. The Internet is primarily used to collect information and for mailing – and, for the time being, it is at these general (searching and mailing) usage levels that work, education and entertainment related needs start to emerge.

According to the results of the empirical survey, there are no significant differences between the content usage habits of broadband and narrowband users. The contents that require a broadband connection are usually movie and multimedia contents – and most of them serve cultural, entertainment or direct personal online communication purposes. This consumption focus, however, is today typical of a relatively small number of users and availability of such services in the Hungarian language is also limited.

Today, choosing broadband is motivated by comfort rather than the need to use complex contents. When a customer decides to use a broadband connection his/her primary motivation is not speed but the fact that s/he gets unlimited usage for a flat rate. At present, broadband users are characterised by the desire to freely and comfortably use the World Wide Web. All these together provide a consumer base whose members intensively and professionally use the Internet with high expectations and an increasing potential demand – a good foundation for the development of business, public administration and cultural contents – which has a positive economic and social effect.

What do you use the Internet for?
Averages on a scale of five. 5 = truly typical, 1 = not at all typical

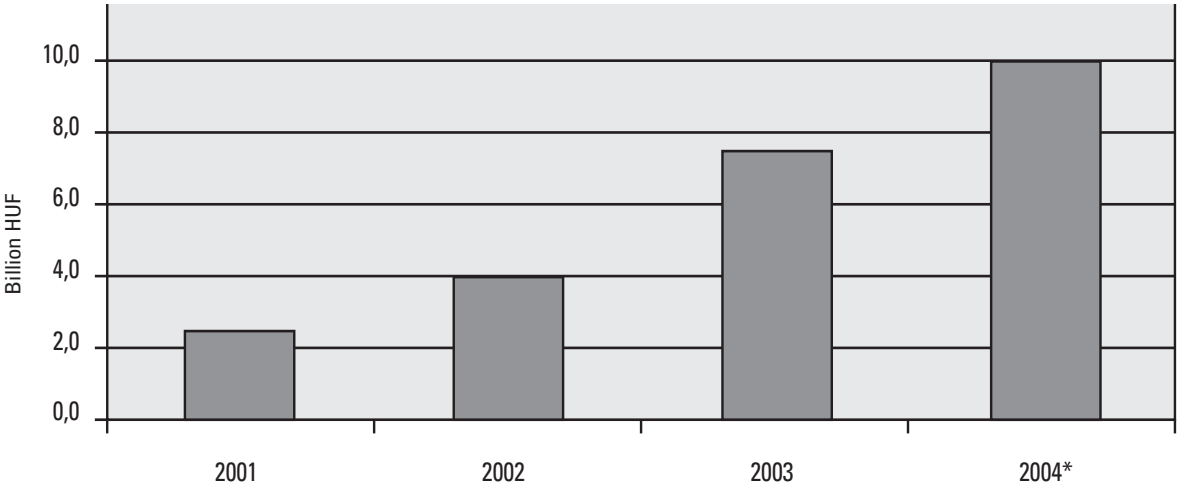
Activities	Scale average
General searching, information collection	4,2
Mailing, e-mail	3,8
Work, studying, e-working	3,5
Access to Internet magazines, reading	3,1
Search for free-time programs (movie program, timetables of public transportation, etc.)	2,7
Collect information before shopping	2,7
Search for information related to travelling and accommodation	2,6
Download music, films, MP3 pictures, software	2,5
Read Internet forums	2,4
State and local government institutes and offices – run errands	2,1
Job searching, job and scholarship opportunities	2,0
Banking via the Internet	1,9
Online ticket and accommodation booking	1,9
Online games	1,9
Shopping and ordering via the Internet	1,8
Online media consumption – TV and radio usage	1,7
Making acquaintances, friends, chat/ICQ	1,7
Writing to Internet forums	1,7
Compilation and maintenance of own homepage	1,6

Source: "NSZS 2005" residential survey (Ariosz Kft.)
Base: heads of households who use the Internet

2.3.2.2 E-business

B2C (business-to-consumer). Since 2001, starting from a very low level, the electronic retail business has been steadily increasing. In the year 2003, the turnover of online shopping increased from HUF 4.5 billion to HUF 7.5 billion[19], to reach HUF 10 billion in 2004. The largest group of Hungary's e-shops (14 percent) offered IT equipment, 13 % books, music and films, while consumer electronics, equipment for free-time activities, office equipment, food and clothing took 5% each.

Turnover of online stores



** estimate*
Source: On-line shopping on the move ("Terjed az online vásárlás"; Világgazdaság, 10 September 2004 Issue)

[19] On-line shopping on the move ("Terjed az online vásárlás"; Világgazdaság, 10 September 2004 Issue)

In spite of the growing selection and strong dynamism, the role of online sales is still negligible in retail trade: the annual turnover of one single city shopping centre is at least 50-100 percent more than the total volume of Hungary's e-trade. Hungary's results are way behind the international average. This is shown by the fact that the ratio of online shoppers in Hungary (2%) is still only one tenth of the average of the "EU15" (20%) [20]

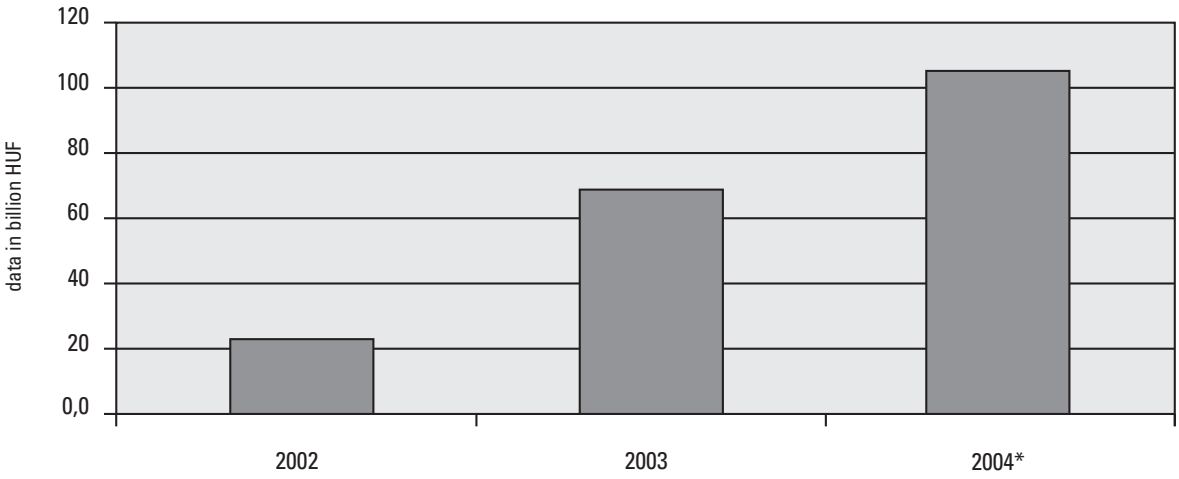
Clearly, the biggest impediment to the development of e-trade is the relatively low Internet penetration rate. Further limitations include the lack of an appropriate logistical background (quantity and quality of delivery services), certain anomalies in regulation (the licensing rules of delivery services apply to online shops) and the low standard of development of electronic payment traditions and possibilities: in e-trade the most common methods of payment are still payment at delivery (78 %) and after delivery (87 %).

Another negative factor is that Hungary does not yet have standard business models which could break the ice on the corporate market place and which could sufficiently motivate business people to enter the electronic market. No company has entered Hungary's market which successfully attracted a significant amount of purchasing power from the offline retail business.

In spite of the above facts, the expectations of companies regarding the spreading of e-business solutions are high. Among others, this is indicated by the fact that nearly 80% of companies with Internet contact info have applied some means of online marketing communication and/or have spent on online advertising. 38% of the interviewed companies have regularly advertised online [21]. Though companies state that only 1-5 % of their revenues have something to do with their Internet presence, the majority of them plan to increase their online marketing and advertising budget.

B2B (business-to-business). The turnover of electronic marketplaces and online auctions has been dynamically increasing over the past 2-3 years. In the first half of 2004, the turnover of Hungary's busiest electronic marketplace, Marketline, was nearly as much as the total 2003 volume. By shopping electronically, purchasing can be as much as 13-15 percent cheaper [22]. While in 2002 the turnover of e-auctions was HUF 23 billion, the sales volume of Marketline's auctions reached HUF 22 billion already in the first six months of 2004 and, according to estimates, the total market volume was near HUF 100 billion at the end of the same year. Despite the dynamic development, Hungary's backwardness compared to the leading EU countries is still significant: the ratio of Hungarian companies ordering products or services electronically is about half of the EU15 average.

Turnover of online auctions in Hungary



** estimates; Source: Online Markets Are Busy ("Forgalmasak az online piacterek"; Világgazdaság, 22 September 2004 issue)*

[20] Bőhm, Mária: "Utolsó pár előre fuss!" (An article about the e-commerce survey carried out by Kopint-Datorg). In: Computerworld, 23/2004 Issue

[21] e-Business Association, 2003 Survey

[22] Online Markets Are Busy ("Forgalmasak az online piacterek"; Világgazdaság, 22 September 2004 issue)

It is also true of B2B e-trade that web pages are used primarily to supply and collect information. Using RFQs, potential suppliers can check if they comply with preliminary terms, whether it makes sense for them to bid and if they can meet the expectations of customers. On the customer's side, the information available on the Internet helps SMEs choose from products (machines, semi-finished products or raw materials), collect the information they need, compare prices and services and look at the demand.

2.3.2.3 E-administration

In the year 2003, 6% of the population used online public administration services. This ratio is far behind the average (30 percent) of the 32 EU and OECD countries covered by the TNS's 2003 international survey [23].

Central public administration. For e-administration, the Public Administration Chapter of the Hungarian Information Society Strategy and the E-Government Strategy compiled by the Electronic Government Centre ("Elektronikus Kormányzati Központ"; "EKK") set the main directions. The purpose of the EKK is to establish efficiency in the work of government bodies through the use of state-of-the-art IT solutions. Priority areas for the successful implementation of e-government objectives are the electronisation of government administration and the establishment of an appropriate technical background for the "service provider government". Owing to the results of earlier stages of development, electornisation programs of certain bodies have been ongoing for a while. The EKK is a key institution in the multi-player government arena, which performs e-administration tasks and coordinates and orientates the e-administration tasks of the other players. The EKK has to centrally establish and operate the base systems which can be properly run only in a government "arena" that is an "umbrella" over ministries and public institutions. The most important such tasks are the following:

– construction and deployment of a physical infrastructure (Electronic Government Backbone Network; "Elektronikus Kormányzati Gerinchálózat" - EKG.; see Section 2.3.1.4.)
– Creation of a government portal (*"magyarorszag.hu"* government portal)
– strengthen security and confidence
– define information and know-how management processes.

According to the objectives defined in the EKK strategy, a total of twenty electronic government services have to be launched by the year 2006, 12 of which for citizens and 8 for companies. Residential services include the reporting of address changes, administration of personal documents and the handling of tax returns, while corporate services include the handling of company tax statements and the management of public procurement projects[24].

As a result of past developments, clients in Hungary can now electronically make appointments in regional document offices for the administration of private entrepreneur certificates, driving licences, address cards and birth, marriage and death certificates – filling in forms at home. In the document offices, these forms only have to be checked and signed. To widen the service portfolio and to make the full administration process available on the Internet, larger funding, higher efficiency in cooperation between state administration bodies and the establishment of the preconditions of the use of electronic signatures are required first and foremost.

Local governments. As regards the level of development of e-administration, the situation is no better at local governments. Over 60% of local governments still do not have a homepage of their own. In this respect, the most underdeveloped regions are the southern and western parts of the country's western half (west of the Danube), while the best developed region is the middle of Hungary (including Budapest) [25].

[23] "E-Government: The Order of the Day Everywhere – Hungary's Backwardness No Better. E-Government Survey" ("Világszerte terjed az e-kormányzat használata - Magyarország lemaradása nem csökkent. E-kormányzati felmérés"). TNS 2003. Source: www.tns-global.hu.

[24] "E-Government Services to Be Launched in November" ("Elektronikus kormányzati szolgáltatások indulnak novemberben"); November 2003. Source: http://www.magyarorszag.hu/hirek/kozelet/bajakovacs20031016.html

[25] GKI Enet: Local Government Monitoring Survey, November 2004

The homepages of local governments are very different. The majority do not provide information on data protection or links to other institutions, do not have versions in foreign languages, access to special databases or administration services.

The most common information available on local government homepages is related to customer service (85%). The homepages of the vast majority of local governments usually also offer information on their bodies and cultural and other events (81-81%). 79% of local governments with a homepage of their own publish information on the Internet about tourism in their town/region and 78% about their institutes of education. 72% inform the reader about the healthcare institutes run by them.

Certain electronic administration services are available only at 17% of local governments with an Internet homepage. Usually, these include the downloading of forms. Certain documents can be electronically submitted to only 3% of local governments that have a homepage of their own.

2.3.3 Education

2.3.3.1 Population

IT education within the education system. Public education is one of the most important arenas of the development and spreading of digital literacy. The most natural forum for the transfer of IT knowledge is the family – thus the favourable effects of the education system are experienced in a lot more than only the school attending population. This assumption is actually verified by the findings of the empirical survey. The lower level of education the head of the family has the more true it is that knowledge about the Internet is spread in the family by school children. The table that follows shows that only heads of households with a high level of education and their partners have the same chance to gain experience about the Internet before using it at home as their children.

Did anyone in the family have experience about Internet usage before starting to use the World Wide Web at home?

Has anyone in the family had Internet experience prior to using the Internet at home?	Education level of the head of the household			
	basic	medium	high	Total
	Percentage frequency of times mentioned			
Head of the household	25,2%	51,4%	69,9%	53,6%
Spouse of the head of the household	17,3%	29,0%	34,9%	29,0%
Child of the head of the household	52,2%	36,6%	39,4%	40,9%
Other family members	14,0%	5,0%	5,6%	7,1%
Anyone in the house	80,3%	85,6%	87,9%	85,5%

Source: Ariosz calculation, expert estimates
Base: In case of Internet experience, households with home Internet access

Also because of the above it is an extremely important fact that Hungary is among the best internationally in IT education in schools. The ratio of students receiving IT education as part of their studies is the same as in developed EU countries (some 10%)[26]. To a large part, this is a result of the fact that – as we saw in the chapter on access – major successful development has taken place in the Internet penetration of schools over the past decade:

- as a result of the launch of the Sulinet Program in 1996, Hungary joined Europe's best as regards the Internet penetration of secondary schools.
- the "Közháló" program has made the Internet available in all educational institutes
- the NIIF program provides state-of-the-art electronic communications services in institutes of higher education.

[26] Eurostat, NewChronos database, 2003: Proportion of persons who have attended an Internet course in the past 3 months (in public education or higher education institutes).

Internet usage at schools can be further boosted by the increase of bandwidth and the development of the electronic communication infrastructure within individual institutes (local networks, equipment upgrades, IT laboratories) and the spreading of e-education solutions. As regards the latter we must emphasise that we do not yet successfully utilise the potential of infrastructures. In spite of the relatively favourable Internet penetration of educational institutes and the wide portfolio of e-education software available digital curricula are scarce and difficult to access – let alone courses offering live interactive services. The more intensive use of e-education products is impeded by bottlenecks in human resources and funding.

IT education outside schools. According to the results of the household survey at the end of 2004[27], a surprisingly high (nearly 50) percent of heads of households interviewed had participated in some computer operation course. Responses show that many household members took part in such courses who use the internet outside their home (e.g. at their workplace or at community Internet sites).

Have you attended an IT or computer operator course?
Breakdown by the "info communication segment" to which the head of the household belongs

	Info communication segment of the head of the household						
	Broadband at home	Narrowband at home	PC at home, Internet elsewhere	PC at home, Internet nowhere	PC and Internet elsewhere	PC elsewhere, Internet nowhere	Total
	Distribution over the different segments						
No	50,4%	39,7%	37,5%	75,2%	32,4%	70,2%	52,7%
Currently attending one	2,2%	4,1%	0,0%	0,0%	0,7%	0,9%	1,5%
Yes	47,4%	56,2%	62,5%	24,8%	66,9%	28,9%	**45,8%**
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	**100,0%**

Source: "NSZS 2005" residential survey (Ariosz Kft.)
Base: heads of households who use a PC at home

The quality and usefulness of out-of-school courses are usually evaluated positively: those belonging to the different info-communication segments evaluated the usefulness of the courses at 3.9-4.7 on a scale of five.

3.2.3.2 Companies

Workforce with IT education. In spite of the results of IT education at schools, the "generation effect" is strongly experienced not only in Internet usage but also in education. Less than one third (29%) of all Hungarian employees have basic IT education – as opposed to the 44% EU25 average. This difference is primarily caused by the fact that in Hungary employees have a lower chance to learn basic computer skills at the workplace than in Western European companies, which operate in a better developed e-business environment. In Hungarian workplaces, the percentage of the users of computers, Excel and presentation software and the Internet is lower not only than in developed EU countries but also in comparison with the recently accessed EU ember states.

[27] Based on the quoted study of Ariosz Kft.

IT skills, IT education and training at the workplace – comparative indicators

Indicator	Hungary, 2003	Average of the 10 new EU member states, 2003	Average of the 15 old EU member states, 2001 or 2003
Percentage of workforce with basic IT skills	29	44	49 (2001)
Percentage of home workers to total workforce	2	4	7 (2003)
Percentage of companies using home workers to total companies	12	8	16 (2003)
Percentage of workforce using word processing software to total workforce	38	43	n.a.
Percentage of employees using Excel to total workforce	26	28	n.a.
Percentage of employees using presentation software to total workforce	10	13	n.a
Percentage of employees not using any software application to total workforce	51	50	n.a.
Percentage of employees using Internet software to total workforce	29	34	n.a
Percentage of employees using email software to total workforce	26	29	n.a
Percentage of employees using a computer at least once a week for work to total workforce	24	35	39 (2003)
Percentage of employees who have ever used the Internet at their workplace to total workforce	14	44	86 (2003)
Percentage of companies using e-learning applications in the training of their employees to total companies	5	n.a.	9 (2003)

Source: CEE Information Society Benchmarks. eEurope, Objective 2, Investing in People and Skills. Survey results, September 2004.

Training of IT experts. According to the experience of info-communication service providers, there is a sufficient number of IT experts available at present. In the current fast growing technology and application development environment, however, the role of in-company training and self-education is becoming higher valued. Therefore, the primary considerations in recruiting are whether the given person considers Life Long Learning (LLL) as a personal priority and the ability to regularly and flexibly learn new knowledge.

2.3.3.3 Public institutions

Many employees in state administration have an aversion to using electronic devices and the Internet. In many instances, skills and abilities to use these are wanting – being, in many cases, an impediment to modernisation. In public administration, however, positive changes are also taking place: more and more state administration employees – primarily the members of the younger generation – are becoming open to new technologies and applications. Though in the majority of cases large state administration IT projects have limited success, the fact that public servants must complete ECDL courses helps a lot in the acceptance of these projects.

A positive survey result in this area is that those who completed an ECDL course have a high opinion about the usefulness of such courses: the average evaluation by those belonging to different info-communication technology segments was 4.4 on a scale of five. Another remarkable result is that ECDL courses received a usefulness valuation 3 percent higher than other, similar courses.

Evaluation of the usefulness of training courses
Averages on a scale of five; 5 = was very useful, 1 = was not at all useful

	Personal ICT segment of the head of the household						
How useful did you find the course?	I Broadband at home	II. Narrowband at home	III. PC at home, Internet elsewhere	IV. PC at home, Internet nowhere	V. PC and Internet elsewhere	VI. PC elsewhere, Internet nowhere	Total
	Averages on a scale of five; 5 = was very useful, 1 = was not at all useful						
(also) participated at ECDL course	4,2	4,4	4,7	4,5	4,2		**4,4**
participated at other course	4,0	4,2	3,9	4,1	3,9	4,5	**4,1**
Total	4,1	4,3	4,0	4,2	3,9	4,5	**4,1**

Base: those heads of the household who use a PC at home and participated in computer or operator courses
Source: "NSZS 2005" residential survey (Ariosz Kft.)

2..3.4 Security

Security and confidence resources will be basic infrastructure elements of the Internet of the future. (These include the infrastructure of different certificates; that of digital signatures and other authentication processes; the white and black lists of reliable and unreliable sources /e.g. for spam filtering/; other data about authentic sites; virus databases, etc.).

An important part of confidence is the need for users to feel secure – both as regards the handling of their own information and the authenticity of information coming from external sources. IT security is primarily not a technology issue – though IT solutions play an important role in its creation and maintenance.

The confidence of users is to a great extent determined by how reliable and harmless the downloaded contents are and whether usage is rightful. Reasonable and good-intentioned usage may be prevented by fears of users from frauds in electronic financial transactions, fears from getting viruses with the downloaded information and access to their personal data by unauthorised people. Authors are also afraid that their rights will not be enforced.

