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Why Broadband? The Meaning of Broadband for Residential Users

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WHY BROADBAND?
THE MEANING OF BROADBAND FOR RESIDENTIAL USERS

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ABSTRACT: In the society we live in today, access to information is crucial. But because of the increased amount of data as well as the nature of the content, a simple Internet connection is no longer sufficient. The EU government, which has followed an Internet access policy for many years (see eEurope programme), has shifted the focus to broadband Internet. Yet, despite these efforts, the uptake of broadband Internet is still quite low. And the situation in developing countries is even more critical.
But is access to information the only enabler for users to switch to a broadband connection? With the wide range of Internet services and applications in the domains of entertainment, communication, commerce etc, now more than ever the Internet is a part of people's everyday life.
In this article we will not only look at the benefits and motivations for people to subscribe to a broadband Internet connection, but also at the different barriers to the uptake and usage of such a connection.

Connectivity, by means of mobile phones or via the Internet, seems to be a common good in Europe. The e-strategy from the EU, in the late 1990s, was focused on connecting everybody to the Internet. Although not completely successful in reaching this target (only 52% of the households in the EU (EU25) have an Internet connection at home, while only 32% of the households have a broadband connection), the access to the Internet as such is no longer the standard. For the realisation of the new i2010 strategy it is assumed that everybody will have access to a high-speed broadband connection. But what exactly constitutes a 'broadband connection' and what are its benefits? Why are high-speed connections so important and why do people switch (or have to switch) to such an enhanced connection?

In this article, we will explore the meaning of broadband for residential users. This exploration is based on a profound literature study of different primary and secondary sources, in order to address the following three questions:

- What are the benefits of broadband for residential users?
- What are enablers and barriers for switching to broadband?
- How do people use their broadband connection?

Towards a definition of broadband

Although there is no universally accepted definition of broadband it generally refers to a high bandwidth Internet connection, that can upload or download information much faster than a standard telephone line and modem (BT, 2006). This is in line with the ITU Standardisation Sector that defines broadband as "transmission

capacity that is faster than primary rate Integrated Services Digital Network (ISDN) at 1.5 or 2.0 Megabits per second (Mbits)". But what exactly constitutes a high -speed bandwidth, is an issue for discussion. The earlier definitions see a high-speed connection as everything above 56Kbit/s. Recently, we saw this definition change into speeds of at least 256Kbits/s and higher, whereas the EU considers broadband capacity to be "equal to or higher than 144Kb/s", although they mention that in reality, the vast majority of broadband offerings are at least 512Kb/s, with speeds of 2Mb/s and higher being quite common .

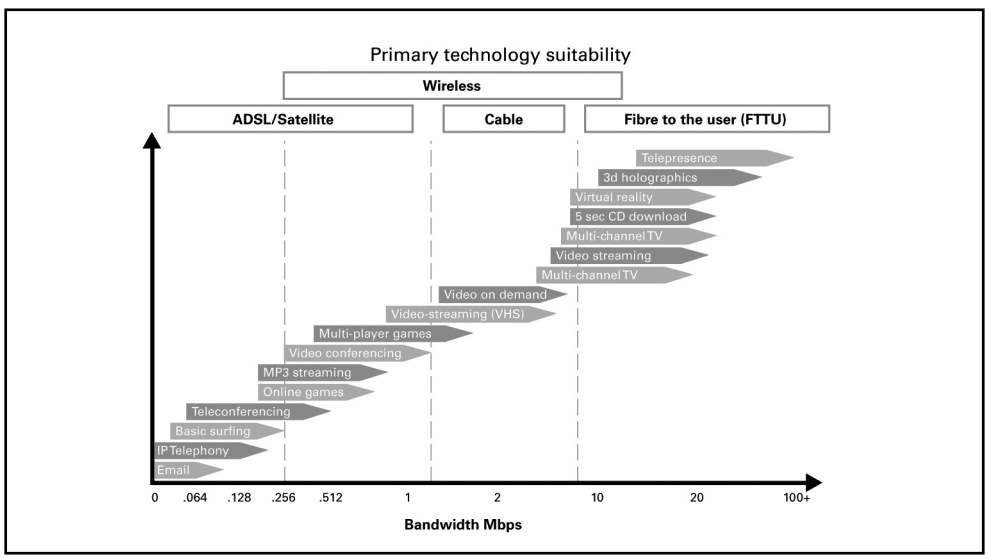
Although broadband was first seen as merely a technical issue, there is now a noticeable shift towards embedding the core elements/benefits as well as the social dimensions of a broadband connection. According to ITU (ITU, 2003):

