BROADBAND BENCHMARKING AND e-EUROPE INITIATIVE

prof.Antoni Slavinski, Georgi Petrov PhD - NBU

aslavinski@nbu.bg, gpetrov@nbu.bg

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Part I

e-Europe and Information society

The **e-Europe** plan was launched in **2000** from European Commission. This plan aims of accelerating Europe's transition towards a knowledge based economy and realization of the potential benefits of higher growth, more jobs and better access for all citizens to the new e-services.

The first phase of e-Europe was the **e-Europe 2002 Action Plan** which focused on exploiting the advantages offered by the Internet and increasing connectivity. It comprised a total of 64 targets to be achieved by end 2002. The majority of those were successfully completed and in June 2002 the European Council launched a second phase, **e-Europe 2005** Action Plan.

E-Europe 2005 was focused on exploiting broadband technologies to deliver online services in both the public and private sector. **E-Europe** 2005 was not a public expenditure program and did not make new funds available. It rather provided a new policy framework, such as the **6th Framework program** for research, the **eTEN** or the **Structural Funds**. More information regarding different **e-Europe** programs may be found on next addresses:

- **eEurope Communication (COM 1999/687, December 1999) (EN, other language versions on request)**
- **eEurope 2002 Action Plan (June 2000)**
- **eEurope 2002 Benchmarking Report (February 2002)**
- **eEurope 2002 Final Report (February 2003)**
- **PROMISE programme evaluation (June 2005)**

i2010 (European Information society in 2010) will provide an integrated approach to information society and audio-visual policies in the EU, covering regulation, research, and deployment and promoting cultural diversity. It will look for fast and visible results, building on the optimistic outlook for ICT industries and markets. It will encourage fast growth built around the convergence at the levels of networks, services and devices. Its objective will be to ensure that Europe's citizens, businesses and governments make the best use of ICTs in order to improve industrial competitiveness, support growth and the creation of jobs and to help address key societal challenges.

e-Europe Regions Indicators

The e-Europe Regions indicators have been developed to measure the development of the **Information Society** in region, and the effects on regional development. Indicator development is structured along a number of domains which

have been identified as being of special relevance for Information Society, these are called **Core Indicators**:

- e-Government and Public Administration;

- Health and Care;

- Business Enterprise;

- Education, Training and Skills;

- Work and Labour Market;

- Innovation and R&D;

- Regional Identity & Social Cohesion;

- Transport and the Environment;

- IT Infrastructure;

- Broadband Infrastructure.

There are several main European projects rending Information Society benchmarking and analysis:

- **BiSER -** Benchmarking the Information Society: e-Europe Indicators for European Regions

- **ESPON –** Telecommunication Services and Networks: Territorial Trends and Basic Supply of Infrastructure for Territorial Cohesion

- **TRANSFORM –** Benchmarking and Fostering Transformative Use of ICT in EU Regions

- **UNDERSTAND -** European Regions UNDER way towards STANDard indicators for benchmarking the Information Society

- **SFERA -** Structural Funds for European Regional Advancement

The first steps of all these projects was to define indicator requirements, which means identifying the indicators which are necessary to make sense of regional development in the Information Society. As a major part of IS development take place Broadband Infrastructure Deployments and Computer and Software technologies introduction in all business and manufacturing sectors in EC countries. Most if indicators can bi directly taken from next organizations:

- National Statistical Institutes and regional policy research Institutes in the EU and the NAS countries;

- EU Commission and Eurostat;

- Organisations representing regions at EU level;

- Regional regulatory organizations;

- Research community;

- Non-Gvernmental Oganization - NGO;

- Representatives of individual EU regions.

It is very important to note that ICT development and specially Broadband penetration is not well tracable from these organizations, and most of present surveys lay down on some base framework for measurement of indicators like: fixed telephone lines, digital telephone lines, ISDN lines or xDSL lines. Because not all regional networks were developed in the same way and using the same scenarios we need to make deeper research on variety of regional cases and national strategies for broadband development. It is interesting to note that CATV or DSL broadband lines have different percentage of national and regional penetration rate for different countries. New member states have very verious geographically, market, regulatory and technology conditions so different technology for broadband access were developed during years. Lets take a closer look on **Core Indicators**.

e-Government/Public Administration

The role of public administrations have been undergoing significant change with some functions or services being privatised and semi-privatised (the creation of Public Private Partnerships). Administrations have also seen rapid change in the organisation and delivery of public services; this has been primarily due to the adoption and implementation of Information Communication Technologies.

The restructuring of public administrations facilitated by the adoption of ICTs is being driven by Information Society drivers including eGovernment (intra-governmental, G2C, G2B) including interactive communication with the public, inter and intra public administration networks and communication channels, e-procurement and knowledge management systems. The adoption and delivery of improved and new services has enabled public administrations to be more efficient, provide higher levels of service, minimize red tape and improve the quality of communication and interaction with the public.

Health and Care

Developments in the area of health and healthcare are being driven by wider social changes – including a demographic shift to an ageing society and the rise of the wellness and leisure society. The Health industry is also currently driven by extensive research and development in the Life Sciences including biogenetics, human genome mapping and by the pharmaceutical industry. Within these wider trends the health industry and health services are seeing advancements in the quality and access to health services and information as a direct result of the application of new technologies.

The access and quality of health services are being improved through remote diagnoses and tele-medicine, for example, NHS Direct in the UK. Health services are also being improved through the increased access to health information through on-

line services and web sites that provide a range of self-diagnosis manuals and other emergency and treatment information. The access to health information is benefiting both doctors and patients alike by reducing waiting lists and times and through improved co-operation between care-providers and hospitals through electronic data exchange.

e-Health

e-Health has enabled a tremendous development of healthcare systems over the last few years. It has already brought many opportunities to raise the quality and accessibility of healthcare services. It provides a greater efficiency of services which, in today's era of considerable expectations on the part of every citizen, combined with limited financial resources in the system, has become among the most important goals of healthcare. With the help of information and telecommunication technologies we are introducing new ways to provide medical treatment, ease communications between citizens and healthcare providers, simplify procedures, ensure mechanisms for reducing errors, encourage individuals to manage their own health and, finally, provide data for the management both of risks and healthcare systems.

http://www.ehealth-benchmarking.eu/news/news.html

e-Health main actions:

1. To increase confidence and acceptance of telemedicine services among users. In particular, by encouraging provision and dissemination of scientific evidence of its effectiveness and cost effectiveness.

2. To bring legal clarity on existing EU legislation regarding telemedicine services and encourage Member States to improve provision of telemedicine services.

3. To solve technical problems such as the lack of adequate community-wide broadband infrastructure and interoperability of telemedicine devices.

Telemedicine works on broadband networks: it saves lives, improves efficiency and benefits the economy. Literature and case studies of already-implemented or piloted telemedicine applications, including many EC-funded projects report proven benefits at different levels. For example, disease management through telemonitoring of heart conditions reduces mortality rates by an estimated 20%. It has also demonstrated the influence on attitudes and behaviour of patients resulting in better clinical outcomes.

Savings estimates due to telemonitoring of patients who would otherwise be kept in hospitals have been shown to range between 30-60% and 40-70% of health professionals' time. Market growth of telemedicine systems and services has a major potential for growth. The global market for telemedicine, provided that some of the identified barriers described below are addressed, could increase from €4.7 billion today to over €11.2 billion by 2012, an average annual growth rate of 19%. In the context of an ageing population, increased burden of chronic diseases, active participation of more demanding patients and ever increasing health expenditures, the realization and amplification of telemedicine services is important and urgent. In view of the Commission initiative (4Q2008) on "Telemedicine for the benefit of patients, healthcare systems and society" different actions were put in place to

gather information and consult stakeholders on this subject. This has included an online public consultation, a conference, several meeting with stakeholders, associations and other EU funded projects.

Business Enterprise

The information society and knowledge economy is touching down across Europe with varying results. This variation in the development of the information society is directly related to the business base and industrial structure of European regions – this can be described andmeasured by industry sector, type of company and market orientation.