The security conditions of broadband transactions include copyright protection, data protection, virus filtering, the protection of minors, the use of electronic signatures, spam-related issues and the technological preconditions of secure electronic communications. Besides, attention ought to be paid to communication-related initiatives like the "Friendly Internet" ("Barátságos Internet") campaign (launched by a group of non-profit organisations and supported by the Ministry of IT and Communications), whose aim is to provide information about the supposed and real dangers of the Internet for parents, teachers and children (www.baratsagosinternet.hu).

2..3.4.1 The Population

Compared to countries at a similar level of development (10 new EU member states), Hungary is at roughly the same level both as regards the frequency of occurrence of security problems (virus attacks, misuse of personal data) and the application of precautions (virus protection, firewalls, spam filtering, etc.).

According to the results of the empirical survey, the population's opinion about the security of networks shows the signs of an early stage of development. Of specific threats, fears from viruses and the misuse of personal data are the strongest. Predictable security problems, however, which are brought about by modern applications and services (online administration, shopping) do not yet receive much attention. Security-related fears appear in connection with general danger factors like risks to minors, potential Internet addiction and assumed biological effects (harmful electronic waves emitted by computers).

Security of networks – Middle European comparison

Target group	Indicator	Hungary, December 2003	Average of the 10 recently accessed countries, December 2003
individuals: percentage of individuals ...	...among Internet users who have encountered security problems in the past 12 months	26%	22%
	... among Internet users and those individuals who have encountered security problems over the past 12 months – and have had virus attacks	77%	89%
	... among Internet users and those individuals who have encountered security problems over the past 12 months – and whose personal data have been misused	10%	10%
	... among Internet users who have taken precautions	54%	56%

Source: Central and Eastern Europe Countries Information Society Benchmarks. Survey Results, Objective 1 „A cheaper, faster and safer Internet". September 2004.

Evaluation of attitude statements related to security – by those who responded to such questions

	Personal ICT segment of the head of the household								
	I. Broadban at home	II. Narrowband at home	III. PC at home, Internet elsewhere	IV. PC at home, Internet nowhere	V. PC and Internet elsewhere	VI. PC elsewhere, Internet nowhere	VII. digitally illiterate, young	VIII. digitally illiterate, old	Total
thousand people	**268**	**291**	**160**	**331**	**137**	**114**	**205**	**2358**	**3864**
Security attitude statements	**Score averages within the scope of those capable of answering. 5 = finds it completely true, 1 = does not find it true at all**								
People using the Internet risk their personal data being abused	3,2	3,2	3,2	3,5	3,0	3,9	3,6	3,8	3,6
There is a lot of content on the Internet that is harmful to those underage	4,0	4,0	4,3	4,2	3,8	4,1	4,2	4,4	4,2
Internet viruses represent an increasing risk for computers	4,4	4,2	4,4	4,5	4,1	4,3	4,2	4,3	4,3
It is more risky to pay using the Internet that using a bank card	3,5	3,3	3,4	3,8	3,5	3,5	3,6	3,9	3,7
It is more difficult to complain if one takes care of official business and shopping on the Internet	3,4	3,4	3,3	3,8	3,4	3,7	3,9	4,0	3,8
Electronic waves issued by the computer are harmful to the health	2,6	2,3	2,7	2,6	3,1	2,8	3,1	3,5	3,2
It would be better if underage children read books and did sports instead of being on the Internet	4,2	4,2	4,3	4,4	4,2	4,3	4,1	4,5	4,4
Too much Internet use causes a dependency like alcohol and smoking	4,2	4,0	4,2	4,3	4,2	4,1	4,2	4,2	4,2

Source: "NSZS 2005" residential survey (Ariosz Kft.)

2.3.4.2 Companies

The situation of Hungarian companies with regard to network security is similar to that of companies in recently accessed EU member states. The frequency of occurrence of security problems and the intensity of measures taken to eliminate them are similar.

Network security – Middle European comparison

Target group	Indicator	Hungary, December 2003; percentage	Average of 10 recently accessed countries, December 2003; percentage
Companies: percentage of companies ...	... among those using the Internet which have encountered security problems	45%	40%
	... among those using the Internet which have had virus attacks	44%	39%
	... among those using the Internet which have encountered unauthorised access to their data.	2%	3%
	... which have taken precautions	69%	68%

Source: Central and Eastern Europe Countries Information Society Benchmarks. Survey Results, Objective 1 „A cheaper, faster and safer Internet". September 2004. europa.eu.int/information_society/eeurope/ 2005/doc/all_about/benchmarking/ results_objective_1.pdf

In the corporate segment, security-related fears and precautions get a bigger emphasis than in households. At the end of 2004, of companies with a computer and at least five employees:

– 85% used some virus killer software,
– almost 60% used a firewall,
– somewhat more than 50% regularly made copies for security reasons,
– 14% had a subscription for security solutions,
– 15% used encryption,
– 15% accepted electronic signatures[28].

IT security solutions were used mostly by financial, property management and service companies. Of companies with 20+ employees security-related considerations and the penetration of security solutions were significantly greater than in smaller organisations. Small companies, therefore, are far more exposed to these dangers than medium size and large companies.

The vast majority (76%) of companies with Internet access use the World Wide Web to forward so-called "sensitive information". As regards access to corporate databases, not all companies identify their employees electronically: 37% of companies with Internet access have no identification system whatsoever. Where identification exists it is performed in one single way – only 2% of companies use more than 1 method to identify their employees. The most frequently used method is electronic password identification: 61% of computer users apply this method. Certificates and the Public Key Infrastructure ("PKI") technology are far less frequently used (1.5%). Biometrical identification is even rarer and only 2% used any of the other available solutions.

[28] Monitoring report on electronic signatures and their applications. Summary, May 2004. GKI Gazdaságkutató Rt. – National Communications Authority. Some items of data come from the quoted (2004) study of GKI e-Net (Corporate Monitoring).

Of companies that use electronic signatures:
– 69% only use it to sign,
– 3% only accept electronic signatures,
– 28% both accept and use electronic signatures.

The most important area for the use of electronic signatures is communication with providers of financial services: almost two thirds (65%) of interviewees made mention of this. In this area banks play a key role – private pension funds and insurance companies are less important players in this field.

Of those that do not use electronic signatures,
– most stated that the lack of this service is due to the lack of demand for the same (87%).
– 14% argued that they had little information regarding the purpose and use of electronic signatures,
– 15% stated that their business partners would not accept such signatures.
– 10% of interviewees have little information about the method of implementation and application of electronic signatures,
– 7% consider that regulation is not in favour of the use of such signatures,
– 5% stated that the introduction of electronic signatures would give rise to significant costs.
– only 12% of companies currently not using electronic signatures plan to introduce them within the next 12 months.

2.3.4.3 Public institutions

Government institutions. According to the findings of a survey carried out in 2003 in state administration bodies[29], there are major security-related concerns regarding the spreading of electronic communication and services. These institutions evaluated the level of danger to confidential information at 3.5 on a scale of five (5=very much endangered). Fears from the dangers to information were the highest in the Ministry of Foreign Affairs, Justice, Finance and in the Prime Minister's Office. Interviewees considered that
– risks related to viruses, illegal intrusions and other undesired access to data and
– the initial uncertainties regarding the regulation and use of electronic signatures impede the provision of e-services to at least the same extent as other, frequently mentioned factors (e.g. the lack of funds available for development).

It is partly due to the above concerns that services requiring customer identification spread slowly. At present, the majority of public institutions are still not prepared to accept electronic signatures; only such pilot projects and initiatives have been launched whose aim is to lay the technological foundation for future live applications[30].

Local governments. According to the findings of a survey covering local governments in 2004, local governments had encountered the same amount of security problems in the course of the preceding 12 months as companies (42%). As e-local government services are at a low level of development, most of them had encountered virus attacks that had caused damages to their data or resulted in a loss of working time (35%).

Local governments do not generally take measures to eliminate such security risks: in the year 2003 80-90% of local governments still did not have written IT security regulations[31]. At the same time, the IT security status of local governments is clearly improving owing to actual measures taken by them:

[29] TÁRKI: Quick report about the results of the state administration survey. 2.0. Extended version. Hungarian Information Society Strategy and Monitoring Reports. No. 24. The report was compiled at the order of the Ministry of T and Communications. December 2003.

[30] Monitoring report on electronic signatures and their applications. Summary, May 2004. GKI Gazdaságkutató Rt. – National Communications Authority.

[31] Status of the Information Society in Hungary at the end of 2003. Version 1.0.

– 83% of local governments already used virus killer and virus filtering software in 2004,
– over the past two years, the number of local governments applying external data saving has doubled and reached 67%,
– the proportion of local governments using firewalls also significantly increased and reached 42% in 2004.

2.3.5 Motivation, Attitude

2.3.5.1 The Population

In Hungary, the spreading of broadband access technologies can be prevented by the negative attitude towards or the lack of interest in the Internet, and the poor knowledge of broadband possibilities and services. However, the results of the empirical survey at the end of 2004 paint a picture that is more complex and, from several aspects, better than the findings of previous surveys.

In the said survey, 11 of the attitude-related questions asked of heads of households were related to motivation. One of the most important results is that, at the end of 2004, the population had a basically positive opinion about the importance and role of the Internet. In essence – independently of the availability of info-communication equipment to them, their experience in the use of the Internet and their age – all interviewees refused the assumption that the Internet is only a passing fashion and agreed with the following positive statements:

– people who have access to the Internet are better informed,
– according to the state, it is desirable that as many people use the Internet as possible,
– the Internet is becoming ever more indispensable in work
– the Internet is becoming ever more indispensable in studying.

Motivation attitudes

	I. Broadban at home	II. Narrowband at home	III. PC at home, Internet elsewhere	IV. PC at home, Internet nowhere	V. PC and Internet elsewhere	VI. PC elsewhere, Internet nowhere	VII. digitally illiterate, young	VIII. digitally illiterate, old	Total
1. People who have Internet are better informed	4,4	4,1	4,0	4,2	4,2	4,2	4,1	3,9	4,1
2. People who have Internet can spend their free time more usefully	3,3	3,3	2,9	3,1	2,9	3,1	3,0	2,7	3,0
3. It is more useful to be on the Internet than to watch TV	3,8	3,6	3,3	3,4	3,3	2,9	2,9	2,3	3,0
4. Internet is only a passing fashion	1,6	1,6	1,7	1,8	2,0	1,9	2,4	2,5	2,1
5. Being on the Internet takes time away from other, more useful activities	2,8	2,8	3,2	2,9	3,1	3,3	3,3	3,5	3,2
6. People with Internet at home spend less time with their family	3,1	2,6	3,5	3,6	3,8	3,7	3,7	3,9	3,6
7. The state would like to see an increasing number of people on the Internet	4,1	3,8	4,2	4,3	4,2	4,3	4,1	4,2	4,2
8. Teachers would like to see an increasing number of young people on the Internet	4,0	4,0	3,8	4,1	4,1	4,3	4,2	4,2	4,1
9. I would find it useful if more people were on the Internet	4,1	4,0	3,6	3,6	3,7	3,5	3,4	3,1	3,5
10. Internet is becoming increasingly essential for studying	4,4	4,4	4,2	4,1	4,3	4,2	3,9	4,0	4,1
11. Internet is becoming increasingly essential for working	4,4	4,4	3,9	4,0	4,3	4,1	3,8	3,9	4,0

Source: "NSZS 2005" residential survey (Ariosz Kft.)

The groups which were defined independently of actual household segments, only on the basis of responses to attitude-related questions/statements (using cluster analysis) support the above assumptions and make them more complex. Of the 6 groups defined, 4 clearly had a positive attitude towards the importance and role of the Internet. This attitude vanishes only in Cluster 6.

Motivation clusters

Proportion of heads of households	1. 26%	2. 11%	3. 16%	4. 19%	5. 12%	6. 16%	Total 100%
1. People who have Internet are better informed	4,8	4,3	4,5	4,3	2,7	2,7	4,1
2. People who have Internet can spend their free time more usefully	3,3	3,3	3,6	2,3	1,8	1,4	3,0
3. It is more useful to be on the Internet than to watch TV	4,2	3,6	2,8	2,7	2,0	1,5	3,0
4. Internet is only a passing fashion	1,3	1,8	4,0	1,3	1,7	3,1	2,1
5. Being on the Internet takes time away from other, more useful activities	2,5	2,5	4,1	3,7	2,3	4,2	3,2
6. People with Internet at home spend less time with their family	3,1	2,6	4,4	4,3	2,4	4,5	3,6
7. The state would like to see an increasing number of people on the Internet	4,6	2,7	4,4	4,6	3,8	3,9	4,2
8. Teachers would like to see an increasing number of young people on the Internet	4,6	3,1	4,4	4,3	3,8	3,6	4,1
9. I would find it useful if more people were on the Internet	4,6	3,5	3,3	3,4	3,1	1,8	3,5
10. Internet is becoming increasingly essential for studying	4,8	3,9	4,3	4,4	3,9	2,7	4,1
11. Internet is becoming increasingly essential for working	4,7	3,9	4,3	4,2	3,8	2,7	4,0

Source: "NSZS 2005" residential survey (Ariosz Kft.)

Residential attitude groups and their estimated proportion to the whole population

Attitude group	Estimated proportion
I. **Enthusiastic „Internet believers"** (Motivation cluster 1): They think that using the Internet will be important in the long run and is very useful nowadays.	over **one fourth** of the population
II. **Sceptical „Internet believers"** (motivation clusters 2+3+4+5): they believe that network communication will be important in the long run but have different opinions about the future of the World Wide Web as a channel for mediation, the intentions of the state and the positive nature of current Internet usage patterns.	Nearly **sixty percent** of the population
III. **Internet opponents** (Motivation cluster 6): They think using the Internet is unimportant and takes away time from other, more important activities.	About **one sixth** of the population

Source: "NSZS 2005" residential survey (Ariosz Kft.)

Putting the 6 clusters in three attitude groups we can see that those who strongly refuse the Internet represent less than one sixth of the population. This ratio is far lower than previous expectations: it actually means that over half of even the digitally illiterate belong to the group of „Internet believers" – as regards their attitude features this group is more homogeneous than in other features that prevent their development.

2.3.5.2 Companies

Among other things, a 2004 company survey looked at the motivations of companies with more than 5 employees in their decisions to develop their electronic networks[32].

According to the findings of the survey, only 39% of companies want their internal processes to be supported by technologies more advanced than what they are using today. Especially small companies showed a low level of interest in investing in IT modernisation. The need for the electronisation of processes was above the average in the financial sector and in medium sized and large companies. Most companies that plan developments need electronic solutions in the following areas:

– requesting / receiving / compiling / issuing offers,
– receiving and responding to customers' requests and questions,
– official correspondence.

In spite of the moderate enthusiasm about investments, expectations regarding the spreading of e-commerce and the electronisation of official administration are increasing:

– in the year 2005 the leaders of about every second company expect an increase in e-commerce transactions (63% of companies in sales and 51% of companies in purchasing).
– a little less than half of Hungarian companies – within this group, three quarters of large organisations – want a decrease in paper-based administrative communication with different state organs. The electronisation of administration with the Tax Authority ("APEH"), tax returns submitted to local governments and social security and public procurement projects would be very popular.

However, in spite of long-term expectations, only less than one fifth of companies consider that they could seize the opportunities available as a result of Internet-related developments. Without a significant increase in residential Internet penetration and the electronisation of the processes of offices, however, no drastic change can be realistically expected in this attitude in the near future.

2.3.5.3 Public institutions

At the different levels of public administration there is significant resistance to the organisational changes brought about by the introduction of information technology developments. The lack of resources is not the only and not even the most important impediment to the creation of an electronic system for public institutions operating and developing in a coordinated way: the inflexible, hierarchical and heterogeneous nature of the institutional structure and local interests in maintaining this system also prevent development.

In state administration in general, customer-oriented systems that use info-communication equipment usually operate as "islands" – though these would be the basis of the "service provider state". It is still against the interests of individual bodies that the closed e-administration systems operating within individual ministries, authorities or local governments get integrated and start to cooperate with one another.

The discussions ongoing between ministries and other institutions are only a manifestation of the process whose purpose is to establish cooperation between institutions that are not subordinated to one another. Moreover, the transaction processes now cross not only organisational but also state boundaries – which sets new challenges for the development and operation of international databases.

Fears from making information available and from becoming transparent also often prevent the registration of documents in Hungary's public sector and their publishing on electronic networks. This institutional attitude can be stopped only through legislation. The EU passed Directive no. 2003/98 at

[32] GKI-eNet Internetkutató és Tanácsadó Kft.: Corporate Monitoring Survey. Budapest, November 2004. A representative national survey by phone covering companies operating in Hungary and having at least 5 employees. Subjects of the survey: IT and telecom equipment penetration, Internet usage and e-commerce. Total number of companies interviewed: 2203.

the end of 2003 (on the re-use of public sector information). According to this Directive, all organisations using public funds, public administration bodies, background institutions, state-owned business organisations, cultural public institutions and other state organisations must make available all text documents, numerical data, multimedia files and official documents, independently of their actual medium, in a systematic and searchable way for the economic, scientific and civil sectors for re-use. It is expected that this item of legislation will be integrated into Hungarian law. As a result, positive changes can start to take place. Nevertheless, basic changes in negative attitudes and the elimination of counter interests can be expected only if the electronisation of public administration becomes a basic horizontal priority in the process of modernisation of the institutions and subsystems of the state.

2.4 Horizontal issues

2.4.1 E-inclusion

The term "e-inclusion" means social integration, inclusion and acceptance through the use of info-communication equipment, i.e. the seizing of opportunities presented by info-communication equipment to ensure equal opportunities, to diminish the disadvantages of disadvantaged social groups – in summary, to support social integration and cohesion. These are unavoidable aspects in the implementation of development programs aimed at improving competitiveness as a result of the use of broadband electronic communications.

If equal opportunities are not handled as a priority, the spreading of broadband electronic communications may deepen the digital gap between groups threatened to be left behind others, may further deteriorate the opportunities and life quality of traditionally disadvantaged groups and may weaken the integrity and development of the whole of society.

The EU's expectations towards member states are primarily defined in the document entitled „The Information Society's potential for social inclusion in Europe" (written by the Commission of Europe)[33]. This document highlights the fact that all member states must recognise their digital gaps and must launch e-inclusion programs with an eye to encouraging disadvantaged people to seize the advantages of the information society. The document also states that member states must set their own priorities and add them to the "best practices" list. Such "best practices", recommended for application in EU ember states, include measures taken to reach the following objectives:

- establish public Internet access sites
- increase awareness
- increase the info-communication literacy of people at a disadvantage
- launch online services in e-inclusion areas
- increase user-friendliness in the whole e-government sector
- do away with the technology-related fears of the older generation
- training courses and work for unemployed women and legal and organisational innovations required to enable home working
- for people who cannot use e-government services, maintain a basic set of public administration services.

2.4.2 Innovation

In broadband infrastructure and content development better results have been reached by countries that offer better regulatory and support conditions for innovations. In regulation, key areas are the efficiency of the protection of intellectual properties, while in financing government innovation and the support of R&D projects are the most important.

[33] e-Inclusion: The Information Society's potential for social inclusion in Europe. With the support of the High Level Group "Employment and Social Dimension of the Information Society" (ESDIS). Commission staff working paper. Commission Of The European Communities, Brussels, 18.9.2001, SEC (2001) 1428

This recognition also gets manifested in programs financed by the EU. In the EU's Sixth Framework Program for Research and Technological Development for 2002-2006 (for the establishment of the European Research Region and innovations; "FP6"), most resources are used for programs related to the development of the information society. The IST priority of the FP6 set the following objectives, related to broadband developments:

1. Management of cohesion and economic challenges:
– development of technology-related conditions in order to increase user confidence and security,
– strengthen social cohesion through the development of healthcare, cultural, transportation-related and risk management applications,
– create the conditions of sustainable development through the elaboration of modern e-administration and e-commerce applications
– support complex, problem-oriented network cooperation

2. Development of the main technology-related core elements:
– support micro- and nano-technologies in order to reduce costs and energy consumption
– development of the mobile, wireless and optical networks used as a broadband communication infrastructure and the related software and IT background and applications – in order to develop next generation products and services
– support the development of user-friendly semantic (voice, touch, gesture, etc. recognising) user interfaces, which increase the efficiency and creativeness of Internet usage.

3. SWOT Analysis

3.1 METHODOLOGY: INTRODUCTION

To ensure easy understanding and alignment with the situation analysis, the four parts of the SWOT analysis (i.e. **strengths, weaknesses, opportunities, threats**) were put together using a breakdown by the **"strategy pillars"** (access, content, education, security, motivation).