> "Broadband is commonly used to describe recent Internet connections that are significantly faster than today's dial-up technologies, but it is not a specific speed or service".

Or as BT states, "It's not the technology, it's what you can do with it that makes broadband so important". Concrete examples of applications made possible through broadband are (BT, 2006):

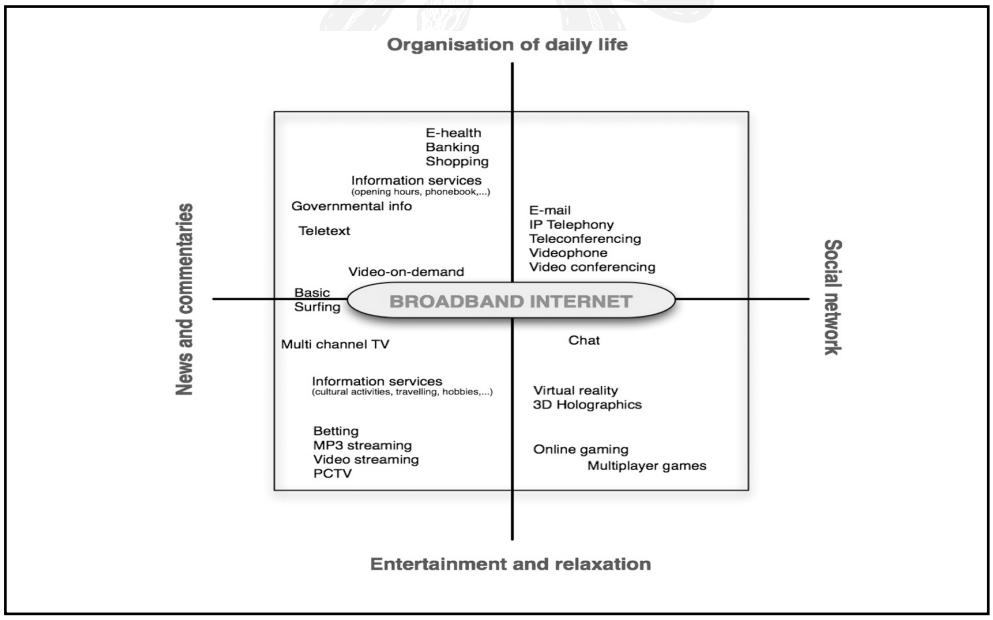
- staying in touch with family and friends via webcam;
- downloading complex and graphic-rich websites virtually instantly;
- downloading music, animations and videoclips faster than ever; and
- playing interactive games at top speed against gamers around the world.

FIGURE 1: OVERVIEW OF POSSIBLE APPLICATIONS AND SERVICES OF BROADBAND. (KPMG, 2004:15)



The basic functionalities of the Internet, as far as can be identified, are communication and the gathering of information. For that purpose, a high-speed connection is not really required. However, as the Internet impacts on three areas of the individual (work, home and on the road), a high-speed Internet connection becomes more important. In these areas, especially the residential environment, ICTs are becoming important on all domains, as identified by Zerdick: social networks, organisation of daily life, news and information, and entertainment (Zerdick et al, 2000). As people use the Internet for specific purposes in different functional domains, they expect immediate access to different services and applications.