Sectors range from low value to high value industries, for example, low value agriculturalsectors versus high value financial services. These sectors can also be classified according totheir geographical location and market orientation (export or local consumer market).

Depending on the sector profile the uptake and penetration of ICT will vary. The variation in ICT use is related to the changing level of technology and knowledge intensity of the sector – that is to say, as sectors become higher value added they tend to be more technology and knowledge intensive.

The type of company in relation to its size or scale also directly affects the uptake and use of CT applications, but also will partially determine the type of applications required. The number of start-up and micro companies in relation to Small and Medium Sized companies (SMEs) to large companies will define a level of regional complexity required for ICT applications and services, creating a varying ICT demand map. The application of ICT across these company types will also reflect the nature of the company – a fast paced, high growth start-up or micro enterprise, an established and moderate growth SME, or a large and mature slow growth company.

The third factor for measuring the industrial structure is the market orientation of the regional business stock – are they operating in the export market or do they serve local consumption and service needs. This will influence the scale of the market for technology, including the provision of ICT infrastructure such as broadband.

Education, Training and Skills

A main stream of economic development today has moved towards the role of education and skills - human capital models of development. The Information Society places new and everchanging requirements on skills and training with life-long learning principles at the core to creating and maintaining the skills base of a region. To be competitive now entails an element of adaptability – the workforce must be able to learn, relearn and de-learn.

Some key indicators used to capture the educational attainment and skills in a region – a region's human capital – include: the adaptability of the workforce, share of workers employed in sectors requiring the highest education levels, completion of tertiary education, participation in continuing education and training among the adult

population, labour force participation by level of educational attainment, earnings and educational attainment, and patents.

Work and Labour Market

Work can be classified and measured across a range of categories, the analysis of which will provide a description of the main types and forms of work. Measures could include broad industry types including production, industrial, or service sector to various measures of the occupation structure – paid, volunteer, professional, pay levels, part time or full time, gender splits, public versus private sector etc.

The labour market is generally described in terms of employment and earnings with the aim to maximise levels of both. The labour market operates in relation to supply and demand curves.

The supply curve measures the skills level, qualifications and education of the workforce – the regional human capital. This describes the knowledge and skills base of a region. The demand curve is a measure of the jobs on offer – or what the employers are looking for. This could be flexible or part time work or seasonal in the case of agricultural industries. The match, or mismatch of the two will give a picture of the labour market profile for a region.

The knowledge economy is based on innovation and change and thus requires a flexible labour market. The knowledge economy innovates through rapid change in business and organisational structures and consequently, work and the labour market need to be flexible in response, which ultimately, requires people to be adaptable. People now need to shift between jobs and industries, they need to be multi-skilled and adaptable to changing styles of work – team based, partnerships and virtual work.

Innovation and R&D

Innovation and entrepreneurship are important sources of regional growth. Regional Innovation Systems (RIS) are the structures or networks that support knowledge and technology transfers, crucial to business formation and innovation.

In fostering long-term growth effort has also focused on the framework conditions for fostering new enterprise formation and growth of Small and Medium size Enterprises (SME). Start-up firms have gained significant attention in the innovation process as they represent rich sources of new ideas. The number of new start-ups in a region is often used as a proxy measure for the level of innovation and long-term economic growth – as SMEs in theory will become larger organisations with a growing economic multiplier. The formation of SMEs can result from spinoffs from larger corporations or from other centres of research such as universities and colleges and through developing an enterprise culture that supports potential entrepreneurs with the right mix of business support services, business incentives and financing (venture capital) and skilled workforce.

Measures of the number of higher education centres, university institutes, industry clusters and the number of new business formation rates and patent registrations have traditionally been used as measures of the level of entrepreneurialism and innovation capacity in a region.

Regional Identity

The role of community and regional networks and the existence and adherence of civic norms is commonly referred to as Social Capital. Social Capital acts as part of the formal and informal regional community and identity – theses networks, provide the foundation for creating place identity and a sense of community, it generates a level of trust that is inherent in, but varied according to regional cultures. Theoretical research draws the link between the level of trust in a culture or society as a condition of prosperity for democracy as well as economic competitiveness.

Regional and community networks and civic norms include social relations, formal and informal social networks, group membership, trust, reciprocity and civic engagement. These attributes are generally considered to be the property of the group not the individual.

Since the Knowledge Economy is largely urban focused there is a need to measure the urban and rural structures for the role of city-region networks as the conduit for knowledge transfer. Similarly, how regions build the trust and community drive to prosper and be competitive can be supported by the development of the information society – this includes real and virtual networks, location marketing, place related websites, and place branding - these factors combine as part of the social capital pool that creates regional advantages and is highly valuable in the attraction of inward investment.

Social Cohesion

The digital divide can be described in terms of access, the existence of infrastructure such as broadband connection; affordability, the cost of purchasing a personal computer of subscribing to Internet services, and; the ability to leverage value. These factors manifest themselves across social groups, generational groups (old versus young), geography, businesses and educational levels.

The social structure acts on the digital divide in two ways affecting the access, affordability and leveraging capability of the user. First, those who are less well off cannot afford to purchase personal computers or pay for Internet services and second, their occupations normally do not utilise ICT, reinforcing the lack of access and exposure to the information society.

E-inclusion also relates to the level of digital-literacy. Simply providing access to those areas or individuals does not solve the digital divide – these areas and individuals still need to possess basic numeracy and literacy and develop a basic digital literacy to be able to leverage the power of ICT. This is especially true across ethnic lines – the Internet is text based, an English Language medium, and

consequently favours any English speaking individual. This is slowly changing but at present represents a significant barrier.

Transport and the Environment

Europe today runs on 'wheels and wires' - transport and telecommunications networks. While e-Europe networks grow at a phenomenal rate, transport networks are becoming unsustainable in terms of sheer absorptive capacity and the rising economic, social and environmental costs of traffic congestion.

It is widely recognised that current transport policy is unable to cope with growing demand for mobility. Policy in many European countries is shifting towards the better and efficient use of the existing transport infrastructure, rather than the widespread building of new road infrastructure (the so called 'predict and provide' policy), Intelligent Transport Systems, or "ITS", are seen as providing key tools and services to achieve this.

IT Infrastructure

The role of ICT in raising productivity levels is much debated and is now referred to as the "productivity paradox" – rapid levels of technological innovation with slow gains in productivity growth. However, it is still considered that technology is core to product and process innovation and the diffusion of innovation and technology transfer are related to new firm formation and regional growth and development.

ICT technologies are most effective when associated with organisational change, improvements in the skills and education of the labour force, and as a condition encouraging innovation. An example of the benefits of ICT and economic development in this context is the role of ICT in the development and support of SMEs.

Broadband Infrastructure

Broadband's larger capacity, lower costs, and higher speed of data transmission can encourage the further integration of ICTs in economy and society to the extent that they become truly pervasive. It creates the possibility to create new markets and new ways to organise firms. Universal broadband access provides economies of scale and scope. And affordable access to the Internet can result in considerable social savings and a smaller digital divide. Broadband indicators play major role in market planning, e-Government deployment and for solving digital divide solutions. Most important question that benchmarking indicators must answer are:

- What is level of backbone and national networks in region?
- What are the coverage levels of broadband services?
- How to use broadband services to improve administrative services?
- How much demand is there for bandwidth?