Time is a key factor is the separation of the strength-weakness and threat-opportunity dimensions. The former relates to the existing situation, while the latter focuses on the possible directions of processes.

In connection with the SWOT analysis we must emphasise that it was put together in an iterative way: on the one hand, the SWOT analysis is based on the summary of the situation analysis, on the other hand, considerations highlighted in the course of the compilation of the SWOT analysis necessitated the refining and extension of certain elements of the situation analysis.

3.2 STRENGTHS

3.2.1 Access

– Dynamically increasing broadband coverage in cities and big towns
– The data transmission market is one of the most dynamically growing segments of Hungary's telecommunications sector.
– High mobile telephone penetration, intensive usage.
– High CATV coverage (75 %) and penetration (52 %) in Hungary – clearly favourable features for the spreading of broadband electronic communications.
– In digital literacy, there is a strong positive generation effect: 77% of students graduating from secondary school already have basic computer skills and 62% are experienced Internet users.
– Favourable Internet and computer access features in institutes of secondary and higher education
– Successful central infrastructure deployment programs (EKG, Közháló, NIIF)

3.2.2 Content

– Clear strategic vision for the development of e-administration services (EKK).
– The turnover of electronic market places and online auctions has been dynamically increasing over the past 2-3 years.

3.2.3 Education

– Hungary is among the best internationally in IT education in schools. The ratio of students receiving IT education as part of their studies is the same as in developed EU countries.
– According to the experience of info-communication service providers, there is a sufficient number of IT experts available at present.
– According to empirical results, a surprisingly high (nearly 50) percent of heads of households have participated in some computer operation course.

3.2.4 Security

– Compared to countries at a similar level of development (10 new EU member states), Hungary is at roughly the same level both as regards the frequency of occurrence of security problems (virus attacks, misuse of personal data) and the application of precautions (virus protection, firewalls, spam filtering, etc.).
– The situation of Hungarian companies with regard to network security is similar to that of companies in recently accessed EU member states. The frequency of occurrence of security problems and the intensity of measures taken to eliminate them are similar.
– Owing to actual measures taken by them, the IT security status of local governments is clearly improving. An increasing number of local governments apply virus protection, firewalls and external data saving.

3.2.5 Motivation

At the end of 2004, the population had a basically positive opinion about the importance and role of the Internet. In essence – independently of the availability of info-communication equipment to them, their experience in the use of the Internet and their age – all interviewees refused the assumption that the Internet is only a passing fashion and agreed with the following positive statements:
– People who have access to the Internet are better informed,
– according to the state, it is desirable that as many people use the Internet as possible
– the Internet is becoming ever more indispensable in work
– the Internet is becoming ever more indispensable in studying.

According to the results of the empirical estimate, only one sixth of Hungary's population can today be considered „Internet opponents".

3.3 WEAKNESSES

3.3.1 Access

– Conspicuous backwardness in residential broadband Internet penetration compared to the EU average.
– Based on purchasing power and income levels, broadband services are expensive.
– Low corporate broadband Internet penetration and usage in international comparison.
– Low broadband Internet penetration in regional and decentralised public administration bodies and in local governments.
– In Hungary, the density and technologies of the broadband distribution network and local networks (last miles) are heterogeneous.
– over half of the people in regions with a low density of population and over two thirds of people living in small towns and villages (with a population of less than 3,000) have no access to any broadband electronic communications service.
– In international comparison, the ratio of the population living in low-density rural areas is high. This fact slows down the dynamism of business-based infrastructure development.
– Access to the Internet has not yet „spread out" in education: only 71% of computers used in teaching in elementary and secondary schools have access to the Internet.

3.3.2 Content

– At present, the primary motivation for choosing broadband access is comfort rather than the complex content available.
– In Hungary, the proportion of the users of online government services is only one fifth of that in better developed countries.
– In state administration in general, customer-oriented systems that use info-communication equipment usually operate as "islands" – though these would be the basis of the "service provider state".
– Over 60% of local governments still do not have a homepage of their own and existing local government homepages are usually static and do not offer complex services.
– The majority of businesses use computers primarily to run their business office and accounting programs and use the Internet for mailing and to search for information.
– The role of **e-commerce** is still negligible.
– due to the low level of household Internet penetration, there is insufficient demand for e-commerce developments.
– the development of e-commerce is impeded by the lack of an appropriate logistical background (quantity and quality of delivery services) and the low level of development of the electronic payment culture and conditions.
– lack of successful Hungarian online business models
– It is also true of B2B e-commerce that web pages are used primarily to supply and collect
– information rather than for actual transactions.

3.3.3 Education

– Nearly 60% of Hungary's population is digitally illiterate: has no experience in Internet or PC usage. Digital illiteracy significantly increases by age.
– Less than one third (29%) of all Hungarian employees have basic IT education – as opposed to the 44% EU25 average. In Hungarian workplaces, the percentage of the users of computers, Excel and presentation software and the Internet is lower not only than in developed EU countries but also in comparison with newly accessed EU ember states.
– In spite of the relatively favourable Internet penetration of educational institutes and the wide portfolio of e-education software available digital curricula are scarce and difficult to access – let alone courses offering live interactive services.

3.3.4 Security

– Local governments do not generally take measures to eliminate security risks: in the year 2003 80-90% of local governments still did not have written IT security regulations.
– At present, the majority of public institutions are still not prepared to accept electronic signatures.

3.3.5 Motivation

– Nearly one sixth of the population are against the Internet, while three fifths believe that network communications will be important in the long run.
– Especially small companies show moderate interest in investing in IT modernisation.
– Many employees in state administration have an aversion to using electronic devices and the Internet. In many instances, skills and abilities to use these are wanting – being, in many cases, an impediment to modernisation.

3.4 OPPORTUNITIES

3.4.1 Access

– Decreasing prices, an acceleration in the increase in broadband coverage as a result of the network effect and increasing residential and corporate Internet penetration.
– As a result of efficient government infrastructure development projects and successful demand aggregation, public institutions may reach full broadband coverage.
– The spreading of broadband electronic communications triggers investments and innovation in the info-communication technology sector, intensifies the use of info-communication equipment and thus, through positive effects on productivity and growth, strengthens competitiveness.
– The ratio of broadband to all subscriptions is high even in international comparison – the majority of new customers skip the „dial up phase". Therefore, if such business models are applied which are optimised for efficiency in the regulation of competition and in communications and for the spreading of broadband technologies Hungary can almost "skip" the dial up phase.
– As networks are deployed, regional differences in broadband Internet penetration may lessen.
– Increase in the utilisation and popularity of community access points

3.4.2 Content

– The increase in the amount of popular content available in Hungarian and the digitisation of contents created for the public (NAVA, NDA) may make the Internet more attractive to potential new users with a lower level of education. This may contribute to the slow "leaking down" of the Internet to less educated people in the past 2-3 years.
– In spite of the moderate enthusiasm about investments, expectations regarding the spreading of e-commerce and the electronisation of official administration are increasing.
– The need for the electronisation of processes is above the average in the financial sector and in medium sized and large companies.
– The majority of companies plan to increase their online marketing and advertising budget.
– The increase in available resources and higher efficiency in cooperation in state administration may result in the spreading of e-administration services.

3.4.3 Education

– Improving the conditions of Internet use at schools is the best long-term investment: if Internet use at schools is made more intensive, if e-learning solutions spread, if the IT infrastructure of schools is used for community purposes ("IT mentors"), if network density increases and if more equipment and digital contents are made available Hungary's chances to reach the EU average may significantly grow.

3.4.4 Security

– Create the conditions of use of electronic signatures and make them common.
– Security-related concerns in public administration could be relaxed through successful pilot projects and the use of communication and training courses.

3.4.5 Motivation

– More and more employees in state administration – primarily the younger generation – are becoming open to new technologies and applications.
– A large art of the population are already open to communication programs that present the benefits and use of broadband Internet.
– Broadband Internet is intensively spreading in companies as more and more decision makers realise the business potential of broadband communication.

3.5 THREATS

3.5.1 Access

– The rate of increase in the number of Internet subscriptions is slowing down: if the network effect fails to come along our backwardness in broadband residential Internet penetration will grow further.
– Due to the weakness of regulatory measures, prices do not decrease significantly – which prevents the majority of potential new customers from using broadband Internet.
– The growing dynamism of broadband electronic communications increases the digital division, i.e. the differences between social groups with different social status and age.
– Convergence processes and the spreading of the Next Generation Network may produce new „market defects", to which regulation may react only with a delay.
– No resources are obtained for demand aggregation and/or for state and/or EU subsidy programs.

3.5.2 Content

– The lack of resources available for funding and that of efficient coordination significantly sows down the launch and spreading of e-administration services.
– The deceleration of the rate of increase of broadband penetration further slows down e-business developments.

3.5.3 Education

– Employees' IT skills and the use of info-communication equipment and the Internet by companies stagnate at a low level. Without appropriate training and communication programs digital illiteracy will not decrease considerably.
– Due to the unavailability of appropriate training programs public administration employees have fears from change and, as a result, resist the IT development of work processes.

3.5.4 Security

– People's fears from the threats of the Internet intensify.
– To protect their business data, companies do not sufficiently utilise the opportunities of the Internet.
– State administration bodies have strong reservations regarding the spreading of electronic communications and services; security-related concerns also contribute to the fact that services requiring customer identification spread slowly in public administration.

3.5.5 Motivation

– The Internet becomes the subject of negative communication, its image among the population deteriorates.
– At the different levels of public administration (and, to a less extent, also in the market sector) there is resistance to the organisational changes brought about by the introduction of information technology developments. The lack of resources is not the only and not even the most important impediment to the creation of an electronic system for public institutions operating and developing in a coordinated way: the inflexible, hierarchical and heterogeneous nature of the institutional structure and local interests in maintaining this system also prevent development.

4. The Targeted Situation

4.1 METHODOLOGY – INTRODUCTION

The targeted situation is comprised of a
– target-oriented vision and a
– value-based vision.

For the target-oriented vision a central indicator – residential broadband Internet penetration – is in the focus. This indicator has been estimated for the short term (2006), the medium term (2008) and for the whole of the planning period (2013). These estimates are based primarily on the empirical data used in the situation analysis. The relating subchapter offers more information about the methodology of estimation.

Within the value-based vision, expectations regarding competitiveness and economics have been put together primarily on the basis of secondary data sources:

– assumed macroeconomic effects of international broadband strategies
– empirical econometric analyses
– international comparisons for the macroeconomic effects of the info-communication technology sector.

Within the value-based vision, to outline the main expectations regarding info-communication trends not only secondary information sources (studies, presentations, analyses) but also structured deep interviews were also used[34]. Hungarian experts were asked primarily about the expected trends and effects of the convergence processes of applications, transmission technologies and end user equipment.

4.2 TARGET-ORIENTED VISION

4.2.1 The Targeted Course of Development

An important assumption regarding the target based vision is that, in order to reach EU standards, Hungary will run a similar course of development to mist EU ember states – the only difference being that Hungary has a chance to have broadband as the main driver of development even in the short run.

The table that follows presents the main development phases (early, extensive, intensive) and their basic features, based on the experience of EU member states, also presenting the possible time schedule and parameters of Hungary's optimum development.

[34] Matáv PKI, HP, NKFH, PGSM, Ericsson, Anotel, 3COM, T-Mobile, Cisco.

Development phases in the EU and the features of Hungary's tereted development course

Early phase	Extensive phase	Intensive phase
EUROPEAN UNION		
Until 1999	2000-2001	**From 2002**
Relatively low (15-20 %) Internet penetration and hectic, moderate growth. Dominance of modem and ISDN access.	As a result of the network effect, the rate of the growth of Internet penetration increases for 1.5-2 years. In certain countries, Internet penetration grows by 100-300 percent and reaches 35-64 percent. Demand for broadband services increases.	Compared to the year 2001, the rate of growth of Internet penetration significantly decelerates. The ratio between broadband/total connections gradually increases.
HUNGARY		
Until 2004	**2005–2007**	**From 2008**
Internet penetration (10-20 percent) is low in international comparison. growth accelerates. Starting from a low base, the number of broadbandsubscriptions increases fast.	As a result of the network effect, major acceleration (to exceed 40 % in the optimum case). Due to the delay in development, while the rate of increase grows the dominance of broadband connections intensifies.	The rate of increase of Internet penetration decelerates, broadband connections become the majority. The digital division determines Internet penetration.

Target based objectives are examined at two times:

– Because of the intention to reach EU standards, the strategy considers it a priority that, by the beginning of the "intensive" development phase (2008), broadband Internet penetration reaches the EU average (EU 25+).
– For the period after 2008, the objective is to improve Hungary's relative situation. This means that Hungary should reach the average of developed EU member states. Due to the nature of statistics, the realistic benchmark is the old EU member states (being such before 2004; the "EU 15").

4.2.2 Difference between the organic course of development and the targeted situation

To estimate the difference between the objectives outlined in the strategy and the "normal course of development", we tried to define a so-called "organic course of development". This organic course of development – especially in the long run – can be considered a pessimistic scenario: it does not take into account the effects of the strategy or the network effect. This is also shown by the methodology-related comments that relate to actual calculations:

Until 2006

– The 2006 forecast is based on the responses received in the residential survey. The responses (e.g. how likely do you think it is that you will buy a PC or a home Internet connection before 2006) have been corrected with the likelihood weights used in international practice. Thus responses could be used to estimate not only the expected number of Internet users but also the expected size of each segment.
– The expectations put together using the responses on the questionnaires have been supplemented only with demographic effects. In essence, in this short period of time this means only the inclusion of figures resulting from the expansion of the „sulinet generation".

2008-2013

– Naturally, we could use far less information for the 2008-2013 estimates. Our forecast is based on the assumption that the circumstances of the spreading of Internet use will be the same as today. In other words, supporting the spreading of broadband electronic communications will not become a development policy priority: prices slowly decrease, no programs are launched for the education of the digitally illiterate, no EU sources are available for infrastructure deployment, the broadband infrastructure is not modernised significantly, etc. Due to the above, Internet usage will be more widespread only in the digitally literate segments (I-VI.). In other words, the annual increase in the number of Internet users will decelerate after 2006 because of saturation. "Leaking down" will start but will not be fast and will take place primarily in segments II, III, IV, V and VI:
  – Segment I („Broadband at home")
  – Segment II („Narrowband at home")
  – Segment III („PC at home, Internet elsewhere")
  – Segment IV („PC at home, Internet nowhere")
  – Segment V („PC and Internet elsewhere")
  – Segment VI („PC elsewhere, Internet nowhere"):
  – Segment VII („digitally illiterate, with youngsters"):
  – Segment VIII („digitally illiterate, elderly")
– The first step in putting together the forecast was the estimation of the number of Internet users. Our assumption is that **in 2013, 90% of the digitally literate** will use the Internet (in December 2004 69.5 percent were Internet users). **40 % of the digitally illiterate currently under the age of 35, and 20% of the digitally illiterate currently older than 35** will use the Internet. Based on the end-of-2004 Internet attitudes of the digitally illiterate, ceteris paribus even these ratios seem optimistic. The estimation (**4.7 million Internet users in 2013**) took into account demographic effects.
– **For 2008** a similar method was applied – though rates were smaller. 80 percent of the currently digitally literate, 20 percent of the digitally illiterate currently under the age 35 and 10% of the digitally illiterate members of the older generation will be Internet users.
– The other indicators were estimated using the number of Internet users. Based on international trends, there will be an ever increasing ratio of home Internet users within the total group of Internet users.
– Among home Internet users there will be an ever increasing ratio of broadband subscribers. Our assumption is that in the year 2013 there will be hardly any narrowband connections, as they are defined today (5 %).

Forecast on the expected trends of the spreading of Internet use
Based on the 2005 residential situation assessment study carried out by NSzS

			2004	2006*	2008*	2013*
Home Internet use	households	thousand	666	1000	1312	1948
		%	17,2%	26,0%	34,1%	51,4%
	persons (14+)	thousand	1437	2263	2887	4267
		%	16,8%	26,6%	34,1%	51,4%
Home broadband Internet use	households	thousand	319	584	984	1754
		%	8,3%	15,2%	25,6%	46,3%
	persons (14+)	thousand	704	1322	2165	3840
		%	8,2%	15,5%	25,6%	46,3%
Home narrowband Internet use	households	thousand	347	416	328	195
		%	9,0%	10,8%	8,5%	5,1%
	persons (14+)	thousand	733	942	722	427
		%	8,6%	11,1%	8,5%	5,1%
Internet use anywhere	persons (14+)	thousand	2434	3378	3608	4741
		%	28,4%	39,7%	42,6%	57,1%
Full population	households	thousand	3863	3851	3850	3790
		%	100,0%	100,0%	100,0%	100,0%
	persons (14+)	thousand	8559	8510	8469	8300
		%	100,0%	100,0%	100,0%	100,0%

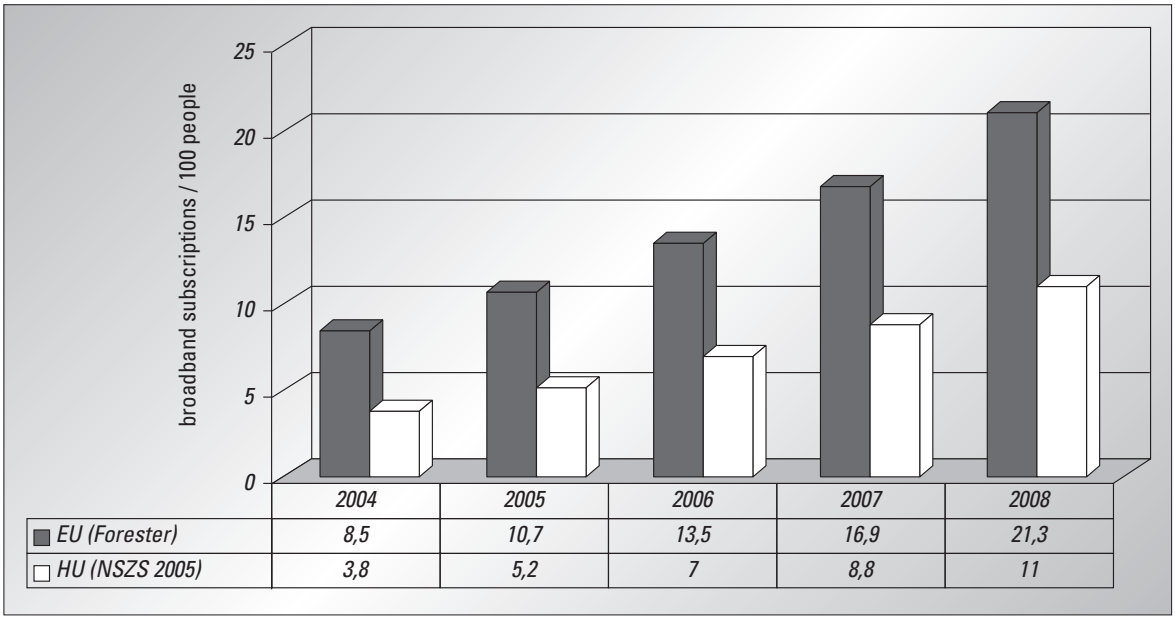
Based on the estimate regarding the **organic course of development**,

– **In the year 2006 about one fourth (26.6%) of households** will have an Internet connection at home and **about 60 % of them will use broadband** connections.
– **By the year 2008 the Internet penetration of households may reach one third (34.1 %)** and about **three quarters of households will have broadband** connections.

Assuming that the proportions between the different segments of broadband subscriptions (households, companies, public institutions) will not significantly change in the forecast period, the broadband subscription penetration will be 7% in 2006 and 11% in the year 2013[35] – as opposed to today's 3.6 % rate. As regards this indicator, the 2004 forecast of Forrester Research prognosticates a major growth in the EU. Based on the optimistic EU and very pessimistic Hungarian development outlooks, Hungary's backwardness in broadband Internet penetration compared to the EU average may be as much as three years in 2008 (i.e. Hungary would reach the 2005 EU average by 2008), unless successful measures are taken in regulation, public policy and state interventions.

[35] This indicator (broadband Internet penetration) is important since EU measurements consider this the primary indicator used for comparisons.

Internet penetration expectations:
changes in the EU average and the Hungarian indicator between 2004-2008



	2004	2005	2006	2007	2008
EU (Forester)	8,5	10,7	13,5	16,9	21,3
HU (NSZS 2005)	3,8	5,2	7	8,8	11

4.3 VALUE-BASED VISION

Regarding the value-based vision, the strategy focuses on the positive economic and social effects of broadband electronic communications. By realising the "broadband access everywhere, for everyone at affordable prices" objective, citizens, companies and the Government can all use information society services and applications more intensively and with higher efficiency. As a result, quality of life will improve, social cohesion will strengthen and Hungary's competitiveness will grow.

The vision will be presented with a focus first on competitiveness and economics and then on its aspects related to the info-communication sector.