FIGURE 2: BROADBAND INTERNET AS KEY-ELEMENT IN THE EVERYDAY LIFE DOMAINS



Based on: Van den Broeck, W 2005. New media, new practices, new audiences? Is iDTV indeed a paradigm shift? Paper presented at the IAMCR conference, Taipei.

The www is no longer the 'world wide web', but rather refers to 'whatever, whenever, wherever'. People have the potential to access services for different purposes from different locations, even when they are on the road, via a wireless connection.

Switching to broadband: enablers and barriers

why switch to broadband?

As already mentioned, governments (still) have high expectations of the potential and benefit of broadband connectivity, and are therefore putting a lot of effort into promoting it. The EU government for example has set the widespread introduction of broadband at affordable prices as one of its main objectives in their e-Europe 2005 action plan (see Lievens, 2005).

According to the International Telecommunication Unit (ITU) there are three main reasons why governments should promote broadband (ITU, 2003):

(1) The first reason is the clear benefits to users. The high speed and 'always on' nature of broadband enables the exchange of richer content, an expansive communication and even the sharing of a connection with multiple users.

(2) A second aspect is the benefits to the economy. Broadband connectivity is a key concept in the information society and encourages innovation.

(3) The third main reason is the return on investment, as broadband holds the promise of new applications and services that will attract users and help to recover infrastructure development costs.

These reasons show that it is not the broadband networks *per se* that should be promoted, but rather the availability of high-speed Internet access as a platform for developing a range of new and innovative applications and services.

Most countries do subscribe to this framework, but the development and uptake of broadband is also influenced by a number of other factors:

- Access: there has to be a widespread broadband infrastructure, and competition in services at reasonable prices, so that everyone can easily access the Internet at high speed if desired.
- Motivation: people are not always aware of the possibilities and the advantages of a broadband connection. Because of this ignorance there is often a lack of motivation to switch to or to use a broadband connection.
- Content: there is a requirement for appropriate broadband applications and content supply that is in line with the needs of the end-user.
- Security: certainly in an 'always on' situation, the Internet has to be secured (eg spam, viruses, secure payments) so that there is sufficient trust by the users.
- Education: people need skills, not only to operate a computer or the Internet, but also to be able to deal with the massive amount of information. Therefore a certain level of digital literacy is required.

These elements are not only enablers in broadband distribution, but at the same time, they can also be important barriers for the end-user (see below). And in developing countries they tend to be responsible for the low penetration and adoption of broadband Internet.

THE BENEFITS OF BROADBAND TO RESIDENTIAL USERS

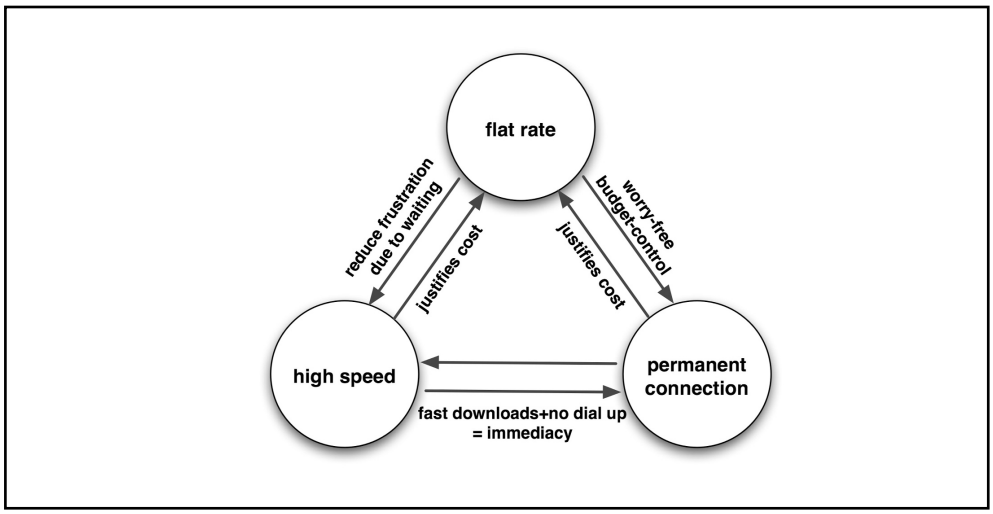
It is clear that Governments promote broadband, but what are the specific advantages for residential users? Why do or should they switch to broadband?