- How much bandwidth do people actually want?
- How much would people be willing to pay for?
- How to deploy broadband services in rural areas?
- How to teach people to use broadband?
- How to protect people from dangers content?
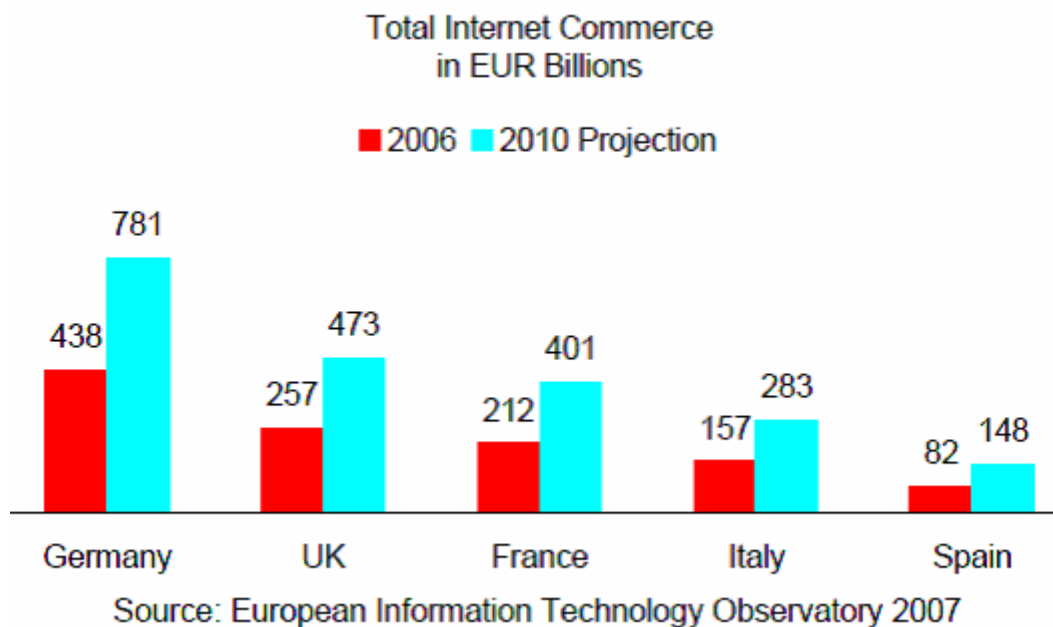
Part II

ICT Benchmarking

Assuming above mentioned points as a matter of fact, broadband benchmarking can be carried out only keeping into account both the regional and the national basis, incorporating all existing statistical data for ICT development in all regions. Thus providing the stabile background for multicriterial comparison of broadband penetration in different countries and regions. A good starting point is to make a closer look on i2010 benchmarking framework. Most important topics that this framework cover are splitted in to several sections:

- **Broadband coverage**

- **Broadband take up**

- **Speed and prices**

- **Multiplatform of access to the internet**

- **Availability of advanced online services**

- **Usage of advanced online services**

- **Security module in the Community Surveys on ICT usage:**

  - 2007: skills and digital literacy;

  - 2008: advanced services;

  - 2009: e-Commerce and trust;

  - 2010: security.

- **Indicators on growth of ICT sector:**

  - Share of the ICT sector in the economy measured as proportion of GDP and of total employment;

  - Growth of the ICT sector measured as % change of value added at current and constant prices.

- **Investment in ICT research:**

  - R&D expenditure by the business sector, as % of GDP and as % of total R&D expenditure;

  - R&D expenditure in ICT by the public sector as a % of GDP and as a % of total R&D expenditure.
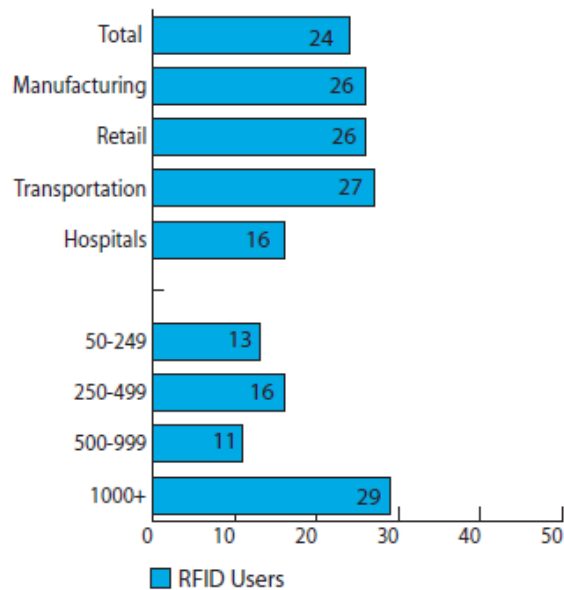
    http://ec.europa.eu/research/press/2008/pdf/com_2008_588_en.pdf

- **Indicators on basic connectivity and ICT adoption:**

  - Percentage of persons employed using computers connected to the Internet, in their normal work routine;

- o Percentage of enterprises with a LAN and using an Intranet or Extranet;
- o Percentage of enterprises with broadband access;
- o Percentage of enterprises using open source operating systems.

- **e-Commerce**
  - o Percentage of enterprises turnover from e-commerce as % of total turnover;
  - o Percentage of enterprises having received orders via computer mediated networks, where these are ≥1% of the turnover;
  - o Percentage of enterprises having purchased via computer mediated networks, where these are ≥1% of the total purchases.

Total Internet Commerce in EUR Billions

■ 2006 ■ 2010 Projection

	Germany	UK	France	Italy	Spain
2006	438	257	212	157	82
2010 Projection	781	473	401	283	148

Source: European Information Technology Observatory 2007

- **e-Business**
  - o Integration of internal business processes: percentage of enterprises whose internal business processes are automatically linked;
  - o Integration with suppliers and/or customers: percentage of enterprises whose business processes are automatically linked to those of their suppliers and/or their customers;

% of companies currently using, piloting or implementing RFID technology (by sector and size-band, EU-7, 2007)

- o Use of software solutions for improving relations with customers - % of enterprises using software solutions, like CRM (customer relation management), oriented at improving relations with clients;

% of companies enabling customers to order goods or services online on the internet or through other computer networks (by sector and firm-size, EU-7, 2007)
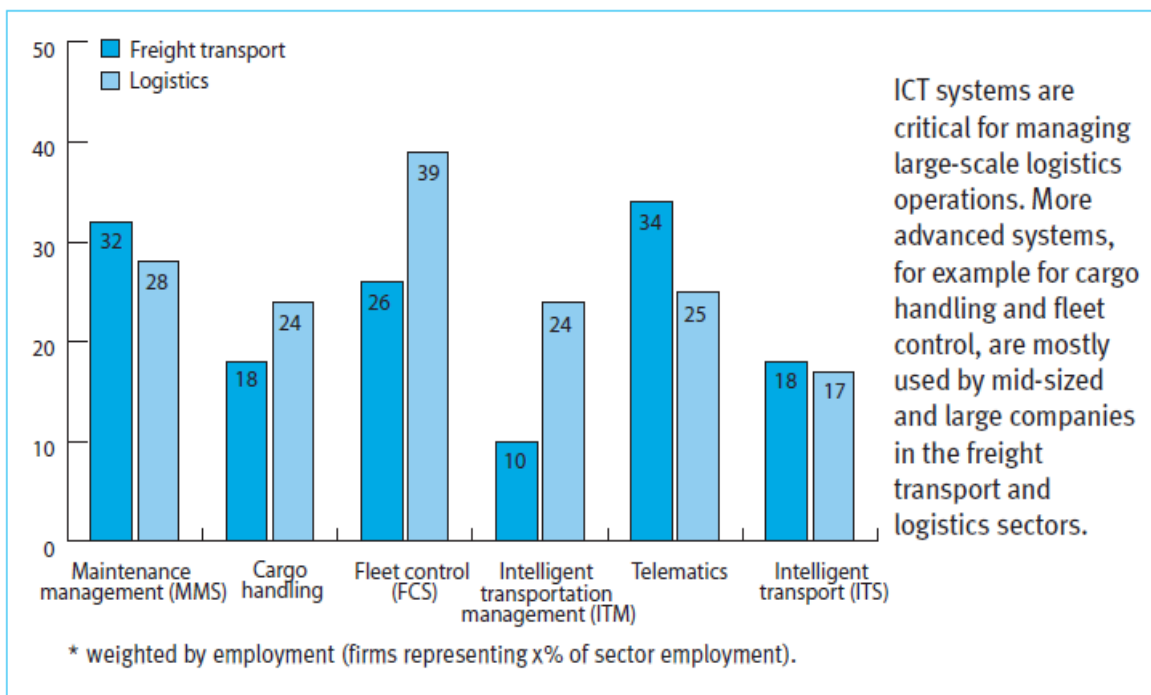
- o Percentage of enterprises sending and/or receiving e-invoices;
- o Percentage of enterprises selling on the Internet and offering the capability of secure transactions - percentage of enterprises that make

sales on the Internet and whose online sales system offers the capability of secure transactions;

o Percentage of enterprises using advanced e-signatures[1] in the relations with their suppliers and/or their clients.