4.3.1 Effects on competitiveness and economics

4.3.1.1 Impacts on companies

The spreading of broadband access will impact the corporate sector in multiple channels. The strongest effect will be on the development of e-commerce, B2B and B2C. According to calculations, the development of e-commerce will enable most companies to change the structure of demand. This will primarily be manifested in the fact that companies will communicate with new consumer types and, as a result, can enter earlier isolated markets and can do business on a larger geographical area. By the use of e-commerce transaction costs related to marketing and sales will drop significantly, which will extend the meaning of "market proximity" for companies.

An important impact of broadband access on the corporate sector is that it offers closer, faster and more efficient communication between companies, which will support their network integration. This enables companies to become involved in networking and to utilise the resulting organisational and logistical benefits and to achieve higher efficiency in business – to be able to provide more and higher quality services via the Internet. The network effect makes it possible for companies to achieve higher efficiency in cooperation, to more easily share certain tasks (purchasing, sales, outsourcing, marketing), to utilise economies of scale and to save significant costs. Network effects can take place not only between but also within companies as companies with online operation can implement a

higher level of decentralisation, easier cooperation between sites and the more efficient and faster outsourcing of certain activities.

Using broadband access, companies can also acquire additional markets by creating new services for customers and consumers. Broadband communication can encourage the outsourcing of certain services into smaller organisations or to countries where wage and other production-related costs are lower. An example is the relocation of call centres and online services into countries with an average level of income. As a result of outsourcing, the efficiency and revenues of both the company that orders the service and the one that provides the same can increase.

Broadband communication can improve companies' internal efficiency through the more efficient organisation of purchasing, production and sales activities: the expansion of supply, possibilities for comparisons in purchasing and the diversification and competition between purchasing sources can offer companies cost savings and efficiency-related advantages.

Due to the nature of their activities, the volume of their revenues and their cost sensitiveness, SMEs have a higher chance to reduce the above-mentioned cost types and to decentralise or outsource certain activities. Naturally, broadband developments have a twofold effect in the SME sector: besides the opportunities and the benefits outlined above, such developments give rise to significant one-off and, then, regular expenses, which they cannot always pay. At the same time, independently of the given company's actual size, using broadband communication to become an online organisation requires, according to the majority of analyses and forecasts[36], deep changes in the operation and structuring of companies: rationalisation and reorganisation affect production, sales, purchasing and marketing, can save significant cost volumes and may result in job cuts both within the given company and its suppliers.

The Irish and Spanish examples also point out that in the corporate sector broadband developments may be preconditions of investments in areas with a higher added value and the encouragement of direct capital investments in this sector. In small, open economies that are dependent upon the positive impacts of foreign investments on competitiveness, instead of the devaluation of workforce and other traditional competitive advantages other comparative advantages will get highlighted: the availability of "human capital", the level of development of the financial and physical infrastructure and the ability to integrate into existing production-purchasing-distribution chains. An important precondition of the latter is the existence of online cooperation and communication.

Broadband developments can contribute to the increase of competitiveness and companies' capital attraction ability. On the one hand, this can partly eliminate the impacts of lower production costs on the choice of company sites (if other pro-investment circumstances exist).

On the other hand, broadband developments may be important preconditions of the integration of companies into the international production chain: the importance of this factor is growing as large multinational companies and their suppliers are becoming online organisations.

4.3.1.2 Impacts on Consumers and the Community Sector

The spreading of broadband communications will also have significant effects on consumers and employees. To the consumer the most important benefit is a larger freedom of choice, better possibilities to compare products and services and a reduction of the costs of shopping and of accessing information. Through online shopping, consumers can get more and better quality services and products that have a better price-value ratio – which can have positive effects on consumer welfare.

Another important advantage for the consumer is that s/he can save significant time and costs as a result of the increased efficiency of accessing public services and owing to the easier administration and shorter search times. To consumers this means significant cost savings, a shortening of search times and an increase in free time.

[36] OECD (2003) Sources of Economic Growth, Paris, McKinsey (2001), US Productivity Growth 1995-2000: Understanding the Contribution of Information Technology Relative to Other Factors, McKinsey Global Institute, Washington, DC. October.

The spreading of broadband communication also strongly affects the community sector – especially in the following two areas:

– the reduction of costs,
– the increase of the efficiency of the public sector.

Broadband developments enable institutions belonging to the public sector to provide their services more efficiently and in a more cost efficient manner. The establishment of e-administration brings about the rationalisation of public administration, which enables the reduction of general costs of operation, for example through the use of uniform file and data handling and standardised filing systems [37].

Savings can get manifested in a decrease of bureaucracy, higher efficiency in public administration or changes in the structure and/or employees of state-run organisations. An important conclusion of country analyses defining broadband development strategies and of international institutions and studies dealing with this topic is that the employee-replacement effect of broadband developments is stronger in economies with a large state bureaucracy system. This is extremely important in the light of the fact that the advantages outlined for the corporate sector (slimming down of the organisation, better opportunities for outsourcing) are also true in the public sphere – meaning additional organisation rationalisation and workforce savings.

Another important community impact of the spreading of broadband access is an improvement of the efficiency of the public sphere and the quality of its services. The efficiency of community services can improve in online data processing, information flow and administration.

4.3.1.3 Major expected macroeconomic effects in Hungary

The analyses of international organisations and the recommendations and objectives defined in national broadband development concepts contained several assumed macroeconomic effects which analysts and planners expect as a result of the spreading of broadband access. This chapter briefly oversees the macroeconomic effects which can be realistically expected to be brought about by broadband developments in Hungary – taking into account the starting situation and the limitations of economics.

In Hungary, the formulation of the info-communication sector shows the signs of **duality**. While on the production side **the info-communication sector has a large share of production, export and employment** even in European comparison, the use of **info-communication equipment is** at a rather **low level**. One of the assumed effects of broadband developments, therefore, is that access to info-communication equipment and services and the status of info-communication equipment and applications may significantly improve.

While in major European countries basic objectives included the installation of broadband connections in public institutions, the improvement of computer and Internet penetration in the residential segment and the spreading of info-communication applications in SMEs, in Hungary – due to the poor starting level – these will not only be higher on the country's priority list but will also be a more important macroeconomic impact.

Installing broadband connections between public institutions, the increase of the use of PCs and the Internet by the population and the integration of the SME sector may generate significant **efficiency advantages** in info-communication applications.

In Hungary, another important consequence of broadband developments, besides the spreading of availability and access, is the **increase in investments**. Hungary's capital use has two basic features. On the one hand, on an aggregated level the country's investment rate is low in the light of the level of the country's development, its potential to reach average levels and in comparison to several economies with the same level of development and features. N the other hand, even within the relatively low

[37] In Estonia, MPs have access to the data and information required for their work also via the Internet – a feat of paper-free administration. Initiatives have been progressing successfully in several EU member states for the provision of public services via the Internet. A simple example is the fact that several states already accept tax returns electronically.

investment rate, info-communication investments are low in international comparison – reflecting the country's significant backwardness in penetration rates and the use of info-communication equipment. The spreading of broadband access could modify this aggregate and info-communication related investment pattern: the creation of broadband access in the public sphere and in the private sector would give rise to significant additional investments, would force companies to speed up info-communication projects so far lower on their priority lists and would lead to an increase in the investment rate. Investments would increase not only in the private sector but also in the public sphere, improving the ratio between operating and capital expenses.

Though it would be difficult to measure, we can assume that **productivity** increase would accelerate as a result of broadband developments. The strong productivity increase between 1996-2001 in Hungary was followed by a slowdown of the rate of this increase, while in the main competitor countries the rate of increase of productivity continuously grew. Productivity increase is preconditioned by growing investments and the creation of efficient and competitive markets – but, as a result of broadband developments, positive productivity and competitiveness effects can be expected, whose sources are the relationships between info-communication applications and productivity (see the previous chapter). An increase in productivity would also be made possible by the fact that sectors representing a higher added value would become more important in economy.

In Hungary, another important impact area of broadband developments is **employment**. According to international experience and positions included in broadband strategies, the spreading of broadband access would result in the restructuring of employment in the private sector but lower employment rates in the public sector. About Hungary we must emphasise that in case the spreading of broadband access is accompanied by reforms in the state subsystems (primarily in healthcare, education and local governments' public administration systems), these developments would make a lot of human resources redundant – decreasing employment rates in the public sector. Broadband developments themselves would also lead to a decrease in the number of employees – but this would be offset by the additional employment resulting from an increase in demand for supplementary services and the increasing volume of online content available from the public sphere. However, in case the organisational changes connected to the spreading of broadband access are accompanied by a restructuring of the institutions of the public sector the same would also have significant effects on employment.

Besides the impacts of broadband access on employment, its impacts on the structure of employment also deserves attention. These get manifested in the spreading of flexible working schemes, the increasing role of home-working and, as e-learning becomes more important, in new training and retraining opportunities. This can significantly improve the flexibility of labour markets on the one hand and, on the other hand, may find better alignment between the demand and supply sides of the labour market. Through effects on the labour market this may raise the importance of sectors that produce higher added values.

It is not yet possible to make exact calculations about the **fiscal effects** of broadband developments. Only areas can be identified which help us recognise what factors affect the fiscal balance and when. The impacts of broadband developments on the state budget balance are special in the sense that **positive impacts which manifest themselves in increasing revenues are experienced with a delay, indirectly, while negative effects are experienced directly and in the short run.** State subsidies for broadband developments (whether in the form of tax concessions or in direct investments) may be a major burden on the state budget in the course of the first two-three years. This can only partly be offset by an increase in tax revenues (as a result of intensifying e-commerce and the resulting direct tax revenues, etc.). Due to the country's current level of development and info-communication equipment penetration the state has to provide more resources for developments and must provide greater support for SMEs and disadvantaged areas than other, better developed states.

When evaluating the fiscal impacts of broadband developments, however, **we must also take into account the favourable medium-term impacts.** On the one hand, the positive changes in investments and productivity enables an increase in budget revenues as a result of the **accelerating GDP increase**. On the other hand, the expense effect of broadband developments in the long term can also be positive, owing to higher rationalisation in state administration and the decrease in employment.

In summary, the primary macroeconomic effects of the spreading of broadband access in Hungary are the sudden improvement of penetration rates and access-content, an increase in investment rates (capital production both in the private and in the public sectors) and an improvement of productivity. We can assume that the spreading of broadband access, accompanied by the related organisational changes in the private and public sectors, would generate positive growth effects. The impacts of broadband developments on employment are clearly negative – especially in the positive case that the spreading of broadband access and the relating institutional changes lead to rationalisation in the public sector. Finally, the effects of broadband developments on the fiscal balance may also be important: in the short run, these will be negative but in the medium term higher growth and lower operating costs may offset this loss.

The following table summarises and weights, based on importance, the above-described possible macroeconomic effects.

Major macroeconomic effects of broadband developments in Hungary

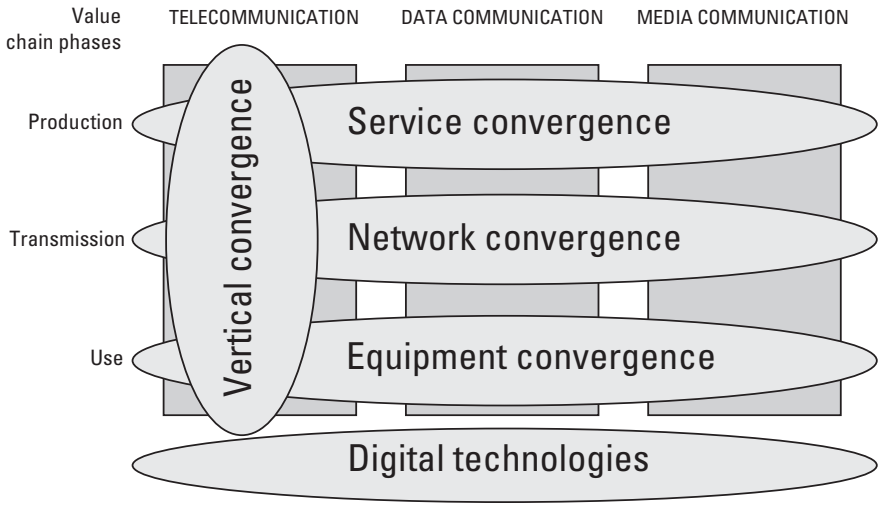
Effect	Factor	Importance
1. Advantages	**Increase in penetration rates and access**	XXX
	Intensification of investments in the state and private sectors	XXX
	Improvement of productivity	XX
	Higher emphasis on sectors generating a higher added value	XX
	Improvement of the flexibility of labour markets	X
	Intensification of competition in the main market segments	X
2. Costs	Decrease in employment rates in the community sector	XXX
	In the short run, negative effect on the fiscal balance	XX

Note: XXX: high importance, XX: average importance, X: little importance

4.3.2 Info-communication vision

For the period covered by the strategic plans (i.e. the next 6-8 years) a basic expectation is that the convergence processes will become ever stronger. These include horizontal convergence (content and services, the transmission channel and the end user equipment) and vertical convergence (telecommunication, media and information technology).

Horizontal and vertical convergence processes



Source: Broadband technology vision (NSZS 2005 RP2)

The effects of the different convergence processes will trigger basic changes in a number of areas. Looking back at the changes of the past 10 years we can see that the development of technological conditions and info-communication services has surpassed the highest expectations in many respects. Therefore, all forecasts contain a large amount of uncertainty. However, we can examine the main aspects of expected development about which there is more or less an agreement internationally and between Hungarian experts.

4.3.2.1 Broadband applications

Among residential applications there already exist several services (primarily the downloading of media, music and other digitized content) which require broadband transmission, especially if downloading also utilises the possibilities offered by multimedia. Presumably, the increase of bandwidth will generate further applications. There is a growing demand for interactivity – which also requires an increase in upload speeds.

In the future, through the development of new technologies, searching will go beyond its current application boundaries and it will be possible to search for audio, picture and video data based on content – which will significantly improve the usability of audiovisual files.

Convergence in the production of info-communication products will activate the telecom, IT and media sectors alike. **The same content may appear as the product of different sectors, thus increasing substitutability and competition.** Especially the latter seems a realistic expectation as the rate of expansion of content supply will be higher than the rate of increase of solvent demand for these services.

Convergent information content services will be characterised primarily by a multimedia nature, high speed/broadband transmission and the need for interactivity. This is directly caused by the fact that the producers of media contents will capitalise on the fact that today practically any information content can be handled with digital technologies. The appearance of these innovative services will intensify competition – though an impediment to their fast market introduction is that their development requires a lot of resources and major R&D capacities.

Technological development offers new opportunities to widen the product portfolio of info-communication companies – which can, in turn, result in a transformation of the market structure. One way of widening the product portfolio already present in Hungary is the appearance of „triple play" type (voice-data-video) services. Hungarian telecom research experts have the ever stronger position that a company which cannot achieve a strong position on the „triple play" market will also have to take a defensive position on traditional markets.

Simultaneously with the spreading of triple play services, major companies will make all endeavours to move along the value chain towards producing contents that may bring higher profits. The likelihood of telecom infrastructure owners appearing as content and/or multimedia service providers is increasing also in Hungary.

On the way to the universal communications service provider model: UPC–telephone, Origo-Play (MATÁV)

UPC entertainment information communication	[origo play] music, image, video
"Decrease your phone bill using UPC Phone, make calls without connection charges, free of charge within the UPC network. Our network does not require the use of complicated prefixes, making it possible to call as you are used to, without having to replace your existing wired telephone set. *Source: www.upc.hu*	"Forget about video rentals- watch DVD quality movies on the Net! Select a movie using the menus on the left or by searching. Once paid for, the movie starts immediately on the monitor of your computer or even on the TV screen." *Source: www.origo.hu*

In business applications the demand for broadband will be intensified by the need to have data exchange in the mobile office (continuous communication with the company without speed or access limitations), the spreading of video conferencing and the start of e-learning and e-administration that utilise multimedia services.

As market competition intensifies and as consumers become less restricted by network and infrastructure bottlenecks the temptation for service providers to re-establish the access limitations defending their business may increase. Such efforts are already experienced in standardisation processes, in the interoperability of end user equipment and in legal disputes related to electronic programs guides (EPGs).

4.3.2.2 Broadband technologies

Technology development and intensifying competition lead to the introduction of new transmission processes and the establishment of new network structures. The changes expected in networks/services will be triggered by the convergence of voice and data services. Service providers will try to find a flexible and cost efficient solution through the implementation of the NGN (Next Generation Network) concept (combination of voice and data traffic in trunk and access networks). Among others, the NGN is characterised by the separation of service provision and network operation through the use of packet-based transmission (IP – Internet Protocol) and standard application interfaces (API). This also means that the broadband applications available to users will not depend on the actual physical network environment in which the user uses the given service/application.

Through the utilisation of the improvement of the price/performance ratio of the Internet technology, the NGN enables the continuous decrease of the unit cost of transmission (price/bit), as well as the maximum utilisation of the existing public switched telephone network infrastructure and the related projects and broadband transmission, while offering constant service quality between endpoints.

Depending on actual costs, the potential solutions for the implementation of access networks include wireless (WLAN, WiMax), mobile (3G, 4G) and DSL and CATV solutions. The two currently dominating fixed-line technologies may have a future even in the medium term: FTTx access will not be a competitive alternative in the short run.

Another feature of the changes is that computer network functions will play an ever increasing role in the operation of traditional telecommunications companies. In multi-purpose and complex info-communication networks (i.e. containing points of interconnection) managed interconnection and market type capacity management will be possible. Higher efficiency in network utilisation will depress the unit costs of network capacities. Independent companies will appear on the market acting as network capacity sellers and providers of providers of services offered via leased virtual networks.

We must also make mention of the fact that the downloading of media flows through broadband connections and the distribution of the requested huge content volumes requires major network capacities. Therefore, there will be an increasing need to store contents locally.

4.3.2.3 Terminal Equipment

Simultaneously with the spreading of mobile and position independent applications, the following are expected to happen:

- RFID (RadioFrequency IDentification) devices that enable the recognition and identification of info-communication systems will become widespread.
- services invented for localisation and position identification and primarily support the finding of destinations (vehicle navigation) and that help the use of location-based services (nearest petrol station, service, bank, restaurant, cinema, etc.) will start to develop
- alternative energy sources will be identified for mobile and portable devices, e.g. fuel cells that enable longer operation than today – without the replacement or recharging of the energy source.

– As UMTS networks are deployed the market of 3G sets may significantly expand. Simultaneously, mobile phones may become tools used not only for communication but also for personal availability and a device to prove presence in a given location.

The convergence of terminal equipment and devices will be manifested primarily in the merger of user device functions (e.g. PC-based digital TV set, interactive television, PDA etc.) and will be implemented by the integration of new functions into an existing type of equipment.

Digital user devices may offer different mixtures of the functions of different types of communication terminal equipment, PCs also operating as terminals and audiovisual equipment. Related functions will be merged so that these devices can access, store, handle and forward picture-like, text-like, voice and data contents.

The technologies in the original value chain of sectors will receive competition from technologies belonging to their own or some other, related sector. This competition will break the earlier vertical integrations and will create fierce competition between services, networks and user equipment alike.

The market of user equipment will also undergo a process of integration: numerous examples exist to the joint appearance of companies with interests in different sectors on the market of sets (e.g. Sony-Ericsson). Value increase and the integration of functions literally get embodies (e.g. integration of PDA and mobile functions). A fierce global competition will form, where the right and timely understanding of future needs will be the most efficient weapon.

As microelectronics develops technology constraints will soon be encountered in the manufacturing of microprocessors with an increasing speed and memory chips with an increasing capacity. Therefore, research has been ongoing for several years to develop nano and quantum technology solutions which will take over the role of microelectronics. Though promising results have been reached info-communication equipment using nano/quantum technology are expected to spread only after the year 2012.

As a result of mobile usage (since we wish to receive as much information as possible in the form of voice communication), speech synthesis has started to spread for the "reading" of text messages. This trend is starting to appear also in many other areas. As processor speed increases and as a result of the utilisation of the results of research of natural languages speech recognition is becoming part of operating systems (e.g. MS Windows) and of different applications. This enables the operation of certain computer functions through speaking. In the future, natural language processing will get a decisive role in Internet and intranet searching.

While the networks of the future will become more and more transparent the intelligence of terminal equipment will increase. There will be a certain convergence between fixed-line and mobile terminal equipment: fixed-line and mobile devices used for telephony may get integrated.

5. Strategic Objectives

5.1 METHODOLOGY – INTRODUCTION

When defining the strategic directions and priorities a basic consideration is the fact that the primary focus of this strategy is to support the spreading of broadband electronic communications – to achieve positive effects on competition and social cohesion.