Broadband is immediately associated with the concepts of "always on" and "flat-rate", which are generally perceived as the most important advantages of this type of connection. This "always on" connectivity combined with the "flat rate", facilitates communication, because it increases the availability of information (ITU, 2003). And as we are living in an information society (Castells, 1996) access to information is crucial.

Not only do we need to have open access points or gateways to this information, but, because of the volume and nature of information, we also need to be able to access the right information quickly. In that respect, broadband Internet increases the access speed and therefore saves time and reduces the frustration level for users. This is particularly important for those who want to consume or download large amounts of information from the Web. Due to changing technologies, the nature of content is also subject to these changes – specific content like 3D imagery in video games is difficult to use effectively over slower connections. Several content-rich applications such as voice, audio, video in domains like e-commerce, e-education, e-health, e-Government, as well as online gaming and file sharing are seen as potential drivers of broadband take-up.

Anderson (2002) has identified these three core elements ("flat rate", "always on" and high speed) as the broadband virtuous loop, with these three elements continuously interacting.

FIGURE 3: THE BROADBAND VIRTUOUS LOOP. (ANDERSON, 2002:10)

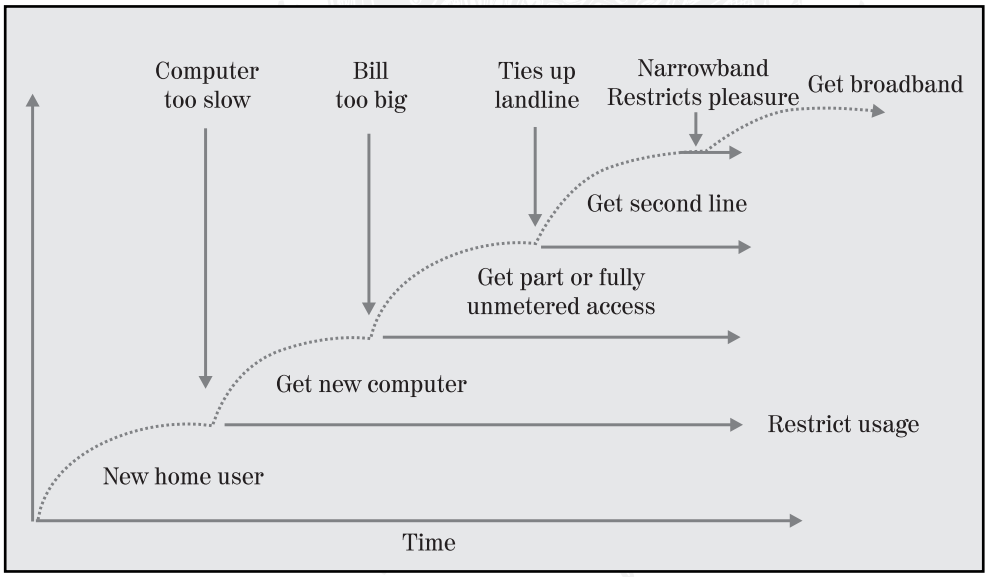


Each of these elements is an enabler for people to switch to a broadband connection. The transition to a broadband connection therefore is normally perceived as a gradual one. Prior to switching to broadband, most people have already used a phone-line or ISDN connection as an intermediary. Known triggers to switch to broadband are: (Dunaway, 2005)

- tied-up phone lines;
- inability to make a connection;
- website error messages;
- passwords;
- the wait.