Use of specific software systems in the transport services sectors

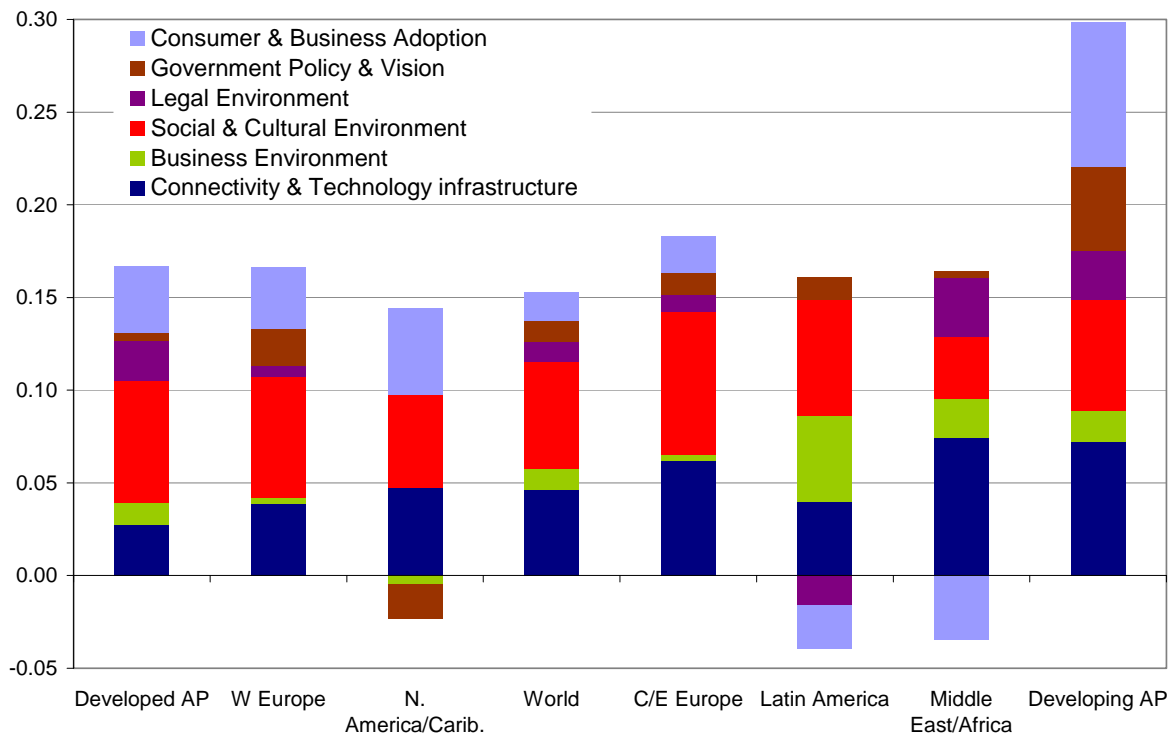### % of companies* using a ... system / technology (EU-7, 2007)

ICT systems are critical for managing large-scale logistics operations. More advanced systems, for example for cargo handling and fleet control, are mostly used by mid-sized and large companies in the freight transport and logistics sectors.

Freight transport: Maintenance management (MMS) 32, Cargo handling 18, Fleet control (FCS) 26, Intelligent transportation management (ITM) 10, Telematics 34, Intelligent transport (ITS) 18

Logistics: Maintenance management (MMS) 28, Cargo handling 24, Fleet control (FCS) 39, Intelligent transportation management (ITM) 24, Telematics 25, Intelligent transport (ITS) 17

* weighted by employment (firms representing x% of sector employment).

- **An e-Readiness or an e-Business Composite Indicator**

Each year, the e-readiness rankings methodology is modified to reflect the current 'state of play' in the development of ICT and its application in the economy, as well as the shifting influence of non-technical factors affecting its implementation. Some key changes to the methodology were made in 2007, which minimized the need for major changes in 2008.

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[1] The definition of advanced e-signature is the one contained in the EC Directive 1999/93.

Contribution to Change in 2008 Score, by E-Readiness Pillar

2008 Rank	2007 Rank	Change (Ranks)	Country	E-readiness score (of 10)
1	2	▲	US	8.95
2	4	▲	Hong Kong	8.91
3	3	–	Sweden	8.85
4	9	▲	Australia	8.83
5	1	▼	Denmark	8.83
6	6	–	Singapore	8.74
7	8	▲	Netherlands	8.74
8	7	▼	UK	8.68
9	5	▼	Switzerland	8.67
10	11	▲	Austria	8.63
21	21	–	Ireland	8.03

- **e-Accessibility**

e-Accessibility is a critical requirement for any public service that is available online because it ensures that the benefits of service delivery are translated into reality for those groups of people who may face difficulty using, or even be excluded from, government information and services.

Accessibility by channel for
different types of impairment

http://inova.snv.jussieu.fr/evenements/colloques/servonline/fichiers/Gonzales-Sancho_Slides.pdf

- **Measuring digital literacy**

  Digital Literacy is increasingly becoming an essential life skill and the inability to access or use ICT has effectively become a barrier to social integration and personal development. In response, EU Member States meeting at Riga in 2006 agreed on a series of eInclusion targets, including reducing by half the gap between digital literacy levels of disadvantaged groups and the average for the EU by 2010.
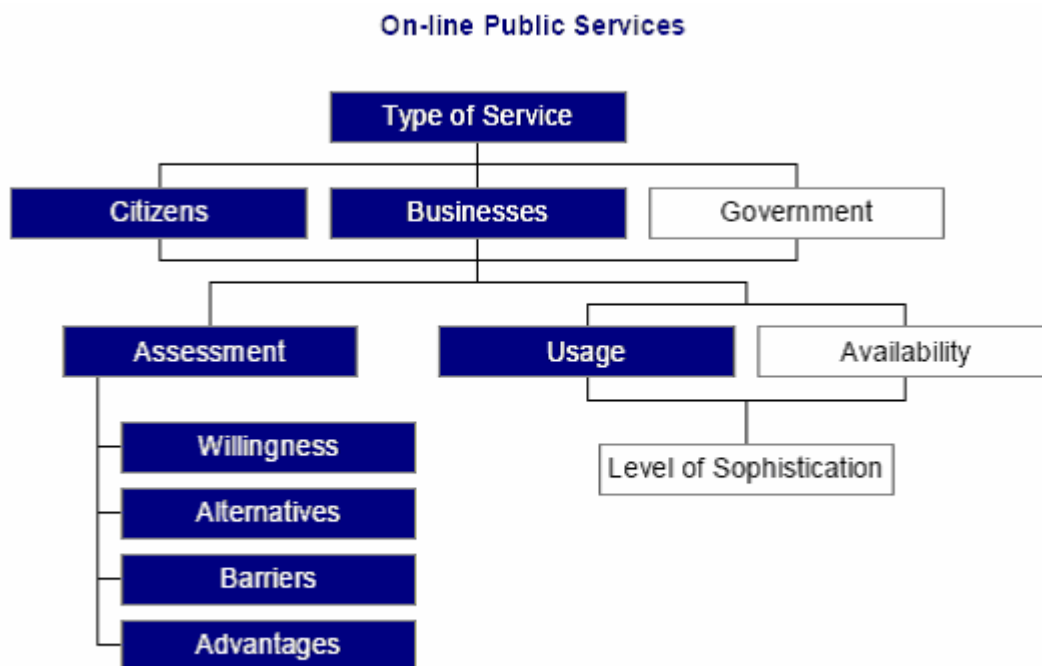

http://ec.europa.eu/information_society/eeurope/i2010/docs/digital_literacy/digital_literacy_hlg_recommendations.pdf

- **e-Government**

The presence of e-government is expected to grow as online activities become more widespread. A number of indicators were piloted to understand the attitudes of Internet users toward e-government.