The strategy looks at the processes mapped at the level of the "pillars" not in themselves but with regard to the extent to which they restrict the unfolding of market processes and the spreading of broadband electronic communications. In other words, if the same low broadband penetration levels remain, the strategy considers the positive processes in contents, education, security and motivation (which are preconditions of the spreading of broadband electronic communications) as moderate results. This concept-based approach manifests itself primarily in the setting of strategic priorities.

When strategic directions and objectives were planned one of the requirements defined was to identify the lowest possible number of strategic targets and indicators in whose light the achievement of the objectives can be measured. These can be used to objectively assess if the strategy has been successfully implemented, to set clear parameters which indicate the extent to which the vision has been implemented and simplify the operation of the monitoring system.

The objectives and the means were identified using the following approach:

– Level of OBJECTIVES: What strategic **objectives** and related **indicators** can be used to best describe the vision?
– Level of MEANS: What intervention and what **measures** must be applied in the different key areas to achieve the strategic objectives?

5.2 OVERALL AIM

Based on the strategic concept and the approach applied, the overall aim of the strategy can be summarised in the following sentence:

„To eliminate any and all circumstances that hinder the spreading of broadband electronic communications through the concerted application of regulatory, public policy and support measures and to promote faster development in access, content, motivation, education and security in order to strengthen economic competitiveness and social cohesion."

5.3 METHOD OF INTERVENTION

The overall strategic aim also determines the main areas of state action:

– Strategy compilation, preparation of operative program, orientation, coordination
– Regulation; creation of appropriate environment
– Development of state and public administration, introduction of e-administration; setting examples
– Financing, support to eliminate restrictive factors

From the point of view of the state, this order also reflects the logic behind the method of supporting the establishment of the information society – in this sense, it is also an order of priorities. The regulation of competition plays a key role in letting market mechanisms work in electronic communications services. This is important as, without efficient regulation,

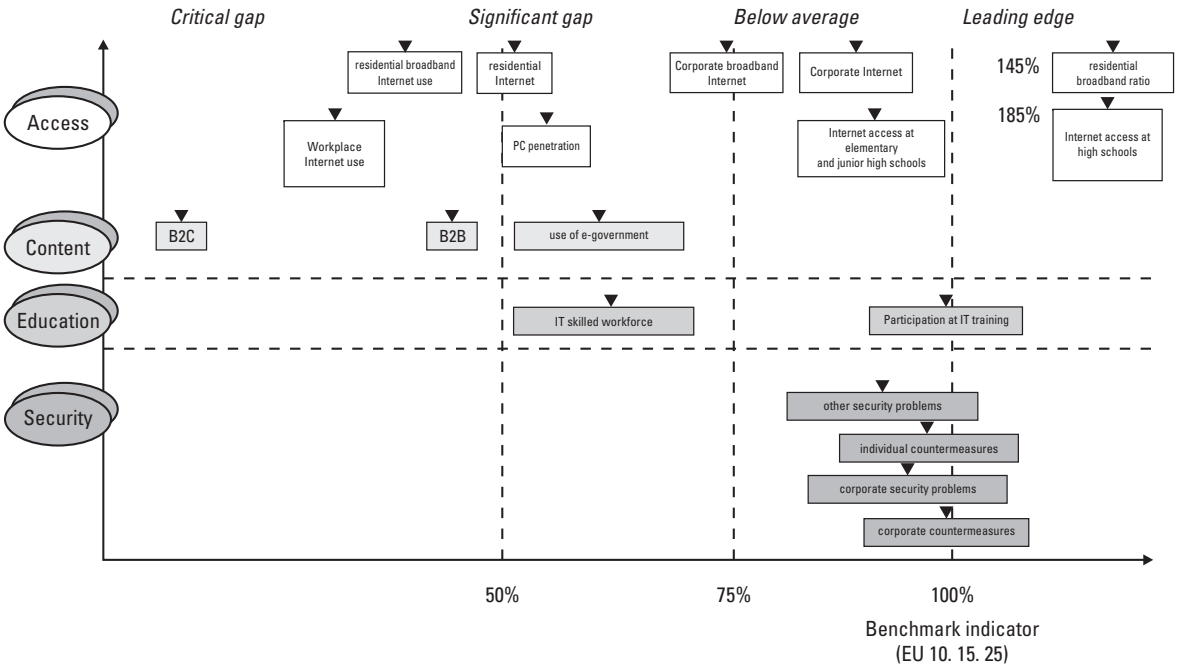
– fiscal and public policy interventions may be doubtful,
– state subsidy programs will become more expensive.

5.4 DEFINITION OF STRATEGIC PRIORITIES

According to the strategic situation analysis, there is critical backwardness in residential broadband Internet penetration, Internet usage at work and in e-business applications in international comparison (average EU25, EU15, EU10 indicators) (Hungary's indicators are less than half of the relating EU benchmark).

As regards corporate broadband Internet penetration, e-administration applications and the proportion of workforce with IT skills Hungary's backwardness is „significant": the country does not reach 75 percent of the relating EU benchmark.

The international comparison of the main results of the situation analysis shows that the unfolding of the positive changes in broadband electronic communications is basically hindered by the insufficiency of access and bottlenecks in relevant content availability.



Empirical research results show that the poor results in access are closely related to the relatively high costs of broadband Internet. At present, this factor is one of the strongest drawbacks.

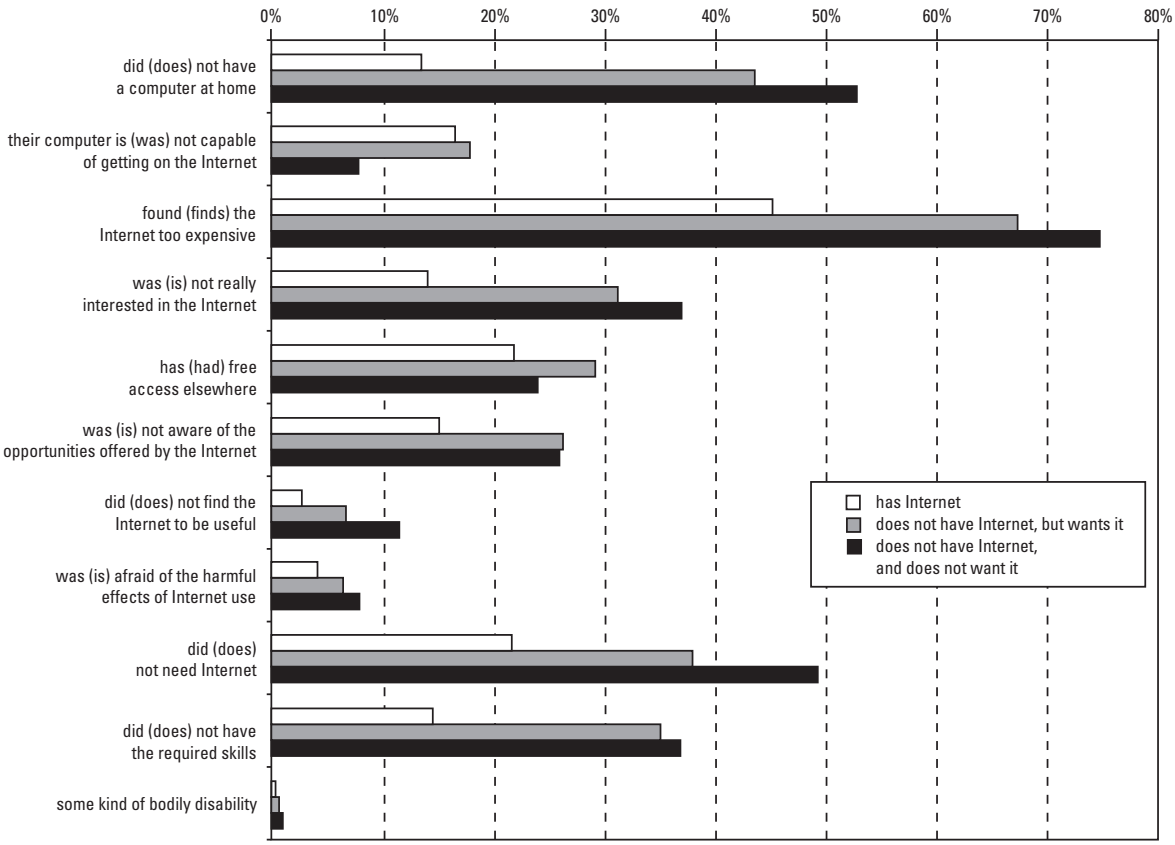
The chart that follows presents the weight of the hindering factors based on the evaluation of the following three user groups:

– households using the Internet,
– those planning to use the Internet in the future
– those not planning to use the Internet in the future.

One can see that all three groups stated that the biggest obstacle was the high price of the Internet. Logically, the lack of computers is the biggest problem in households that do not yet use the Internet. In the groups that do not currently use the Internet the lack of motivation is also a problem. Another drawback is the lack of education.

A general observation regarding restrictive factors is that, independently of all such factors, the members of „close-to-the-Internet" groups usually consider the listed elements less important. We cannot say, therefore, that those who currently do not use the Internet have very different difficulties from those that households that already use the Internet encountered earlier: it is only that the said difficulties are far heavier in the case of the former. On the one hand, this can be the result of the demographic features of these groups described earlier (lower levels of education, worse financial situation), on the other hand – as this is a subjective evaluation – the result of the psychological phenomenon that past difficulties and nuisances fade away and seem less important as time passes.

Factors hindering the purchase of home Internet access: Internet users, those planning to buy an Internet connection in the near future and those without such plans



Source: "NSZS 2005" residential survey (Ariosz Kft.)

Of horizontal aspects, a distortion that requires direct intervention is in equal opportunities („the depth of the digital gap"). At present, the moderate nature of innovative infrastructure and service development is a consequence rather than the reason for the lack of demand on the broadband market in international comparison.

Bottlenecks in education are strongly related to generation-related features: therefore, the elimination of digital illiteracy is primarily an issue related to equal opportunities.

Based on the situation analysis and international experience, security considerations will become more important in a later development phase, in a more advanced application environment.

According to the results of the empirical survey, general motivation and attitudes regarding the Internet were more positive on both sides of the digital gap than expectations based on preceding surveys (Tárki, WIP). Therefore, in the planning phase, instead of general PR campaigns and propaganda, targeted communication and information supply get a bigger emphasis. This should be taken into account when identifying the strategy's means.

Foe the above reasons, the following should receive the most attention when strategic priorities are identified:

– access
– content and
– equal opportunities (e-inclusion).

The simultaneous positive processes in these three areas guarantee the achievement of the desired objectives, the unfolding of positive effects in competitiveness and cohesion and the elimination of Hungary's backwardness. In other words, the spreading of broadband electronic communications

– cannot take place if the appropriate infrastructure is not available;
– has only limited effect on competitiveness if relevant content des not grow in quantity;
– can even deepen the digital gap and worsen social tensions if the preconditions of e-inclusion are not established.

In summary, the strategy's objectives are defined around the following priorities:
increase the use of broadband Internet,
increase the quantity of relevant content available,
create the preconditions of equal opportunities (e-inclusion).

5.5 AREAS OF INTERVENTION

Intervention areas (in accordance wit the results of the situation analysis and grouped by priorities) are as follows:

The strategy's areas of intervention

Priority	Areas of intervention
1. Increase the use of broadband Internet	population companies public institutions
2. Supply relevant content	companies public institutions
3. E-inclusion	population (disadvantaged social groups)

5.6 THE TARGETED HIERARCHY AND INDICATORS

The targeted hierarchy specifies objectives grouped by priorities and intervention areas. Among others, the identification of specific objectives was based on EU benchmarks (C.1, C.2, C.3,). As regards these specific objectives, the goals are is to reach the EU average by 2008 and to reach the average of better developed EU member states by the end of the strategic planning period (2013). As for the other two specific objectives (C4, C5), we have identified a clear target (full broadband coverage by 2010) and decided that the second objective should be to continuously and strongly improve the current situation (significant reduction of digital illiteracy).

Priorities	Intervention **areas**	**Code**	**Specific objectives**
1. Increase broadband Internet penetration	Population Companies Public institutions	C.1	By the end of 2008, broadband Internet penetration (i.e. number of broadband subscriptions per 100 citizens) should reach the EU average and, by the end of 2013, the average of the "EU15" countries
2. increase the quantity of relevant content available	Public institutions	C.2	The use of e-administration services should reach the EU average by the end of 2008 and the "EU15" average by the end of 2013
	Companies	C.3	By the end of 2008, the ratio of e-commerce should reach the EU average and, by the end of 2013, the average of the "EU15" states
3. E-inclusion	Disadvantaged groups	C.4	90 percent residential broadband coverage by the end of 2008, full coverage by 2010
		C.5	The ratio of the „digitally illiterate" (those with no Internet or computer experience) should drop below 50 percent by 2008 and below one third by 2013.

6. Means

6.1 METHODOLOGY – INTRODUCTION

The strategy reviews measures in the following breakdown:
– regulatory measures
– public policy measures
– fiscal measures

In the presentation of the individual types of measures, an emphasis is laid on past experience and future possibilities of application. The presentation and listing of the recommended measures and their contribution to the achievement of strategic objectives can together lay the foundation for the programs and action plans aiming at strategy implementation.

6.2 REGULATORY MEASURES

E.1 Ex ante competition regulation

Market regulation is a basic means used for the achievement of strategic objectives. This recognition is explicitly expressed in the broadband strategies of several EU countries:

– The *Portuguese* broadband strategy clearly calls the reader's attention to the expected positive impacts of the new regulatory framework. The strategy lays an emphasis on the regulation's positive effects on competitiveness and considers that the compilation of efficient regulation is the joint responsibility of the regulating authority (ANACOM) and the ministry.
– The *Dutch* strategy also emphasises the importance of regulation. Its objectives include the elimination of current anomalies and, thus, the elimination of factors that hinder the development of the market – with special focus on the expected spreading of next generation networks.
– regarding the regulation of the broadband market, the *Irish* strategy mentions that the Minister of Communication, Naval Affairs and Natural Resources (responsible for the development of the information society) earlier issued directives to the regulating authority (ComReg), which resulted in the introduction of the FRIACO (obligation to offer narrowband flat rate Internet access call origination). Based on the success, similar directives are planned to be issued on broadband services – primarily to support DSL pricing, the acceleration of local loop unbundling and the opening of markets.
– The *Swedish* broadband strategy emphasises that regulation ought to be technology-neutral, to intensify competition.
– The *Danish* strategy considers that the efficient operation of the market of broadband services is primarily the result of good regulation. Besides, the strategy considers that as technology develops regulations should be regularly revised and technology-neutral regulation should be maintained.
– The *Austrian* strategy – similarly to the Portuguese one – emphasises the importance of cooperation with the regulating authority (RTR) in the course of strategy implementation.
– According to the *British* strategy, the responsibility of the regulating authority (OFCOM) is to make broadband services attractive and to closely cooperate with market players.
– Market regulation also plays a key role in the Greek broadband strategy. Of the "old" EU members states, Greece has the lowest broadband penetration. According to the strategy, this is primarily due to the weakness of regulation.

A favourable circumstance from the point of view of ex ante competition regulation is that of the recently accessed EU countries Hungary was the first to introduce a new Electronic Communications Act (on 1 January 2004), which is aligned with the EU's New Regulatory Framework. Experience about the first year of Hungary's new market regulation (which is based on the new EU regulatory framework)

shows that the National Communications Authority ca contribute to the intensification of competition on the market of broadband electronic communications services.

The first direct results of the issuance of decrees based on formal market analyses are that the interests and counter-interests of consumers, service providers and the authority can now be expressed clearly and in a better structured way and that challenges and opportunities regarding the regulator's activities are clarified. As regards this, the following areas seem to be very important from the point of view of broadband electronic communications:

- continuous and comprehensive effect analysis of market regulation, with special focus on markets 12 and 18,
- coordination of the aspects of service-based and infrastructure-based competition in regulations,
- retain technology and competition neutrality in the fast changing technological (Next Generation Networks) and service („triple play") environment
- focusing on the interface points between submarkets in the regulatory activities (12, 18, etc.)
- examination of the regulation-related aspects of fixed-line program distribution (issues related to the introduction of the Internet service and to the sharing of networks, handling of potential market superiorities on retail markets, etc.)
- analysis of experience about international market regulations, integration of best practices into Hungarian regulations
- active participation in the revision and shaping of EU regulatory frameworks
- definition of strategic objectives and directions in broadband electronic communications that help the work of the regulator – including the priorities of the National Communications Authority and in line with the current strategy (price changes, market structure, available service portfolio, innovation, penetration objectives, etc.)
- efficient cooperation between the National Communications Authority and the Ministry of IT and Communications (inclusion of the priorities of the broadband strategy in the updated version of the cooperation agreement between the Authority and the Ministry).

Specific objectives and planned measures are defined for ex ante competition regulation in the National Communications Authority's currently prepared broadband regulation strategy. The penetration-related objectives of this strategic document are aligned with the objectives of the "NSZS 2005" (2005 National Broadband Strategy). Besides, the National Communications Authority sets specific medium-term goals in – among others – the areas of pricing and the expansion of the available service portfolio.

E.2 Management of Scarce Resources

From the point of view of broadband electronic communications, the regulator's efforts in the management of scarce resources are the strongest in the utilisation of radio frequencies and the definition of frequency licence fees.

When defining the framework for spectrum management, the regulator has to meet two types of efficiency-related requirements:

The requirement of *technical efficiency* is clearly related to the elimination of interferences between different users and usages. In this area problems related to illegal frequency usage, the use of inappropriate equipment, performance levels above the permitted limits and non-optimal transmitter allocation belong to the competence of the regulator/authority.

The requirement of *economic efficiency* is a much broader regulatory issue and, in general, addresses the question of how radio frequencies, which are "scarce resources", can be allocated in the most efficient manner to alternative types of usage and competing services.

Economic efficiency becomes extremely important on the broadband electronic communications market because of the possibilities of re-use of frequencies ("digital dividend") that become available as a result of the speed of technology development, growing needs for alternative uses (WIMAX), the expanding service portfolio and the digitisation of broadcasting (DVB-T). Moreover, because of the convergence processes, the growth in alternative usage needs and the effects of the "digital switch"

tend to get manifested in an environment where boundaries between service providers and services disappear – thus the original regulatory approach and categories have to be put on a different foundation. The success of such efforts is decisive for the long-term prospects of the spreading of broadband access: if spectrum management is aligned with convergence processes the same could significantly support the achievement of the objectives set in ex ante competition regulation.

E.3 IT Regulation

Items of legislation related to the information society and connected to broadband electronic communications are found in all areas of Hungarian law. One of the reasons is that, in essence, all areas of life covered by regulations have aspects related to the information society: IT law is the generality of regulatory means that are related to the information society and permeates the whole social and economic system.

Consequently, the necessity of IT regulation can be realistically assessed only in a dynamic way: as broadband electronic communications spreads, new regulation-related challenges appear in certain new areas, while items of legislation may become obsolete. For this reason, IT regulation, in the first place, means the continuous and targeted monitoring of the regulatory environment. The primary task is to identify the network services where restrictive factors can be eliminated through regulatory measures.

At present, the following areas of IT regulation require special attention:

– Publicity of data of public interest in the information society (electronic freedom of information)
– Protection of personal data in the information society
– The process of electronic authority administration
– E-commerce
– E-billing
– Authenticity of documents and identification in the information society, regulation of electronic signatures
– Archiving of electronic documents,
– Authentic conversion between electronic and paper-based documents
– Electronic payment
– Digital rights management (DRM)
– National Digital Archives (NDA) and National Audiovisual Archives (NAVA)

electronic public procurement.

E.4 Convergence regulation

Today, convergence regulation is a horizontal challenge related to regulatory measures and the system of institutions rather than an independent area of regulation. We have seen about ex ante competition regulation and spectrum management how convergence-related challenges are integrated into the set of medium-term regulatory tasks. At the same time, convergence-related challenges are not limited to these two areas only.

An important question regarding the possibilities of the regulation of info-communication convergence processes is how wise it is for the state to intervene in market processes and which are the areas whose development is better supported by deregulation. It is clear from EU laws and other, non-normative documents that the regulation of convergence can be legitimised by two objectives: to ensure competition and the safeguarding of consumer interests (NRF, Eht) and to guarantee basic rights (media regulation).

As regards specific regulatory measures, the most important thing is not to forget that in those areas of the info-communication market which are not regulated by ex ante competition law the key to achieve efficiency in regulation is to coordinate several areas of law (communication, media, information technology and ex post competition law)[38].

[38] Nagy, Krisztina: "Deficiencies of the media regulation with regard to the digital TV" ("A digitális televíziózás médiaszabályozási hiányosságai, http://cyberlaw.jogiforum.hu/index.php?page=kon_pub 29 September 2004)

From the point of view of broadband electronic communications, the currently shaping convergence regulation challenges are related primarily to the interface areas of communications and media regulation, e.g. in the case of the launch of IP-based broadcasting or digital terrestrial TV services.