This means there is a natural transition towards broadband connectivity based on the end-user's activity. Research has shown that this transition, based on technological factors, is necessary for switching to broadband. This broadband upgrade consists of complicated layers of previous actions that combined result in either a decision to buy or to postpone .

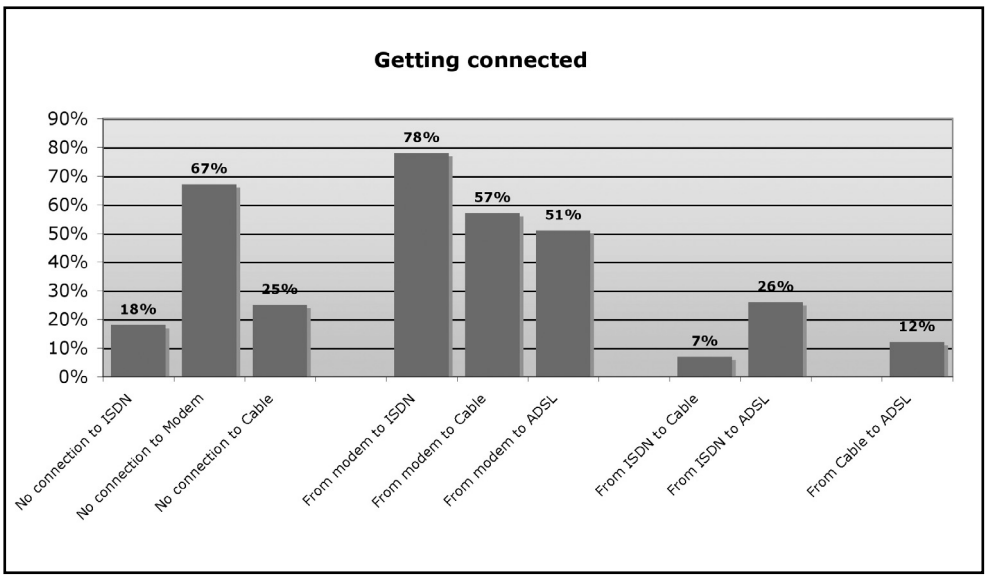
FIGURE 4: NATURAL STEPS IN BROADBAND SWITCH-OVER (CRABTREE & ROBERTS, 2003:15)



An important evolution in broadband uptake, is that the natural transition from narrowband to broadband connections is becoming more and more rare. Advanced Internet applications and cheaper broadband connections, as well as different triple-play package-deal promotions have resulted in a slowdown of the natural transition and an increase in new broadband connections, without intermediary stages. Research in the Netherlands for example has not only shown that the number of people with an analogue connection has diminished, but also indicated that more and more people skip the natural switch from narrowband to broadband. In the Dutch research 25% of the respondents immediately subscribed to a broadband connection. (Dialogic, 2005: 16)

To revert back from a broadband connection to a narrowband connection is something that only occurs sporadically. In the mentioned research example, only 3% of respondents switched from broadband back to narrowband (Dialogic, 2005).