What is e-government?

hierarchical structure on-line public services

Generally, e-government designates any transaction that involves the government and that is carried out, even partially, using electronic means. E-government plays an important function in mediating government actions and its role will continue to grow as communications technologies become more widespread. Already, communications technologies change the way that government operates by facilitating information dissemination, communications and transactions. E-government is not simply the process of moving existing government functions to an electronic platform. Rather, it calls for rethinking the way government functions are carried out today to improve some processes, to introduce new ones and to replace those that require it. The range of services that may be provided by e-government spans from simple information sites to fully interactive experiences where users and government engage in a dialog mediated by information technology.
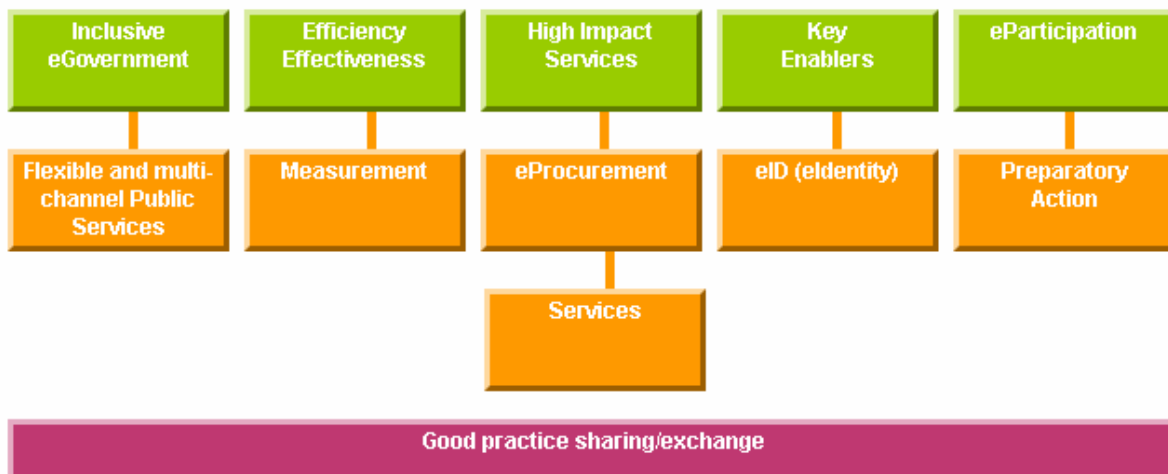
How is it organised?

Government operates on several different levels. One approach to dealing with this is to split e-government into three categories:

- o Government to citizen (GtC);
- o Government to business (GtB);
- o Government to government (GtG).

In all cases, the relationship is two-fold between the two parties; GtC designates just as well interactions that originate with government as with the citizen. Likewise, GtB designates interactions between businesses and government. GtG comprises all intra-government interactions within and across agencies. e-Government is the use of Information & Communication Technologies (ICTs) to make public administrations more efficient and effective, promoting growth by cutting red tape. This is something which anyone who has spent hours waiting in line in a government building can appreciate.

The EU's main policy initiative in this field is the eGovernment Action Plan, which focuses efforts on five priorities:

Inclusive eGovernment	Efficiency Effectiveness	High Impact Services	Key Enablers	eParticipation
Flexible and multi-channel Public Services	Measurement	eProcurement	eID (eIdentity)	Preparatory Action
		Services		

Good practice sharing/exchange

e-Government Indicators:

- o Number of basic public services fully available on-line *Source: web-based survey of e-Government services;*

- o Percentage of individuals using the Internet for interacting with public authorities broken down by purpose (purposes: obtaining information, obtaining forms, returning filled in forms);

- o Percentage of enterprises using the Internet for interacting with public authorities broken down by purpose (purposes as 2 above, plus full electronic case handling).

Part III

<u>Broadband Coverage Benchmarking</u>

Broadband Coverage Benchmarking must provide representative data regarding the level of broadband penetration in different regions by type of technology, number of users, speed limits, corporate users etc. Because broadband is not only technically dependent, we need to include as many factors that previously explained benchmarking analysis reports engage. These are regional socio-economical development, geographically specific data, the level of competition in each one region and government etc. If we take a closer look in <u>i2010 benchmarking framework</u> indicator stages we can understand that indicators can be splited in to tree major types. A good example of Broadband benchmarking survey is FP7 project SFERA, this project split these base indicator types in the next sections:

- **Technical Indicators**

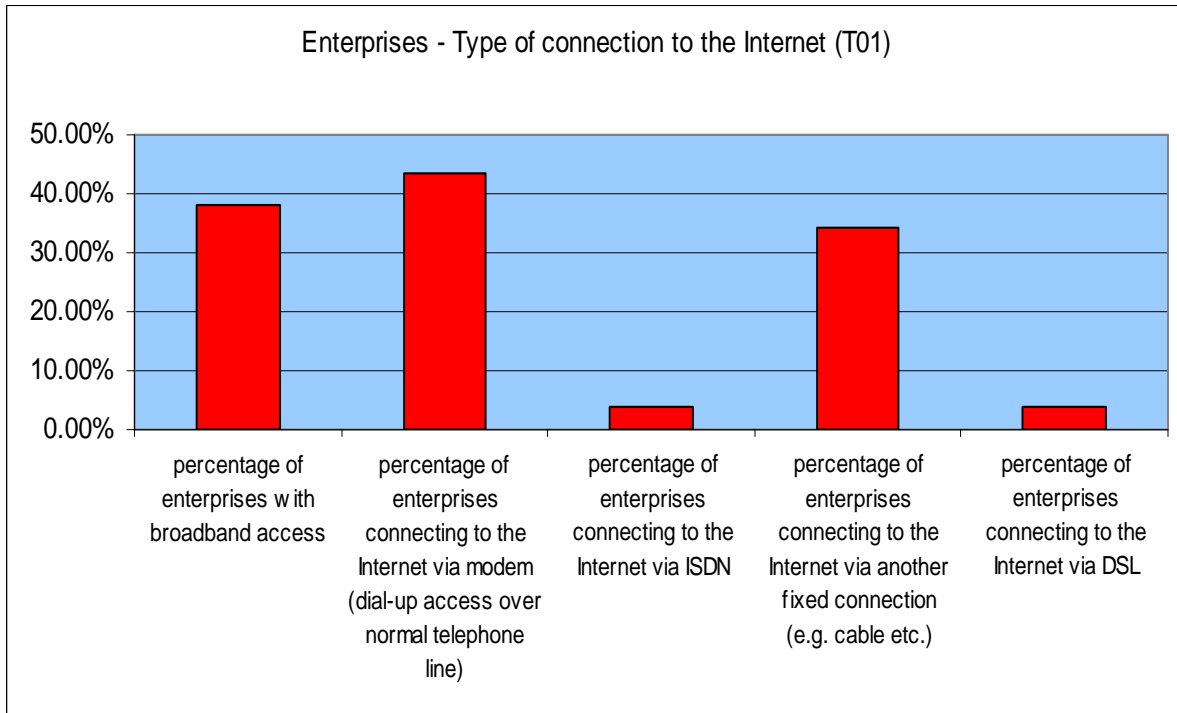- **Economical Indicators**

- **Regulatory Indicators**

In next section example of **Bulgarian broadband market** indicator survey will be given. Historically, in the different countries different approaches for the integration of new technologies for broadband access have been developed. Some technologies have been equally developed in all the regions subject to the analysis – such as ADSL, SHDSL, UMTS, but others are not popular in some countries/regions – such as LAN (10/100/1000 Ethernet), WAN, cable TV. After you read this example your personal task will be to collect information of these indicators for your country and regions. Basically you can search for this information in national statistic institutes and government and regulatory bodies in the filed of telecommunications. In other case local operators must be abble to answer potential users of folowing list of questions:

1. If I change my ISP, what happens to my old email address?
2. If I change my ISP, are there any exit fees?
3. What broadband services do you offer?
4. What do I need for broadband?
5. What type of modem do I need?
6. Is ADSL available to me?
7. Is cable broadband available to me?
8. Can I connect to the internet via wireless or satellite?
9. What do I need to check before I sign up to an ISP?
10. What is the typical data-rate that I can expect?
11. What is the contention ratio for my service?
12. What flat fee (limited/unlimited data amount) accounts do you have?
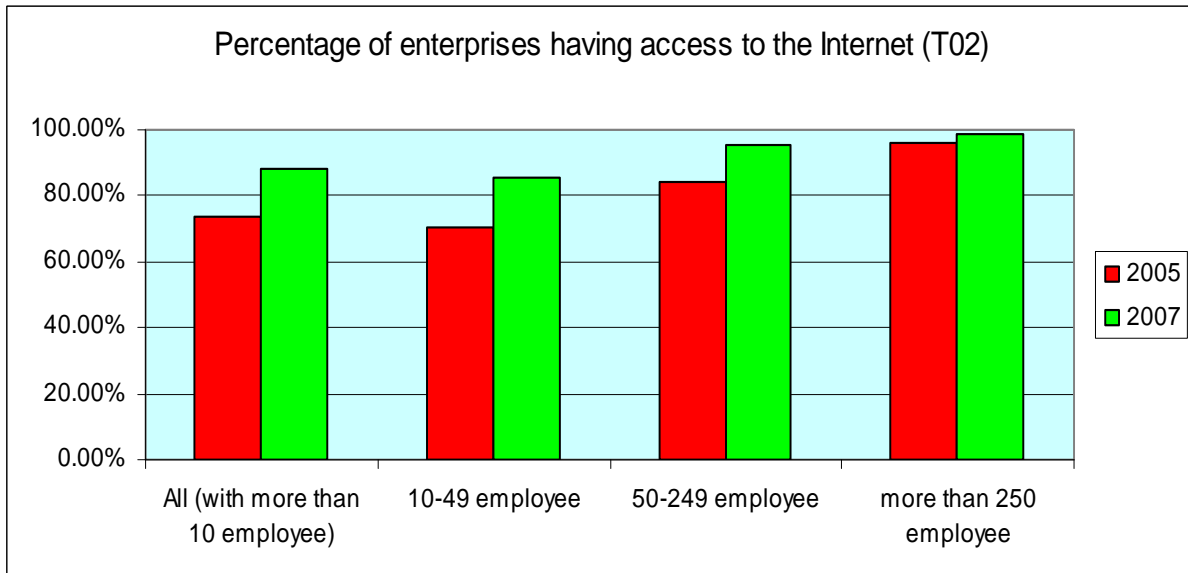13. What are the call connection costs?

14. What facilities do you have to keep track of my internet costs?

15. What other costs do I need to incur to get your broadband service?

16. Are there any usage limits placed on download and upload before additional charges are incurred?

17. What is the maximum size email you can send or receive?

18. Does browsing ('surfing') the internet contribute to any usage allowance?

19. Does playing games online contribute to any usage allowance?

20. What is being done about unsolicited bulk email ('spam')?

21. What do I need to know about downloading or sharing music?

22. What do I need to know about downloading videos?

23. What do I need to know about technical support?

24. Do you have any software that can protect my privacy on the internet?

25. Do you have any 'firewall' software to protect my computer when I am on the internet?

26. How is the privacy of my personal information protected?

27. Do you have any software that will protect my computer from viruses?

28. What can I do to protect children from inappropriate content on the internet?

Technical Indicators

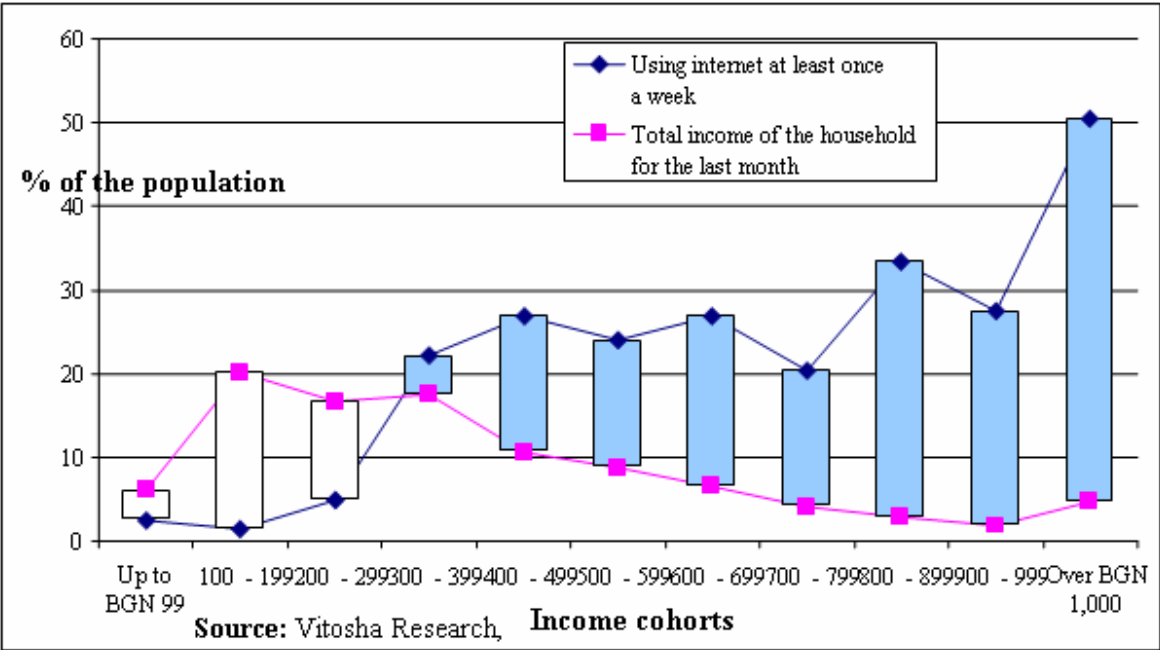1. Enterprises - Type of connection to the Internet

Enterprises - Type of connection to the Internet (T01)