E.5 Public Administration Procedures Act

The new Public Administration Procedures Act was passed by Parliament at the end of 2004. The new Act replaced an item of legislation that was already 30 years old: it re-regulates the relationship between state administration and citizens. A whole chapter of the Act is dedicated to electronic administration. This chapter says that in case, after 2005, a citizen uses electronic media for official administration offices must also handle his/her problems electronically. The use of digital signatures will boost the spreading of e-administration. However, those who do not yet have an electronic signature can use the Virtual Document Office of the Government Portal ("Kormányzati Portál Virtuális Okmányirodája") to run errands. The other key provision of the Public Administration Procedures Act is that public administration bodies may not request citizens to supply data which are already possessed by another public administration body. This forces state institutions to regularly communicate with one another and share their information – thus integration into existing networks will be not only a possibility but also an obligation for state administration bodies. In the near future the key objective is to create the infrastructure, procedural and security related preconditions of performing the Public Administration Procedures Act – otherwise the Act cannot be performed.

E.6 Act about the freedom of electronic information

By passing Act 63 of 1992 ("Protection of Personal Data and the Publicity of Data of Public Interest Act"), Hungary applied international best practice of the time in the regulation of the freedom of information (i.e. access to data of public interest). However, in the twenty-first century aspects related to the freedom of electronic information should also be given attention. If this is done and if access to data of public interest is guaranteed by law, Hungary can take a major step in the freedom of information. Recognising this, the Ministry of IT and Communications, in cooperation with the Ministry of Justice, prepared the draft of the new act. If the new act is passed the volume of valuable Hungarian contents available on electronic communication networks can significantly increase:

– The obligation to electronically publish data of public interest (as defined in the act)
– Obligation for a lot of bodies to maintain their own homepage, a possibility for bodies to jointly operate their homepages
– Electronically publish legislation in force in a uniform format
– Make final law court resolutions on certain issues available on the Internet

Create a system for searches for public data

In accordance with international experience, based on the act on the freedom of electronic information, the need may arise to provide universal Internet access – which, in the long term, may be directly relevant to the e-inclusion priority related to broadband electronic communications.

6.3 PUBLIC POLICY MEASURES

E.7 Strategy compilation, orientation

To improve the situation of an area that requires state intervention and is important from a social and economic point of view it is unavoidable to define clear objectives for the state, identify the necessary means and program and monitor implementation. The setting of objectives and successful state participation in their implementation will orientate the decision of consumers and service providers – thus has significant positive external impacts. This what the success of this strategy will also be measured by. Another important expectation is for the strategic objectives to be built as priorities into the planning and program development processes of the 2007-2013 EU subsidising period. In essence, this could guarantee that the institutions and funds necessary for the implementation of the strategy's objectives are available.

E.8 Targeted information campaigns

According to the results of the empirical survey, general propaganda campaigns will play a less role in the elimination of factors that restrict motivation. Simultaneously, the importance of targeted information campaigns will increase: these focus on clearly defined target groups and send messages to their actual needs and features about the usefulness of the Internet in general and broadband electronic communications in particular. This requires careful planning and preparation and the use of a broader set of means. As regards the latter, the processing of the pilot initiative of IHM ISZHÁT launched in the year 2005 for the encouragement of the spreading of broadband Internet is very important. This initiative targeted at the following:

– broadband portal development
– organisation of a PPP-based broadband communication campaign
– in May 2005: „Broadband Day"
– presentation of broadband innovative and technology intensive model-like projects
– training projects, development of a broadband e-learning curriculum

In the planning of future communication programs an important possibility is more efficient cooperation between the government and private sectors. A promising area for this cooperation is the organisation of PPP-based, jointly planned, implemented, monitored and financed information campaigns.

E.9 Demand aggregation

Independently of the status of the "Közháló" project after 2006, it is worth looking at the international best practices of demand aggregation. A good example can be the English demand aggregation model. This model aims at covering disadvantaged (e.g. rural) areas with a broadband infrastructure. According to this model, the purpose is not to directly support service providers in the deployment of the broadband infrastructure and it is not necessarily the responsibility of the state to build such infrastructures. The state acts as the coordinator: it collects the broadband development needs of the state institutions operating in the given area, organises public procurement projects for the same and coordinates such needs and the broadband development needs of other players in the same area. Such concerted action can help reach the critical mass above which it makes sense for the private sector to build the required infrastructure.

The National Aggregation Body (NAB) coordinates the activities of 9 Regional Aggregation Bodies (RABs), whose main functions are as follows:

1. aggregation
– aggregation of the demand of state institutions
– communication with key stakeholders

2. Development of network solutions
– elaborate the best price and accessibility solution
– select the solutions which best suit the aims of the RAB

3. Public Procurement
– management of public procurement projects
– act as contact with suppliers
– monitoring

6.4 FISCAL MEASURES

E.10 Support the deployment of the broadband infrastructure in villages and small towns

So far, the two programs targeted at making broadband electronic communications available to everyone have been "IHM HHÁT2" and "GVOP 4.4.1". The GVOP 4.4.2 Program, whose beneficiaries are local governments, was launched in March 2005.

The "IHM-HHÁT-2" tender issued by the Ministry of IT and Communications in the autumn of 2003 and offering a total fund of HUF 900 million („Supporting the deployment of the broadband Internet infrastructure and the launching of such services in Hungary's municipalities with a lower business potential") had over 30 winners, getting a combined funding of over HUF 2 billion for the implementation of broadband projects in several hundred municipalities.

In essence, the "GVOP 4.4 priority" is a continuation of the HHÁT-2 Tender. As part of this, the "GVOP 4.4.1" Tender was launched in 2004-2005. The purpose of this tender (title: „Support of the deployment of broadband networks by SMEs in disadvantaged areas") is to increase broadband Internet penetration in small municipalities (a population below 15,000) with a low penetration level and limited business potential, where the infrastructure required for the provision of broadband services would not or would only later be built out without state subsidising. According to the program, this enables SMEs and potential employees to join business processes and improves the broadband Internet coverage of the said municipalities.

Regrettably, the GVOP 4.4.1 tender has achieved the desired aims only in part. Until the middle of March 2005, 25 bids had been submitted for the HUF 9 billion subsidy available in the framework of the 4.4 project between 2004-2006. Of these bids, 19 have been recorded, whose total requested subsidy amounts to some HUF 1.3 billion. The number of bids recommended for approval by the Committee and already contracted is 9.

The experience of the year 2004 was used to put together the GVOP-2005-4.4.1 Tender, which already contains modifications in several areas (e.g. regional and development features).

The development of the broadband communications infrastructure should not be based exclusively on the efforts of the SME sector. In March 2005 – following careful preparations required due to the novelty of the concept – the GVOP-2005-4.4.2 Tender was issued under the title „Support of the deployment of broadband networks by local governments in Hungary's municipalities with limited business potential". The purpose of the tender is similar to that of 4.4.1, the difference being that its beneficiaries are local governments.

The tender makes it possible for local governments to connect their municipalities to the national broadband electronic communications network. In this program, the implementation of infrastructure developments by local governments does not depend on company size – thus the program can motivate large telecom service providers to implement projects with larger budgets and covering larger geographical areas.

In the course of the planning of the 2007-2013 infrastructure development programs special attention ought to be paid to the experience gained during the implementation of the two ongoing subsidy programs. The development of the broadband infrastructure in the country and the achievement of full national coverage scheduled by 2008 may not be based exclusively on projects run by SMEs. The potential role of the Cohesion Funds should be taken into account as the utilisation of such resources offers better opportunities to implement key programs with state coordination. Another important aspect is that infrastructure development and the regional extension of broadband networks could be greatly supported by the installation of regional BIX interconnection points: in many instances, the business potential of local networks in disadvantaged regions is primarily limited not by the actual costs of network construction but the high rental fees of leased lines.

In decisions about the support of broadband infrastructure development, not only actual experience should be taken into account but technology neutrality and cost efficiency should also be governing principles.

E.11 Support the installation of community access points in villages and small towns

The expectation of the Hungarian Information Society Strategy ("Magyar Információs Társadalom Stratégia") of the uniform network of community access sites ("eHungary points") is to enable everyone to access and use – in their place of living and on a daily basis – state-of-the-art computers and applications, a sufficiently efficient – broadband – network and, if need be, use expert assistance ("IT mentors"). In the framework of the eHungary program, some 4,000 eHungary points, offering advanced services, will be implemented by the end of 2006. The installation of further broadband community access points in all Hungarian municipalities between 2006-2008 should be made a precondition of the release of funds, connected to the infrastructure developments outlined in the previous section. In the course of the deployment of the community access network, opportunities offered by the existing community infrastructure (culture houses, libraries, local government institutions, etc.) should be seized and the demand expected of the population of the given municipality ought to be taken into account.

E.12 Support the deployment of the broadband infrastructure in public education

In accordance with the objectives set in the "Közháló" program, by the end of August 2005 all elementary and secondary schools will have access to the Internet – the majority being broadband connections (80 percent of educational institutes will use a bandwidth over 256 kbps, while 20 will communicate via connections operating at 128 kbps – 256 kbps). A key priority for the near future is to increase the bandwidth of broadband connections in accordance with actual needs.

Besides, the development of the local network infrastructure – required to utilise broadband connections – will become a priority. At present, 71 percent of schools with at least two computers have a LAN. 94% of the said secondary schools and 62% of elementary schools use an internal computer network. 17% of schools with an internal computer network have an Intranet (this corresponds to 12% of all elementary and secondary schools).

Ratio of schools with an internal network (LAN)

	Percentage, compared to all schools (%	Percentage, compared to s chools with at least one computer (%)	Percentage, compared to schools with at least two computers (%)
Yes	69	70	71
No	30	30	29
No computers	1	–	–

Source: Kopint - Tárki Hungarian Information Society Strategy and Monitoring Reports 2003

Besides the development of LANs, further important infrastructure development tasks include the modernisation and extension of the computer pool, the installation of interactive teaching aids (voting machine, screen reader, simulation tools, etc.), the purchasing of projectors and the improvement of the conditions of electronic administration (login, resource control, management).

The utilisation of the positive effects of infrastructure development can be supported by other related programs like the training of IT instructors and system managers and the development of digital teaching materials and contents.

E.13 Support the development of innovative broadband technologies and applications

When planning the future support of innovative technology development, the experience gained during the 2003 tender of the Ministry of IT and Communications ("HHÁT 3"; "Support of the development of model-like, innovative and technology intensive broadband infrastructures") should be utilised, while in application development the experience of the GVOP 3 priority (R&D priority) could be used.

The "HHÁT-3" subsidy program of the Ministry of IT and Communications (total subsidy budget: HUF 400 million) supported infrastructure development projects and service models containing

innovative solutions and technology intensive infrastructure developments which resulted in the following:

– residential broadband Internet penetration may also increase in municipalities where infrastructure development is currently hindered by business and/or technology bottlenecks
– such broadband residential services become available which could not be implemented under the current infrastructure conditions (greater bandwidth, position independent applications, etc.)
– such integrated technology and service models are introduced which enables full broadband Internet coverage in a given geographical area and can be applied for complete small regions in the long term

According to the experience of the Ministry's "HHÁT-3" program, the innovation potential and development plans of Hungarian service providers do not fit the conventional "R&D activity" concept. The Hungarian players of the info-communication market are interested primarily in the adaptation of international technology development results and the elaboration of new market models which will have a business potential in the short term. The innovation content of a project is often not in the actual technology used but the novelty of the service provider model it outlines. Such developments may not have the basic features of base, applied or experimental development – but, owing to their innovative and technology intensive nature, could serve as models for the improvement of the quality of broadband services, the market introduction of products with a high added value and already successfully used elsewhere and in the regional extension of innovative broadband products and services.

The experience of the "GVOP 3" priority is in the processing phase. According to preliminary results, some 20-25% of available subsidies was related to different info-communication developments.

Besides supporting innovative broadband application and technology development through individual tenders, the Second National Development Plan ("Nemzeti Fejlesztési Terv II") may focus on key R&D projects which aim at establishing cooperation between companies and the university-research sector in a special key area (e.g. 4G, digital television technology and service development) and which have a significant multiplicative effect (university „excellence centres", innovation parks, incubator houses, high tech enterprise centres, etc.).

E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority

Based on the experience of currently ongoing EU subsidy programs and international examples, it is worthwhile to handle information society aspects as a horizontal priority in the planning and evaluation of tenders. In the majority of cases, the spreading of the use of info-communication equipment is not sector-specific and usually becomes justified in a specific development project.

Naturally, the importance of information society aspects may be different in different projects. Highlight this requires careful preparation and necessitates the expression of these information society aspects not only in an ex post manner (i.e. in the course of evaluation) but already during the planning phase (when aspects for decision making and scoring are designed).

E.15 Tailored education and access programs for disadvantaged groups

The "digital division" (exclusion) is a complex phenomenon and may mean

– differences in the physical access to info-communication equipment and the slow spreading of technological innovations in certain social groups,
– differences in the abilities and skills required for the use of new equipment and
– different usage patterns.

The purpose of the e-inclusion area of the government's policy is to support access to and the use of info-communication equipment and online services in order to reduce traditional social exclusion and to establish social inclusion on a much broader base – to reduce social disadvantages resulting from the digital division. In info-communication e-inclusion programs

– equal opportunities have to be established in physical access to equipment and electronic access to useful contents on the one hand and
– equal opportunities must be established in knowledge/abilities through the extension of education coverage.

In Hungary, the following social groups are jeopardised by such exclusion:

– people with disabilities,
– the old,
– the poor and
– the Roma.

However, if the digital gap is given a broader meaning, the following groups also belong here:

– women,
– those with low levels of education,
– the unskilled and the unemployed,
– those living in poorly developed regions/municipalities.

When planning tenders aimed at the reduction of the digital division, the experience of the following Ministry programs should be taken into consideration:

– IHM-ITP-25: IT equipment for the visually impaired
– IHM-ITP-14: support of the procurement of IT equipment for the education of people with disabilities
– IHM-ITP-12: support of the procurement of equipment for minority local governments
– IHM-ITP-4: eGeneráció tender
– IHM-FMM-1: tender for the creation of e-working jobs

Besides, the simultaneous use of different subsidies in the case of the digital division and infrastructure development (E10, E11) should also be considered.

E.16 Support participation in central EU programs

EU programs with central funding offer attractive opportunities to Hungarian companies and public institutions to implement information society developments. From the point of view of the broadband strategy, the EU's Research and Development Framework Programs (FP6, FP7), the eTEN program (for the deployment of trans-European networks) and the eContent program (supporting the creation of digital contents) deserve special attention.

Supporting participation in central EU tenders requires, regular communication with the ministry, the efficient safeguarding of the interests of Hungarian applicants, the provision of information services (network of info points) and the support of the preparation of bids (e.g. EUB, eContent bids) – primarily by SMEs.

E.17 Közháló ("PublicNet")

The contract for the "Közháló" program expires at the end of 2006. Simultaneously with program completion, the following are necessary:

– summarise the experience gained in the course of the development of sub-networks,
– examine the possibilities of program extension/continuation,
– take into account the possibilities of synergic cooperation between the EKG and Közháló programs,
– finalise the system for the financing and monitoring of the program after 2006,
– estimate the costs of the continuous provision of the services offered free of charge until 2006 in the framework of the program

– Review the needs and opportunities for the secondary utilisation of the available capacities of the Közháló[39] and summarise the experience of the Közháló – with an eye to laying the foundation for future demand aggregation programs

E.18 Tax concessions

Tax concession for broadband infrastructure development. The development of the broadband infrastructure is supported by the Hungarian state through a 50 percent company tax concession (see Article 22/B of the Company and Dividend Tax Act; Act 81 of 1996). This tax concession is available to telecom companies whose expected profit exceeds HUF 50 million and whose completed projects have a budget exceeding HUF 100 million[40].

We expect that the tax concession after infrastructure development will remain in 2005-2006. For 2006 the conditions of eligibility may have to be relaxed. This would primarily mean the extension of availability to broadband infrastructure projects with a budget less than HUF 100 million.

Sulinet Expressz. The relatively low income of Hungary's population would also justify the subsidising of the purchase of end user equipment. In the framework of the "Sulinet Expressz" program, a tax concession of HUF 60 thousand is currently available to people in lower income categories for the purchase of info-communication equipment. From the point of view of the spreading of broadband electronic communications it would be important to extend the coverage of the tax concession to broadband Internet subscriptions from 2006.

Employees' PC program. The Employees' PC program also offers tax concessions after equipment transfers between the employer and the employee – to support the development of the information society. The most important program elements are the following:

– from 2003, companies can write off the value of IT equipment (whether purchased, rented or leased);
– the employer has to pay neither personal income tax nor social security contribution if it provides employees with computers and Internet access for home use – moreover, can transfer PCs more than two years old to employees without paying either tax or social security contribution after such transfers;
– the full value of computers and Internet access made available to employees for home use can be written off in one amount.

As for tax concessions, their more intensive use seems more important than the extension of their coverage. According to the results of the empirical survey, the majority (87%) of households that bought computers and Internet subscriptions did not take any concession or subsidy. The majority of households that did use these opportunities purchased their info-communication equipment in the framework of the "Sulinet Expressz" program.

Subsidies and tax concessions used for the purchase of the first PC – breakdown by time of purchase (Base: those who bought their first computer)

Was any kind of discount or support used?	How long they have had a computer					Total
	0 to 1 year	2 to 4 year	5 to 7 year	8+ year	dones not knoww/ will not reply	
Tax discount (Sulinet Express)	24%	4,5%	1,4%	3,7%	5,3%	7,2%
Purchasing loan	6,9%	6,3%	2,8%	2,2%	0,0%	4,5%
Employer PC program	0,0%	1,1%	0,0%	0,0%	0,0%	0,3%
Other discount or support	2,3%	1,1%	2,5%	0,0%	0,0%	0,3%
Did not use any discount or support	66,8%	87,1%	93,3%	94,0%	94,7%	86,5%
Total:	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Base (thousand households)	217	379	282	268	19	1165

Source: "NSZS 2005" residential survey (Ariosz Kft.)

[39] Entel Kft (2004): Feasibility Study for the Secondary Utilisation of the Közháló during Low-Usage Periods

[40] Detailed conditions of the taking of tax concessions are described in Government Decree 275/2003 (24 December).

According to the survey results, the Employee PC program, which also offers Internet subscriptions at discounted prices, has not operated very successfully: very few customers seized the opportunity. This is strange especially in the light of the fact that the program offers significant savings:

– a gross wage of HUF 10 000 costs HUF 13 350 to the employer – and the employee gets HUF 4 850.
– a home Internet with a value of HUF 10 000 Ft costs HUF 10 000 to the employer – and the employee, in return, loses a net income of less than HUF 5000.

The said moderate enthusiasm is likely to be due to the limited awareness about this possibility and the relative complexity of the transaction: in general, expectations for state subsidies are the highest in direct subsidies.

What should the state do to make residential Internet usage more widespread?
(frequency of mentions of the three most popular means, in percentage)

How could the state support the spreading of residential Internet use?	Personal segment of the head of the household				
	I. Broadband at home	II. Narrowband at home	III. PC at home Internet elsewhere	IV. PC and Internet elsewhere	Total
	Frequency of mentioning				
Directly subsidize Internet users!	72,9%	78,7%	86,3%	88,2%	79,8%
Subsidize ISP-s!	29,5%	34,8%	25,6%	44,5%	33,0%
Leverage its option to regulate prices!	50,7%	39,3%	48,1%	41,6%	44,9%
Liven competition between ISP-s!	57,8%	53,6%	48,8%	26,3%	49,6%
Show a good example in using the Internet!	13,4%	12,8%	15,0%	13,2%	13,5%
Provide a positive vision!	14,5%	15,2%	16,9%	12,4%	14,8%
Promote the Internet!	22,4%	17,9%	20,0%	24,1%	20,7%
Support Internet training!	31,7%	38,5%	37,5%	40,9%	36,6%
It's better if it doesn't do anything.	1,1%	3,4%	0,0%	0,0%	1,5%

Source: "NSZS 2005" residential survey (Ariosz Kft.)

An important task to support the spreading of broadband Internet is to popularise the tax concessions available after Internet subscriptions and to raise awareness about the actual amounts that can be saved.

Besides, currently available concessions should be supplemented with a temporary, degressive price subsidy for the residential sector – until the gross monthly fees of broadband Internet reach the HUF 5-6,000 limit, where demand would be boosted. The table that follows presents an assumed scenario for the same, with the following assumptions:

– average annual price decrease (w/o tax concessions): 15%
– the discount is 20 percent in 2006, 10 percent in 2007 and 0 percent in 2008.
– the ceiling of the monthly discount is HUF 1,500 in 2006 and HUF 1,000 in 2007.