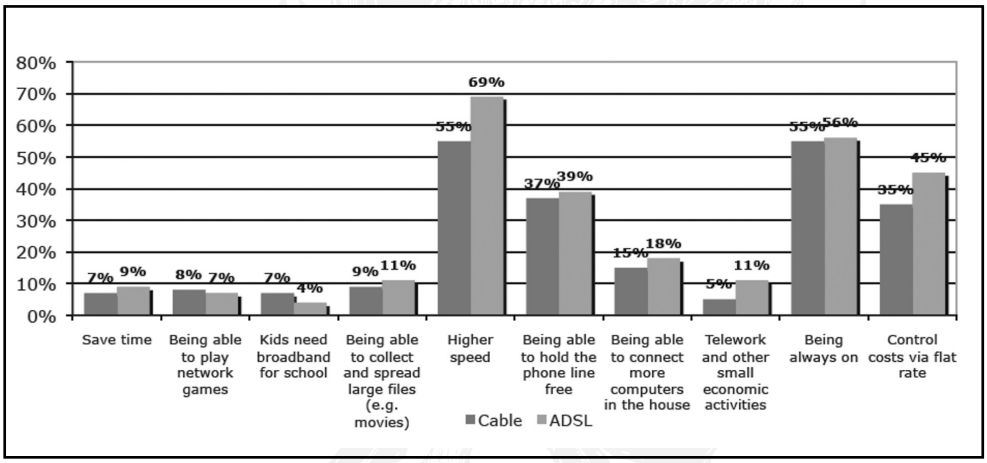
FIGURE 5: TRANSITION BEHAVIOUR OF INTERNET CONNECTION (DIALOGIC, 2005:16)



Once connected, people experience the limitations of a narrowband connection in relation to the new services and applications the web offers. Dialogic (2005) found that ISDN users, more than other Internet users, are bothered by the slowness of their Internet connection (38%). Furthermore the percentage of modem users that are concerned by the slowness of their Internet connection is only 26% (this was around 80% in 2001 and 2003). Therefore it is assumed that people who were dissatisfied with the speed of their Internet connection, have already made the switch to broadband. The main reason for switching to a broadband connection is indeed speed. Nearly three in five (57%) broadband users that switched simply indicated they wanted a faster connection. However, although speed matters for broadband users, few know exactly what connection speed they have at home; 17% said they knew their home connection speed, while 81% acknowledged ignorance .

Concerning costs, the Dialogic research shows that broadband users are more satisfied than narrowband users. 29% of ISDN users and 26% of the modem users say costs are annoying; for cable and ADSL users these percentages are only 15 and 16%. Besides speed, the research also illustrates the importance of the 'always on' aspect. More than 50% of all the people that switched have indicated that being 'always on' is one of the main elements in favour of subscribing to a broadband connection (Dialogic, 2005).

FIGURE 6: REASONS TO SWITCH TO BROADBAND (DIALOGIC, 2005:27)



BARRIERS TO SWITCH

Although we see that more people immediately switch to a broadband connection (see above) we have to recognise that a lot of people still do not have an Internet connection at all. Despite the advantages and Governments' efforts, there are still barriers for residential users to switch to broadband.

Although speed is seen as one of the three core elements of broadband (see above), and with that an important enabler, American research has shown that a lot of dial-up users still are not interested in upgrading to high speed at home (Horrigan 2006).

In the *Home Broadband Adoption* research of the Pew Internet & American life project, dial-up users were asked whether they would like to switch to broadband. 39% say they are interested in doing this, and 60% say they are not. Some possible reasons for so many dial-up users saying they do not plan to upgrade are: (Horrigan, 2006)

- 22% of dial-up users who do not want broadband at home have a high-speed connection at work.
- Dial-up users who do not want to switch to broadband are older and have lower incomes than dial-up users who express a desire to switch.

To adopt broadband, barriers on different levels have to be overcome. The first is the decision to purchase a computer and Internet connection. Next is the infrastructure cost. The lack of digital skills can also be a barrier. Cost, availability, skills and security are seen as the biggest hurdles to switching to broadband Internet and hence the core factors to improving the uptake of broadband Internet

(Van Dijk, 1998; Van Dijk 2001). However, it is clear that these elements, although crucial, are not totally influential on a decision. For example concerning costs, many Internet users appear unconvinced that the benefits of broadband are worth the additional cost. Basic Internet applications, such as e-mail and instant messaging, do not really require a broadband connection. On the other hand, an experiment in the US (LaGrange) where cable broadband access was offered for free to anyone who was interested, showed after one year only 29% of residents had subscribed (ITU, 2003). It is therefore important to recognise that aside from these main barriers, there are also more personal micro-barriers that play an important role in the lack of uptake.