2. Percentage of enterprises having access to the Internet

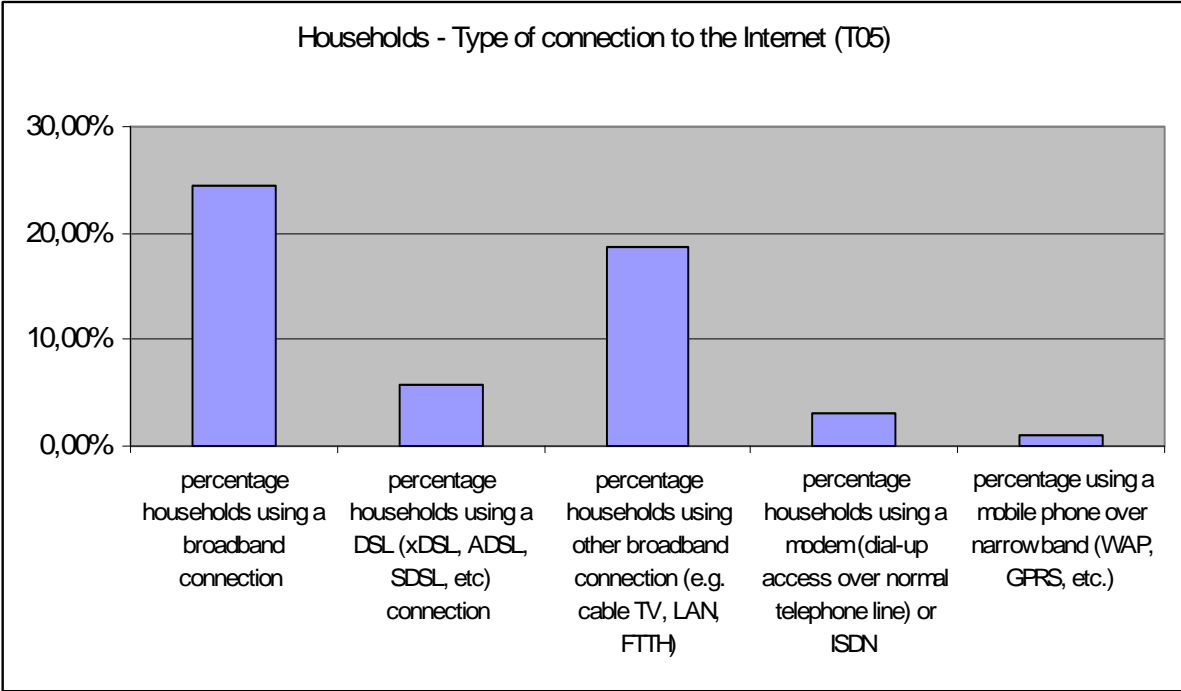Percentage of enterprises having access to the Internet (T02)

Internet use by household income in Bulgaria

Direct communication is still the most popular reason for using the internet in Bulgaria. This fact determines the quick penetration of software programs for mobile phones among Bulgarian consumers. Their easy application will probably further increase the interest towards them and they will attain the levels of usage of

traditional chat programs. The increased control of the violation of copyright in the web space led to the popularization of programs for P2P file sharing. It is anticipated that the 'loop' around illegal content in internet will be even tighter in the next few years which causes the users to look for alternative ways for downloading information and content for entertainment.
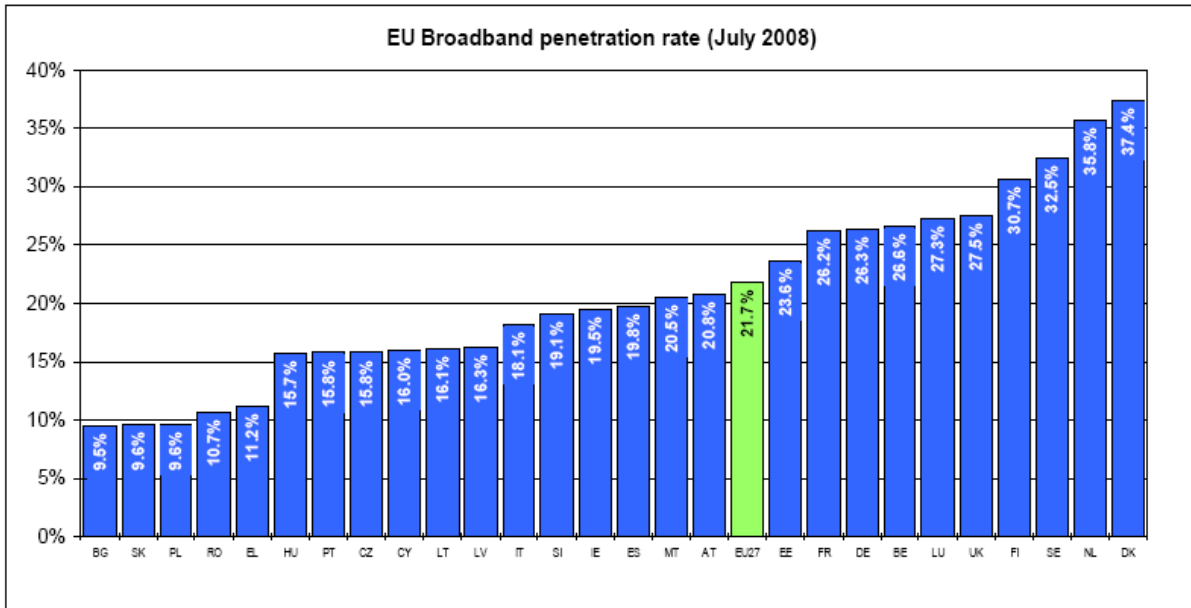

Source: Vitosha Research,

3. Households - Type of connection to the Internet

4. Broadband penetration rate

There were 107 601 796 fixed broadband lines in the EU on 1 July 2008, a 7.8% increase since 1 January 2008. Of these lines, 85 872 936 were DSL lines (79.8% of total) and 21 728 860 (20.2%) were provided using other transmission means, predominately cable modem.

At EU level the fixed penetration rate, which measures the number of broadband lines per 100 population, is 21.7%, up 3.5 percentage points from a year ago (18.2%).

EU Broadband penetration rate (July 2008)

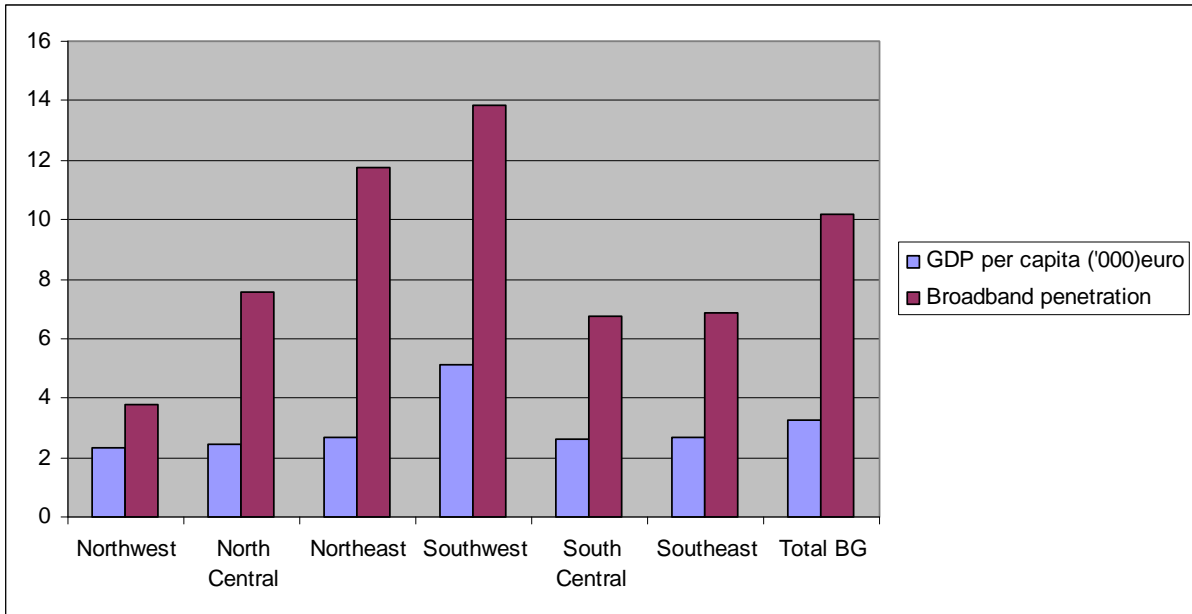| Country	Rate
BG	9.5%
SK	9.6%
PL	9.6%
RO	10.7%
EL	11.2%
HU	15.7%
PT	15.8%
CZ	15.8%
CY	16.0%
LT	16.1%
LV	16.3%
IT	18.1%
SI	19.1%
IE	19.5%
ES	19.8%
MT	20.5%
AT	20.8%
EU27	21.7%
EE	23.6%
FR	26.2%
DE	26.3%
BE	26.6%
LU	27.3%
UK	27.5%
FI	30.7%
SE	32.5%
NL	35.8%
DK	37.4%

Incumbent fixed operators provided 45.6% of these lines, continuing the downward trend recorded since 2003. However, this figure was 55.9% in July 2004, 51.5% in July 2005, 48.0% in July 2006 and 46.8% in July 2007, revealing that decrease has been clearly slower for the last two years. Regarding speeds, 62.0% of reported fixed broadband lines are in the range of 2 Mbps and below 10 Mbps, 25.1% of reported lines are in the range of 144 Kbps and below 2 Mbps, whereas 12.8% of the lines are in the range of speeds beyond 10 Mbps.