Assumed impacts of a direct, degressive tax concession
on the gross monthly fees of broadband connections

	2005	2006	2007	2008	2009
Without discount	7650	6502	5527	4698	3993
With discount	7650	5202	4974	4698	3993
Discount amount	0%	20%	10%	0%	0%

E.19 Support the development of e-administration

The networking and electronisation of public administration processes play a key role in achieving the positive effects of the development of the broadband infrastructure. Due to the sluggishness of coordination in state administration and bottlenecks in financing, e-administration developments have so far brought partial success. The current situation is characterised by isolated developments (operating modules of eMagyarország.hu) and the expansion of the base infrastructure (EKG). The following are the most important tasks for the near future:

– integration, authentication, e-signatures, access by citizens (2005-2006)
– establishment of institutional subsystems, regional developments (2007-2008)
– spreading of modern e-services (2009-)

"Cornerstones" of e-administration

Ensuring **technical preconditions**	Establishing the technical and communication preconditions of public utility services, ensuring the credibility of stakeholders and communication between the public, business, and private sector (electronic signature).
Ensuring **regulatory preconditions**	Creation of state administration and public administration processes.
Establishing **international relationships**	Ensuring compliance with international expectations and obligations (implementation of EU gate, access to standards and laws, international connection interface)
Moderator activity	Providing for tasks related to the introduction, development and promotion of services. Integration of existing services, coordination between sectors, development of Human Resources, and awareness promotion.
Creation of system **of guarantees**	Providing for official and supervisory functions with the objective of developing the trust of users, and guarantees that services comply with current laws.
Organization of **social control**	Ensuring the opportunity for social control and feedback. Developing the system for representation of interest of professional and scientific organizations, service providers and users.

Source: EKK

As a result of planned developments, a uniform government communication platform could be established which could significantly support the achievement of the objectives set in the Public Administration Procedures Act and which would make public administration processes more efficient and transparent

– in the relationship between offices and clients,
– within offices and
– between offices.

The target audience of e-administration services includes al Hungarian and foreign citizens and their organisations who/which have the right to initiate official administration activities with electronic support and, in the course of such activities, need help. At the same time, e-administration can also be used to handle the communication between state bodies and their services provided for one another.

In other words, e-administration would provide all users with a uniform and standardised connection and communication platform – the possibility for authentic communication.

If the development of e-administration does not become a key program in the 2007-2013 development period, major information society bottlenecks will form in this area. Practically, the backwardness of the public sector compared to the private sector in modernisation would be reproduced in the online world. Based on these, the consistent implementation of e-administration development projects is an important precondition of the success of broadband programs. The elaboration of detailed program plans for the same is an urgent task that is beyond the boundaries of the broadband strategy. Our position is that **e-administration** (including central public administration and local governments and

the operation of municipalities) should be **positioned as a key central program within the National Development Plan**, implementation and the efficient use of available resources being the responsibility of a carefully selected final beneficiary (agency).

Simultaneously with e-administration developments the implementation of the „information infrastructure" is also worth considering. This means the identification of that part of the national information resources which is constantly available, continuously developed and available to anyone and making this part available to the public. The main advantage of the information infrastructure would be that it could make available the services and contents produced and maintained from state (institutional and tender) resources, in an integrated way, to a large group of users.

E.20 Support e-business development projects for SMEs

The first tender for the development of e-commerce was in a PHARE program in March 2004, under the title "E-commerce for competitive SMEs" ("E-kereskedelem a versenyképes kis- és középvállalkozásokért"; program code: "Europe Aid /115602/D/SV/HU"), for small and medium-size enterprises[41] . The program is funded jointly by the Ministry of Economics and Transport and the EU's PHARE Pre-Accession Fund, with a total subsidy amount of nearly three and a half million EUROs (app. HUF 900 million)[42] . The program was managed by MVf Kht. (Magyar Vállalkozásfejlesztési Kht.). The purpose of the program was to provide training and consultation projects to support SMEs in the wide use of e-commerce means. The implementation of the program, jointly financed by the Hungarian state and the EU, started in May 2004.

Priority 4.1 of the GVOP (Gazdasági Versenyképességi Operatív Program; "Economic Competitiveness Operational Programme") offered an opportunity to support developments related to e-economy (development of e-economy, encouragement of e-commerce). According to the experience of the tenders, intra-company IT developments – especially ERP systems – are far more popular and timely (4.1.1) than e-commerce developments that support information flows between companies and their customers (4.1.2).

GVOP 4.4.1 tender: partial results; number of bids and their HUF values (as registered by IT Kht, as of end of 2004)

GVOP priority code	Name of GVOP priority	Number of bids submitted and recorded by management body	HUF value of requested subsidies in bids submitted and recorded by management body (billion HUF)	Number of subsidy amounts granted for bids approved by the end of 2004	HUF value of subsidy amounts granted for bids approved by the end of 2004	Total subsidy available: maximum budget available between 2004 and 2006 (billion HUF)
GVOP-4.1.1	Support of intra company electronic business systems	286	5,29	60	1,16	5,3
GVOP-4.1.2	Development of e-business between business partners	39	1,24	2	0,04	3,54
4.1. components, total		**325**	**6,53**	**62**	**1,2**	**8,84**

Source: homepage of IT Kht, 28 December 2004

[41] E-com: E-kereskedelem a versenyképes kis- és középvállalkozásokért.
Forrás: http://www.gkm.hu/dokk/binary/43/44/43/e_com_2004_10_18_ismertet_anyag.pdf

[42] Source: "Does e-Commerce Receive Sufficient Support?" ("Támogatott e-kereskedelem"), Világgazdaság, 11 November 2004

During the 2007-2013 development period, the justifiability and successfulness of programs supporting e-commerce developments may increase. However, a precondition of that is – in line with the strategy objectives – the broadband penetration of households should significantly increase and for online business transactions to become more attractive due to the increasing potential demand.

The spreading of e-business applications would also be greatly supported by handling information society development as a horizontal priority in the evaluation of bids.

E.21 Support e-culture programs

As regards public digital cultural contents, two initiatives deserve special attention: the National Digital Archives (NDA) and the National Audiovisual Archives (NAVA) projects.

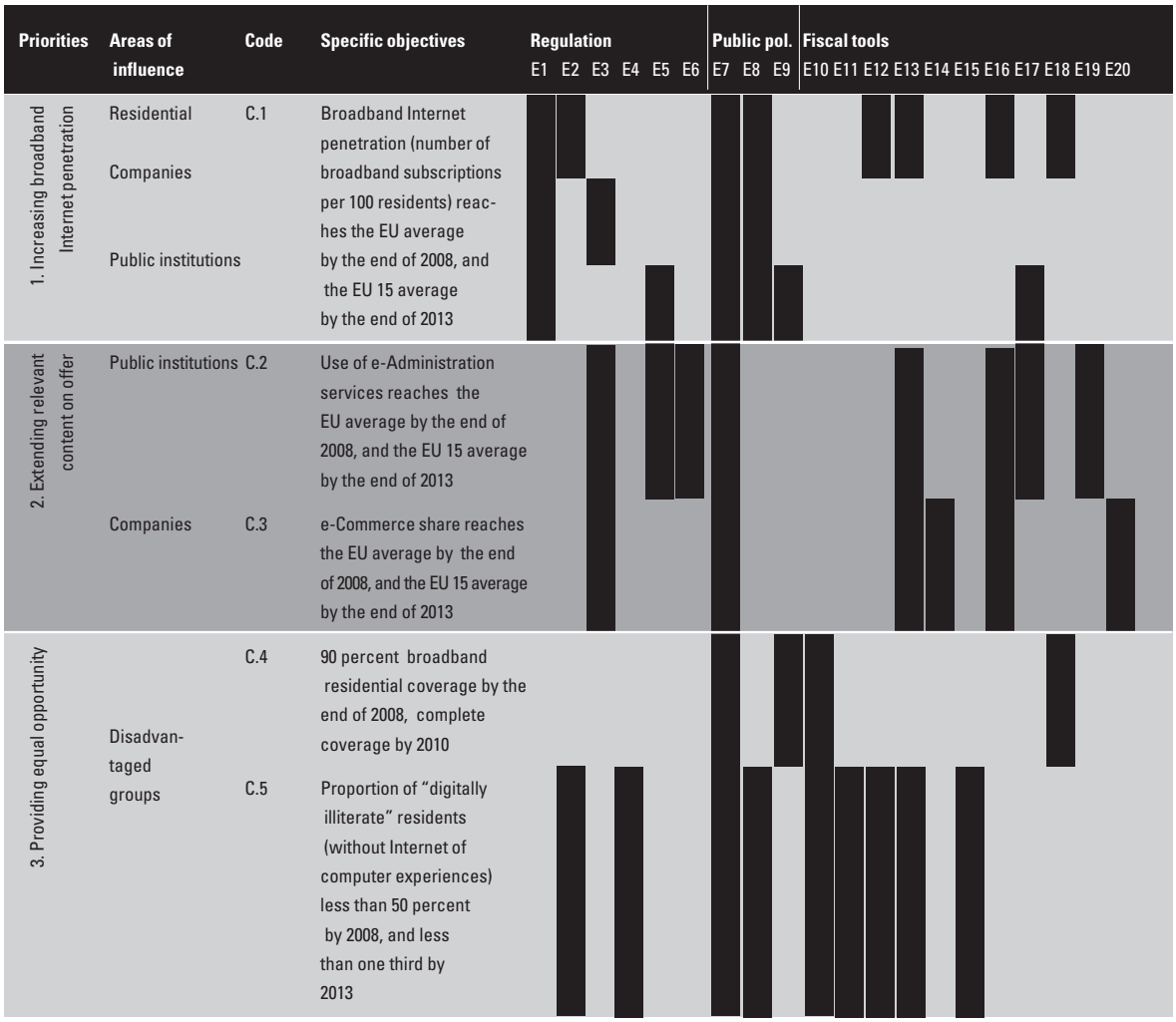
NDA. The NDA, established in 2004, is a place where digitised Hungarian content is collected. Its purpose is to make Hungarian cultural content and other digital contents with public interest available to the largest possible number of users through a uniform, decentralised infrastructure, in a cost efficient manner. Information on the contents and formal aspects of Hungarian documents is also available in the English language. The first contents of the system were taken from the digitised documents of institutions supported in tenders launched by the Ministry of IT and Communications. On its platform, digitised data about the following institutions are available: Országos Széchényi Könyvtár, Magyar Távirati Iroda Rt., Magyar Mozgókép Közalapítvány, Magyar Rádió Rt., Budapesti Holokauszt Emlékközpont, Neumann-ház and the Budapest Music Centre. On this rich cultural content, value-added services are built, connecting different types of institutions: e.g. publishers and libraries ca communicate, public library and other multimedia services are integrated for the public (e.g. for e-learning).

NAVA. The National Audiovisual Archives, a virtual library of Hungarian television and radio programs, was established in an Act of Parliament, with government support. The Archives will start to operate in January 2006. The key objective of the NAVA is to preserve, digitise and publish the audiovisual heritage recorded by televisions and radios.

The NAVA and the NDA play an important role in supporting the cohesion impacts of broadband developments. For this reason, it is worthwhile to examine if the two programs can be integrated into the Second National Development Plan (NFT II; coverage: 2007-2013).

6.5 INTERRELATIONS BETWEEN STRATEGIC OBJECTIVES AND MEASURES

When examining the interrelations between strategic objectives and measures, attention is paid to primary impacts. The matching of objectives and measures is important primarily for program monitoring purposes and the selection of different indicators and enables the estimation of the contribution of individual activities to the implementation of strategic objectives.



Codes of measures

Regulatory measures

E.1 Ex ante competition regulation
E.2 Management of scarce resources
E.3 IT regulation
E.4 convergence regulation
E.5 Public Administration Procedures Act
E.6 Freedom of information act

Public policy measures

E.7 Strategy compilation, orientation
E.8 Targeted information campaigns
E.9 demand aggregation

Fiscal measures

E.10 Support the deployment of the broadband infrastructure in villages and small towns
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in public education
E.13 Support the development of innovative broadband technologies and applications
E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority

E.15 Tailored education and access programs for disadvantaged groups
E.16 Support participation in central EU programs
E.17 Közháló ("PublicNet")
E.18 Tax concessions
E.19 Support the development of e-administration
E.20 Support e-business development projects for SMEs
E.21 Support e-culture programs

6.6 PROGRAM PROPOSALS FOR THE SECOND NATIONAL DEVELOPMENT PLAN ("NFT II")

One of the success criteria of this strategy is for it to make reasonable and programmable proposals for the "NFT II", which determines the areas of development for the period between 2007-2013. The compilation of specific programs means the assessment of which of the proposed measures may potentially receive EU co-financing. According to the currently available information, the following measures of support may potentially be integrated into the "NFT II":

E.10 Support the deployment of the broadband infrastructure in villages and small towns
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in public education
E.13 Support the development of innovative broadband technologies and applications
E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority
E.15 Tailored education and access programs for disadvantaged groups
E.19 Support the development of e-administration
E.20 Support e-business development projects for SMEs
E.21 Support e-culture programs

The recommended measures can be placed in three different groups

1. Programs directly relevant to broadband electronic communications

E.10 Support the deployment of the broadband infrastructure in villages and small towns
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in public education
E.13 Support the development of innovative broadband technologies and applications
E.15 Tailored education and access programs for disadvantaged groups

2. Programs focusing on content development and considered necessary for the achievement of the positive social-economic impacts of broadband electronic communications

E.19 Support the development of e-administration
E.20 Support e-business development projects for SMEs
E.21 Support e-culture programs

3. E.14 Integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority

In the rest of this document, the measures belonging to the first group will be referred to with the term "BROADBAND INFRASTRUCTURE program". From the point of view of the compilation of the Second National Development Plan ("NFT II"), this refers to the measures listed under section 1 and, in a broader sense, includes the recommended public policy and fiscal measures which, as things are at the moment, will not receive EU co-financing:

E.7 Strategy compilation, orientation
E.8 Targeted information campaigns
E.9 Demand aggregation
E.16 Support participation in central EU programs
E.17 Közháló ("PublicNet")
E.18 Tax concessions.

Program proposals for the Second National Development Plan ("NFT II"; 2007-2013)

BROADBAND PUBLIC UTILITY	e-ADMINISTRATION	e-BUSINESS	e-CULTURE

Enforcement of development considerations of the information society as horizontal priorities within the National Development Plan programs for 2007 to 2013

The programs proposed to be included in the Second National Development Plan ("NFT II") may appear in a variety of forms in the 2007-2013 development period. Presumably, for the majority of support types resources will be provided by the Structural Funds. However, in the case of certain fiscal measures, the Cohesion Funds (infrastructure deployment) and the Social Fund (digital inclusion) may also play an important role. Another differentiating factor is whether the different types of support are granted in the form of a central program or in a tender. Central programs seem practical in e-administration and e-culture development projects. From the point of view of the method of implementation, a differentiating factor is whether the proposed subsidy is made available in an operative program or at the level of a priority, under central or local (regional) coordination.

As planning is currently in its infancy, there are uncertainties in these areas. It is important to emphasises, however, that the compilation of programs for the above measures should be independent of the actual form of implementation and the body which is responsible for the same.

The two chapters that follow provide starting points for the programming of the implementation of the BROADBAND INFRASTRUCTURE (what can be integrated into the National Development Plan and implemented from national financing). The elaboration of the necessary content development programs must be given priority during the rolling planning of the Strategic Implementation Program of the Hungarian Information Society Strategy ("SVP; MITS").

7. System of Institutions, Monitoring

7.1 INSTITUTION DEVELOPMENT – ASPECTS

According to the results of examinations of the international system of institutions, the success of broadband development policies is primarily determined not by the actual institutions that manage their implementation but by the extent to which these institutions meet the following general criteria:

1. Dedication
To what extent can the given system of institutions make the development of the information society a key government, economic and social priority?

2. Mandate
Has the given organisation been given a clear, irrevocable and undisputable mandate by the highest decision making circles for strategy compilation and program development?

3. Coordination
How efficient is coordination
– between state bodies responsible for the implementation of the development policy and
– between strategy makers, business organisations, regions and the civil sector?

4. Planning and programming practices
– how capable are the said institutions of planning, programming and implementing the objectives set, of monitoring implementation and providing feedback?
– How strong is the organisation in enforcing its interests against other (Hungarian or international) players that want to lay their hands on the same grants?

5. Thorough knowledge of the strategic area
– How up-to-date and relevant is the information about the given strategic area and the problems and needs of the affected economic and social players?

To meet the above challenges, several countries have assembled bodies responsible for broadband electronic communications. Examples include:

England: Broadband Stake Holder Group, Broadband Task Force
Canada: Broadband Task Force
Italy: Task Force on Broadband Communication
Holland: Broadband Expert Group, Broadband Foundation

7.2 PROPOSAL FOR THE ASSEMBLY OF A BROADBAND TASK FORCE

Due to the extreme importance of broadband developments from the point of view of competitiveness and the society and taking into account the importance of the 2005-2006 planning and programming activities ("NFT II"), it seems practical to establish a strong organisational and coordination background to support broadband development efforts, in line with the above criteria.

We, therefore, propose that a "Broadband Task Force" be assembled in a government decree – either as a unit of an existing institution or as an independent body (foundation, agency, etc.). The Task Force could be established as an initiative of the Ministry of IT and Communications, using the assistance of the National Communications Authority and service providers. Important expectations

regarding its operation are that it should be operative, cost efficient and public. Independently of the actual institution where it is implemented and its members, the Task Force could contribute to the successful implementation of the strategy in the following areas:

– Supply of broadband-specific information, training courses, consultation and communication for SMEs, the Government, public institutions and the population
– Research into broadband-specific technological, social and economic aspects
– Identification of broadband-specific regulatory needs
– Operation of a broadband-specific market information system (price, coverage, competition, service supply, etc.)
– Compilation of annual reports about broadband electronic communications (starting point for strategy updating)
– Updating of the broadband strategy
– Coordination of demand aggregation programs
– Capacity and demand analysis for the implementation of programs
– Inclusion of economic, social and regional players in the preparation of decisions
– Coordination of PPP-based state-market initiatives aiming at the spreading of broadband communication
– Participation in the professional planning of development programs
– Evaluation of the successfulness of the strategy and development programs, their monitoring and feedback.

We must note that some of the above Task Force activities are already in place (e.g. broadband communication campaign, Broadband Day, broadband portal, etc.) in the form of coordination within the Ministry of IT and Communications and its "spontaneous" coordination with the National Communications Authority. These positive initiatives, however, cannot replace the Task Force, which would formally be made responsible for broadband development, with a powerful mandate and operating under stringent rules: the said current coordination is based on the personal conviction and commitment of a handful of public servants.

7.3 MONITORING

The monitoring system is used to monitor the achievement of strategic objectives and the implementation of development programs.

The most important input data required for the monitoring of the achievement of strategic objectives must be supplied by the MITS monitoring system (national data, international indicators for comparisons). These have to be supplemented with the findings of the targeted surveys carried out by the Broadband Task Force. The table that follows summarises the main indicators related to the individual strategic objectives, specifying for each indicator if EU data is necessary.

"NSZS 2005": key monitoring indicators

Priorities	Areas of influence	Code	Specific objectives	Networking indicators	HU	EU	EU15
1. Increasing broadband Internet penetration	Residential Companies Public institutions	C.1	Broadband Internet penetration (number of broadband subscriptions per 100 residents) reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	Number of broadband subscriptions per 100 residents	X	X	X
2. Extending relevant content on offer	Public institutions	C.2	Use of e-Administration services reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	The proportion of residents seeking information on a governmental page	X	X	X
				The proportion of residents downloading a form from the governmental page	X	X	X
				The proportion of residents submitting a form via the governmental page	X	X	X
	Companies	C.3	e-Commerce share reaches the EU average by the end of 2008, and the EU 15 average by the end of 2013	The proportion of persons (residents) who have purchased products/services via the Internet (during the past 3 months).	X	X	X
3. Providing equal opportunity	Disadvantaged groups	C.4	90 percent broadband residential coverage by the end of 2008, complete coverage by 2010	Proportion of residents receiving broadband service (who have the opportunity to subscribe at a price more accessible than the average market price)	X		
		C.5	Proportion of "digitally illiterate" residents (without Internet of computer experiences) less than 50 percent by 2008, and less than one third by 2013	Proportion of digital illiterates (without Internet of computer experiences) within the population as a whole.	X		

The above table shows that the monitoring system uses a small number of indicators. This is because of the desire, currently also common within the EU, to describe the targeted situation with the lowest number of objectives/target figures. Behind this is the assumption that in case the key indicators change to the extent outlined in the strategy, the positive economic and social impacts of broadband electronic communications will be experienced – in the opposite case, these positive processes will lose their impetus.

To understand the processes that affect the changes of the key monitoring indicators the monitoring of the

– annual broadband report (i.e. the updating of the situation analysis of this strategy by pillars) and
– the development programs
– is necessary.