There were 34 040 166 mobile broadband active users (subscribers) in the EU reported on 1 July 2008. This does not include France, the Netherlands and the UK which have not reported on this category. According to the agreed methodology, mobile broadband active users are users using broadband dedicated data services via data modems/cards/keys and other active 3G equivalent users using mobile terminals in last 90 days.
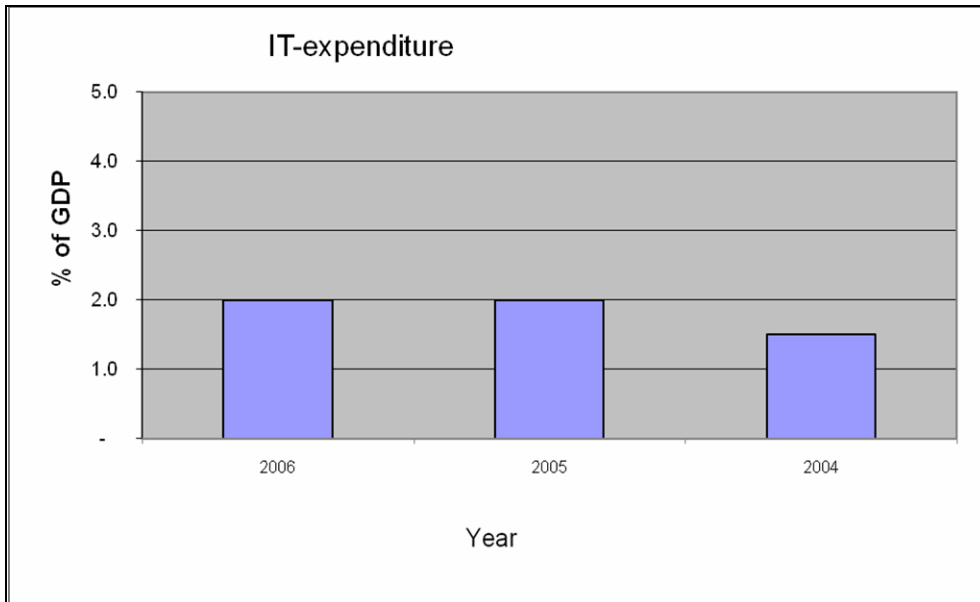
At national level the mobile penetration rate, which measures the number of mobile broadband active users per 100 population, ranged from less than 1% to nearly 20%. The average EU penetration level is at 6.9%. The number of mobile broadband connections using only dedicated data cards/modems/keys is significantly lower (around 2 to 3%).
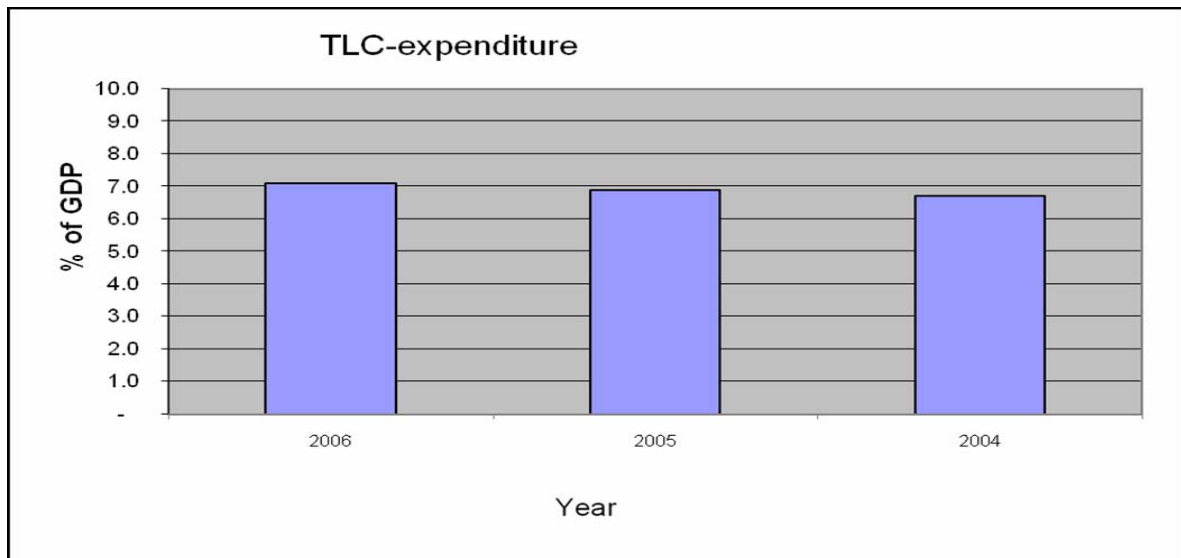
- **Economical Indicators**

Broadband penetration depens of GDP in different regions in Bulgaria. The same case can occure in other countryes in Case Study. This depends from complex set of factors.
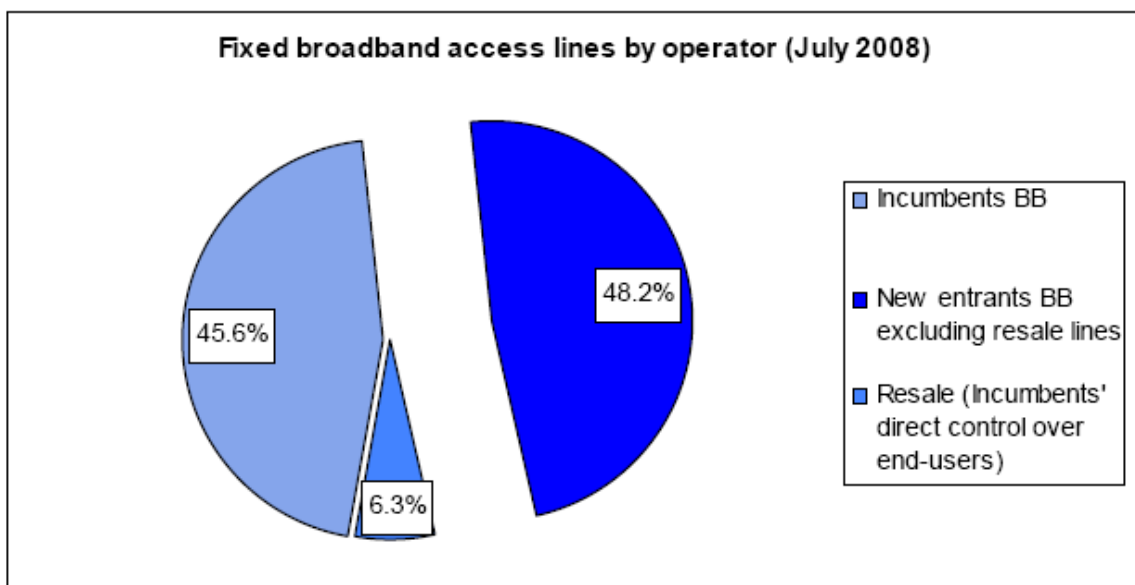
1. Information Technology-expenditure

2. Telecommunications expenditure

• Regulatory Indicators

Level of Competition can be indirectly measured if we examine number of registered operators and backbone operators in interested regions. Next figure shows the percentage of broadband lines provided by the incumbent fixed operators and by the other operators. Simple resale of lines by new entrants is singled out.

http://www.itu.int/ITU-D/treg/publications/trends08.html

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