The monitoring of development programs is especially important in the case of grants that are part of the Second National Development Plan ("NFT II"). The institutions responsible for the same have not yet been selected. From 2007, the operation of the program-monitoring system will be the responsibility of the organisation that takes the role of controlling authority.

However, it would be practical if the proposal for the monitoring system of subsidy programs were included in the strategic document that lays the foundation for professional planning. In line with EU practice, we will make recommendations for the "output", "effect" and "result" indicators of the Broadband Infrastructure programs proposed to be part of the Second National Development Plan ("NFT II"):

Broadband Infrastructure Program – recommended indicators for the Second National Development Plan ("NFT II")

"Broadband public utility" support programs in the 2nd **National Development Plan**	**INDICATORS** **Output**	**Impact**	**Result**
E.10 Support of the construction of broadband infrastructure in villages and small settlements	number of supported projects	increase of broadband coverage in relevant settlements	increase of broadband internet penetration in small settlements
E.11 Installation of community access points in villages and small settlements	number of relevant settlements	households serviced by community access points	growth of broadband Internet use, decrease of digital illiteracy in small settlements
E.12 Broadband infrastructure development support in public education	number of supported education institutions	number of regular users of broadband school infrastructure	growing broadband Internet penetration and use in families with children
E.13 Support of innovative broadb and technology and application development	number of projects supported	development results put to commercial use	growing broadband penetration and use
E.15 Targeted training and access programs for disadvantaged groups	number of relevant persons and households	persons learning Internet and/or computer skills	decrease of digital illiteracy

Of the program monitoring indicators, the output and effect indicators measure the success of applications and resource allocation and the direct effects. Coordination with the objectives of the 2005 National Broadband Strategy ("NSZS 2005") will be manifested in the calculation of long-term impacts, in the result indicators[43].

[43] CEC (2000): The new programming period 2000-2006. Methodological Working Papers. Indicators for Monitoring and Evaluation: An indicative methodology, nr.3

8. Financial Planning

8.1 METHODOLOGY – INTRODUCTION

Financial planning does not use a top-down approach (starting point being the resources expected to be available) but a bottom-up one (starting point being the estimated resource needs of the recommended measures).

The strategy estimates financial needs for the costs of the subsidy measures recommended as part of the Broadband Infrastructure program and the costs of the recommended public policy measures:

Elements of the Broadband Infrastructure program

Fiscal measures

E.10 Support the deployment of the broadband infrastructure in villages and small towns
E.11 Support the installation of community access points in villages and small towns
E.12 Support the deployment of the broadband infrastructure in public education
E.13 Support the development of innovative broadband technologies and applications
E.15 Tailored education and access programs for disadvantaged groups
E.16 Support participation in central EU programs
E.17 Közháló ("PublicNet")
E.18 Tax concessions

Recommended public policy measures

E.7 Strategy compilation, orientation
E.8 Targeted information campaigns
E.9 Demand aggregation

Financial programming does not cover the programs recommended for the development of content (e-administration, e-business, e-culture) as these areas are outside the scope of the broadband strategy. The integration of the relevant information society aspects into the Second National Development Plan ("NFT II") as a horizontal priority (E.14) will neither be estimated as resources will be used in different tenders and will not always be clearly separated.

The indicative costs of the recommended public policy measures are listed in the table under the Broadband Task Force, details about the resource needs of the different objectives are found at "Notes" on the table.

Financial needs are estimated for two periods:

– the 2006 budget year,
– the 2007-2013 development period.

The methods used to estimate the resource needs of the different programs are described in the "Notes" field after the indicative financial table.

8.2 INDICATIVE FINANCIAL TABLE

Broadband Infrastructure Program: estimated resource needs of the fiscal and public policy_measures; 2006 and 2007–2013 (data in million HUF)

	2006	2007–2013
E.10 Support the deployment of the broadband infrastructure in villages and small towns	3100	45 000
E.11 Support the installation of community access points in villages and small towns	Development (HUF 1200 million) will be covered by the Közháló program (E.17). Annual maintenance costs will amount to HUF 700 million and will be aid from the state budget.	As part of subsidies granted for infrastructure deployment in villages and small towns (E.10)
E.12 Support the deployment of the broadband infrastructure in public education	As part of the "Közháló" ("PublicNet"; E.17) program	210 000
E.13 Support the development of innovative broadband technologies and applications	225	28 000
E.15 Tailored education and access programs for disadvantaged groups	500	7000
E.16 Support participation in central EU programs	370	Not part of the Second National Development Plan ("NFT II")
E.17 "Közháló" ("PublicNet")	7 200	
E.18 Tax concessions	5 100	
Of these:		
Tax concession after infrastructure deployment	4 250	
Employees' PC program	850	
Direct consumer subsidies after residential Internet subscriptions	12 500	
Broadband Task Force (E7., E8., E9)	850	
Increase in the overhead expenses of the ministry of IT and Communications due to the planning activities of the Second National Development Plan ("NFT II")	350	
Total::	**30 895**	**290 000**

8.3 NOTES ON THE INDICATIVE FINANCIAL TABLE

8.3.1 Notes on individual programs

E.10 Support the deployment of the broadband infrastructure in villages and small towns

For the year 2006 the pro-rated parts of the GVOP 4.4.1 and 4.4.2 tender budgets are allocated:

– The total grant available in the 2004-2006 period is HUF 9 billion
– Total grants allocated so far: HUF 1.3 billion
– The total grant available in 2005-2006 is HUF 6.3 billion (GVOP 4.4.1: HUF 1.6 billion, GVOP 4.4.2: HUF 4.7 billion)
– The pro-rated part (50%) of the above amount was used as the basis for estimation.

The data for the 2007-2013 period was based on estimates provided by service providers, coverage data from the IHM HHÁT-2 tender and the coverage analysis of the situation analysis. In spite of the major technological, market and statistical uncertainties, the data is a reliable estimate of the costs of achieving full broadband coverage.

E.11 Support the installation of community access points in villages and small towns

The costs of installation of eHungary points are included in the "Közháló" budget in 2006 and under the costs of development policy measures (E.10) in 2007-2013. In 2006, the costs of operation and maintenance of eHungary points will amount to app. HUF 700 million.

E.12 Support the deployment of the broadband infrastructure in public education

In 2006, the costs of the program will be covered by the "Közháló" project.

The estimates for the 2007-2013 period are based on the budgeting data of the "Intelligent School" program (proposed by the Ministry of Education and in line with E12) and also include the EU resources available for the development of the NIIF.

E.13 Support the development of innovative broadband technologies and applications

The starting points for the estimate were the tenders launched under the "GVOP 3" priority:

– GVOP-2004-3.1.1. Applied Research – Development Program ("AKF")
– GVOP-2004-3.2.1. Development of the Research Infrastructure of Research Sites Operated from Public Funds and by Non-profit Organisations ("KMA")
– GVOP-2004-3.2.2. Support for the Establishment of Partnerships and Networks supporting Cooperative Research and Technology Transfer Between Institutes of Higher Education and Companies ("KKK")
– GVOP-2004-3.3.1. Support of the Innovation Efforts of Starting Technology and Know-how Intensive Micro-enterprises and So-called Spin-off Enterprises ("TST")
– GVOP-2004-3.3.2. Development of corporate Research Infrastructures Connected to the Creation of New Research Jobs ("INFRA")
– GVOP-2004-3.3.3 Support of Corporate Innovation ("SME")

Based on data available from the "EMIR" and expert estimates, about 15% of the total subsidies granted in 2004 under the "GVOP 3" priority (HUF 4-4,500 million out of HUF 28 742 million) was related to the development of info-communication technologies and applications.

The 2006 estimate used 15% of the pro-rated part of the tender budgets still open in the year 2005 (3.3.1, 3.3.2, 3.3.3).

For the 2007-2013 period a framework amount of HUF 4 billion per annum was calculated (based on the results of tenders in 2004).

E.15 Tailored education and access programs for disadvantaged groups

In 2002-2004, the Ministry of IT and Communications spent app. HUF 1.5 billion on the inclusion of disadvantaged groups.

For the year 2006 an average annual value was used, based on the results of the 2002-2004 period

The estimate of resource needs for 2007-2013 indicates the increasing importance of the area.

E.16 Support participation in central EU programs

For the year 2006 two cost types were taken into account for such measures:

– The costs of a subsidy program similar to the "IHM ITP 6" tender ("eTartalom" program to support successful participation in the "eContent" program) (HUF 300 million)
– Support of non-profit organisations (Matisz, MTE, Inforum) in their participation in the EU Safer Internet Plus program (HUF 30 million)
– The costs of international communication and representation of the eContent, the Research & Development Framework Program (FP6) and the eTen tender (HUF 40 million).

E.17 Közháló ("PublicNet")

The resources available for the implementation of the "Közháló" project will be used as follows:

– 2004: HUF 6800 million
– 2005: HUF 7200 million
– 2006: HUF 7200 million.

The amount set out in the table (HUF 7.2 billion) excludes additional costs related to the continuation and monitoring of the "Közháló" project.

E.18 Tax concessions

The development of the broadband infrastructure is supported by the Hungarian state through a 50 percent company tax concession (see Article 22/B of the Company and Dividend Tax Act; Act 81 of 1996). This tax concession is available to telecom companies whose expected profit exceeds HUF 50 million and whose completed projects have a budget exceeding HUF 100 million.

The impacts of the tax concessions after such projects on the state budget can be estimated very roughly only. This uncertainty is due to uncertainty of the volume of such projects, the fact that the current HUF 100 million minimum limit is proposed to be lowered and that a lot depends on the profits made by the companies managing such projects. Based on these, the amount included in the table is the annual average amount of the tax concessions available in 2003-2004 plus 25 percent.

Of other tax concessions, we took into account the tax and social security cancellations after Internet subscriptions given to employees as fringe benefits in the framework of the "Employee PC program". The calculations were built on the subscriber number in 2006 (as included in the target based vision) and followed the logic that the concessions/allowances are used by 2% of the subscribers, at a gross monthly fee of HUF 5,000 (broadband and narrowband combined) and the same average tax burdens.

When estimating the costs of the tax concessions on the user side, the decreasing residential tax concessions after Internet usage were taken into account as a new tax concession. According to preliminary calculations, the 20% tax concession available to end users (valid in the first year, i.e. 2006, as described under "E.18") would result in a total state tax loss of some HUF 9 billion after broadband subscribers and HUF 12-13 billion after the total Internet user population.

The Broadband Task Force (E7., E8., E9)

The estimated resource needs of the public policy measures of the Broadband Infrastructure program (strategy compilation, orientation, targeted information campaigns, demand aggregation) are stated in the indicative financial table under the Broadband Task Force. The majority of the stated resource needs will be for the PPP-based information campaigns. Based on service provider estimates and international experience, the annual cost of a targeted information campaign with continuous media presence is around HUF 1.5-2 billion. With a successful PPP-based program, about one quarter of this would be paid by the state. The amount over and above the cost of the information campaign is for the financing of demand aggregation initiatives and the other tasks of the Broadband Task Force (as described in detail in Section 7.1).

Additional costs of operation of the Ministry of IT and Communications arising because of the planning of the Second National Development Plan ("NFT II")

In 2006, the operating costs of the Ministry of IT and Communications will increase because of the planning of the information society programs of the Second National Development Plan ("NFT II"). This means tasks whose resource needs should be taken into account in the course of the preparation of the 2006 budgeting process.

8.3.2 Summary notes

Based on the indicative financial table, the most important conclusions are as follows.

2006

- In the 2006 fiscal year, some HUF 30 000 million will be needed to finance the Broadband Infrastructure Program.
- Of this amount, due to different allocations (Közháló, GVOP programs) some HUF 10-11,000 million will be available partly from the budget of the Ministry of IT and Communications and partly from the budget of the 2004-2006 National Development Plan (NFT I).
- The estimated resource need of currently available tax concessions is around HUF 5,000 million.
- According to preliminary calculations, the proposed 20 percent tax concession after Internet subscriptions would result in a further tax revenue loss of about HUF 12-13 billion in 2006.
- According to the indicative financial table, another app. HUF 2,000 million is needed to finance development policy measures in the following main areas:
  - Programs aimed at digital inclusion
  - Tenders to support successful participation in info-communication EU tenders
  - Finance PPP-based information campaigns
  - Finance other public policy measures that support the spreading of broadband electronic communications (Broadband Task Force)
  - Additional overhead expenses incurred by the Ministry of IT and Communications due to the planning activities of the Second National Development Plan ("NFT II").

2007-2013

For the 2007-2013 development phase, the „Broadband Infrastructure" program focuses on the following areas:

- Infrastructure deployment
- innovation
- public education
- digital inclusion

For the seven-year period between 2007-2013, the estimated resource need of the proposed programs amounts to HUF 290 billion. This amount includes the private, EU and state resources expected to be available.

According to preliminary calculations, the resource needs of the measures required to support the spreading of broadband electronic communications are the highest in public education. The „Intelligent School" Program takes away over 70 percent of the funds required for the Broadband Infrastructure Development Program. This fact indicates that the planned developments cover a long period in the future.

9. The Strategy: Consistence and Coherence

9.1 CONSISTENCE OF THE STRATEGY

9.1.1 Consistence with EU Strategies

The examination of the strategy's consistence means the examination of whether it is in line with EU and national strategic objectives.

When examining the consistence of the broadband strategy, one must not forget that the member states' thematic strategies have been made at EU encouragement. In the eEurope 2005 Action Plan, launched in 2002, broadband developments are handled as a key priority and, since then, the importance of this area has grown according to evaluations (Kok Report, PwC Study, revision of the Lisbon goals, etc.).

The primary reason for this is that the development of the information society is a key area for the EU's competitiveness objectives. This is true for the 2000 Lisbon goals, their revision and the EU's new information society strategy, which is currently being formulated [44].

The European Commission published its growth and job creation priorities for the member states at the same time when the 2005 National Broadband Strategy ("NSZS 2005") was finalised (February 2005), which are as follows:

1. Let Europe be a more attractive target area for investments and the creation of jobs
2. Support know-how and innovation to promote growth and competitiveness
3. More and better jobs.

The objective related to the development of the information society is under the second priority and primarily means the supporting of the spreading of info-communication applications.

Preliminary plans for the program planned to serve as the continuation of the eEurope 2005 (i2010) focus on the following areas:

1. border-free European information space
2. innovation and investments in the info-communication sector
3. inclusive information society to ensure equal opportunities in all areas

The preliminary main goals of the i2010 program are as follows:

1. high-end European info-communication and media sector
2. realisation of the wide range of advantages coming from the use of info-communication equipment in economy and in households.

The above statements show the basic features of the formulating EU strategic arena – in the light of the development of the information society. In line with the approach of the 2005 National Broadband Strategy, the focus is on the positive impacts of the production and use of the info-communication technology sector on competitiveness and cohesion. Broadband network communications is currently considered the most efficient means to achieve these positive impacts.

It is no coincidence that this strategy uses this assumption as its starting point (see Section 2.1: "The Importance of the Area") as this can be considered as the main "consistency criterion" identified by the European Union in broadband electronic communications. The member states have far greater freedom in the identification of the specific objectives and measures.

[44] Lisbon action plan incorporating EU Lisbon Programme and recommendations for actions to member states for inclusion in their national Lisbon Programmes (Companion document to the Communication to the Spring European Council 2005, COM(2005)24)

9.1.2 Consistence with the Second National Development Plan ("NFT II")

As for consistence between the broadband strategy and national programs, the most important aspect of the strategy is its alignment with and contribution to the finalisation of the Second National Development Plan. At the highest level, the development objectives for the period between 2007-2013 will be defined in the National Development Policy Concept ("OFK") prepared by the National Development Office ("NFH") and in the Competitiveness Strategy prepared by the Ministry of Economy and Transport ("GKM"). Both documents are being finalised now, thus, in the course of strategy compilation, we could only use the preliminary concepts and ideas as starting points. The proposed objectives, measures and expected impacts of the broadband strategy are aligned with the focus areas of the national development policy being formulated now.

The long-term objectives of the Second National Development Plan ("NFT II") – in line with the EU's aims – are as follows:

– Continuously improve the competitiveness of Hungarian economy
– Increase the rate of employment and the level of education
– improve the health of the country's population
– strengthen social cohesion
– improve physical and virtual access indicators
– protect natural resources and environmental values and achieve their sustainable utilisation

At present[45], the development of the knowledge-based information society is among key objectives under the objective „improve virtual access" and focuses on the following target areas[46].

I. Dynamic and interactive information society content and service development
   i. e-administration (e-government, e-local government, e-healthcare, e-education, e-working, e-environment, e-transport, etc.)
   ii. dynamic, online business environment (eBusiness)
   iii. digitisation to preserve values

II. Provide the basic infrastructure required by the information society and develop the same
   i. Build out and deploy a multi-layer, high-speed/broadband fixed-line and wireless information network infrastructure tailored to actual needs
   ii. Ensure the conditions of secure communication and data protection necessary for the use of the feats of the information society) for all citizens and organisations
   iii. Provide equipment, services, programs and data as "public utilities" from government or public administration sources

III. Development of info-communication technology competences
   i. Make digital literacy, required for the use of the services of the information society, general – e-Inclusion
   ii. Create the conditions of the education of world-leader info-communication experts, encourage international change of experience

IV. Utilisation of IT R&D and applications
   i. Participation in Hungarian and international research programs
   ii. Organise programs for the utilisation and quick practical application of Hungarian research results

[45] At the time of the compilation of this strategy, we are already familiar with the VIP position (i.e. that of the Prime Minister expressed during his visit to the Ministry of IT and Communications) that the best way to develop the information society would be in the framework of a comprehensive „modernisation program".

[46] Overview of the objectives and measures of the development policy, "Summary for the Development Policy Coordination Inter-ministerial Committee, 7 March 2005 (National Development Office, working paper)

iii. Create and develop active know-how networks covering the research, education and production sectors
iv. Support the establishment and development of industry know-how centre(s) and logistical centres

V. Support the creation of a better performing info-communication sector
i. Active incubation – integrate start-up companies into Hungarian and international information networks, provide them with the necessary technologies, establishment of industrial parks, consultation
ii. Stabilisation as a „medium company" – capital injection, creation of long-term loan types, consultation network, etc.
iii. Entrance into the international market – active support of the export of products and services, support of international presence, company relations, etc.

Of the five main focus areas of the 2007-2013 information society strategy, four are directly related to the programs of the broadband strategy: the „Broadband Infrastructure" is in line with the objectives listed under II., III and IV, the programs proposed for the development of relevant content (e-administration, e-business, e-culture) are in harmony with the objectives listed under Section I. The sector focus identified under Section V is not among the explicit objectives of the broadband strategy, the support of the production of info-communication equipment focuses on infrastructure and demand elements.

To ensure consistence with the Second National Development Plan ("NFT II"), alignment must be created between the Hungarian Information Society Strategy ("Magyar Információs Társadalom Stratégia"; MITS) and the 2005 National Broadband Strategy. This requirement becomes a specific task in the rolling planning of the Hungarian Information Society Strategy ("MITS") and in the implementation of the Strategic Implementation Program of the MITS. The objectives and methodology of the 2005 National Broadband Strategy enable it to serve as the foundation

for the updating and program definition of the broadband chapter of the Hungarian Information Society Strategy ("Broadband Infrastructure") and

– as a starting point for the identification of the **„content development focus points"** (e-administration, e-business, e-culture)

9.2 COHERENCE OF THE STRATEGY

To ensure the strategy's internal coherence, the highest emphasis was laid on the following, in accordance with the Government Requirements for Strategy Compilation ("Kormányzati Stratégiaalkotási Követelményrendszere"; "KSaK")[47].

– coherence between the situation analysis and the pillars defined in the strategy scheme (access, content, education, security, innovation)
– chapters on the alignment between the strategy scheme and the targeted hierarchy (5.2-5.4)
– presentation of alignment between the targeted hierarchy and the measures taken (Section 6.5)
– one-to-one matching between the targeted hierarchy and the monitoring indicators (Section 7.1)
– integration of the indicators of the programs into the monitoring system (Section 7.2)
– estimation of the costs of the proposed measures for the whole time schedule of the strategy (Section 8.2)
– presentation of methodology and aspects for the individual areas (sections 2.2, 3.1, 4.1, 5.1, 6.1, 8.1)

[47] A document on the definition of the uniform set of requirements for government strategy compilation and coordination (issued by the Prime Minister's Office, 2004)

When finalising the strategy, the conclusions of the "Consistence Project" (launched by the Development Policy Vice Presidency of the National Development Office) regarding the 2004 National Broadband Strategy were also taken into account – to ensure that the 2005 National Broadband Strategy serves as a strong foundation for the policy defined in the National Development Policy Concept ("OFK") and is fully integrated into the future planning and programming phases of the Second National Development Plan ("NFT II").