MOTIVATION

Aside from the usual barriers such as access, motivation is increasingly being identified as a key element. As already stated, the lack of motivation, eg ignorance of possibilities and advantages, is a strong barrier to adoption of a computer and subsequently an Internet (broadband) connection.

According to Van Dijk, an initial important step towards obtaining broadband, is the presence of motivation. However, there is a large group of so-called 'information want-nots', comprising more women than men; older rather than younger people; lower instead of higher educated; and more unemployed than employed people. An important barrier for them is fear of computers and an anti-technology attitude, although these people do realise that they will be excluded in the future. However, of these 'information want-nots', an important group are drop-outs, who do not need the Internet, have no time to use it or do not want to use it. This means the lack of motivation is not only an emotional issue (computer-phobia or anti-technology attitude), but also a rational issue, as for some people digital applications do not offer a substantial added value and have serious shortcomings (Van Dijk, 1998).

DIGITAL SKILLS AND COMPUTER LITERACY

Digital skills can be categorised in different ways. Steyaert (2000) identifies three types of digital skills that he refers to as "the demands that recent technological developments make on the skills of citizens." He categorises digital skills as:

- instrumental skills: these are operational acts or being able to cope with the technology;
- structural skills: these refer to the (new) structure of information eg using hypertext, looking for dynamic knowledge via discussion lists and a sufficient knowledge of English;

- strategic skills: these imply the ability to look for information pro-actively, making decisions based on information and scanning your surrounding on important issues.

Van Dijk also sees digital skills, or skills to use computer media and converging new media, as an important step in the broadband adoption process. Like Steyaert, he distinguishes the same type of skills: operational skills, information skills and strategic skills. Operational skills are the capacity to use a computer and its programs. Information skills are the ability to search, select and process information from computer- and network files (ie a broader definition than Steyaert's structural skills). Strategic skills are related to the application and the context, as operation and information skills are being used to pursue a (strategic) goal. The European Commission also identified skills as an important factor next to access. In 1996 it introduced the concept of "informacy": "as the new technology is an information technology, it requires not only stronger basic skills in numeracy and literacy, but also a new form of basic skill, the skill of interaction with the new technology, let us call it informacy."

It is obvious that when people do not have the necessary skills, it is, next to availability, a major barrier for broadband usage and Internet usage in general. As mentioned earlier, the lack of these necessary skills can lead to a resisting attitude and a group of 'information want-nots', that comprise socially vulnerable groups trapped in a vicious loop. Specific attention to these groups of people is therefore necessary.

AVAILABILITY AND COST

Although availability in terms of access is the first and necessary condition in order to get a broadband connection, this is something that, due to Governmental policy as well as new technologies, is not much of a barrier anymore. This is specifically the case in Western-European countries, but even in rural areas or in developing countries access is becoming less and less of an issue.

From the following graphs, it is clear that European countries with higher competition and lower prices have a larger broadband penetration.

Figure 7: Degree of competition (European Commission, 2005:13)

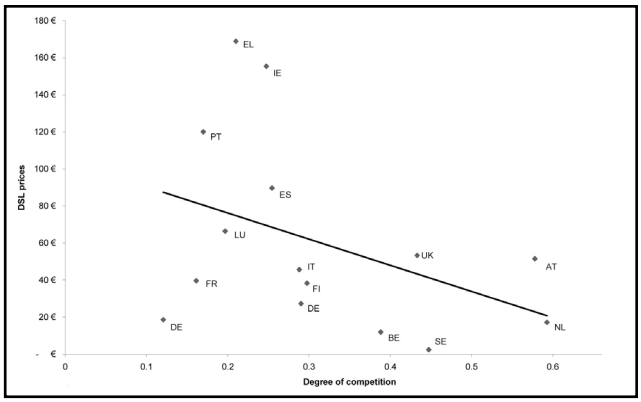
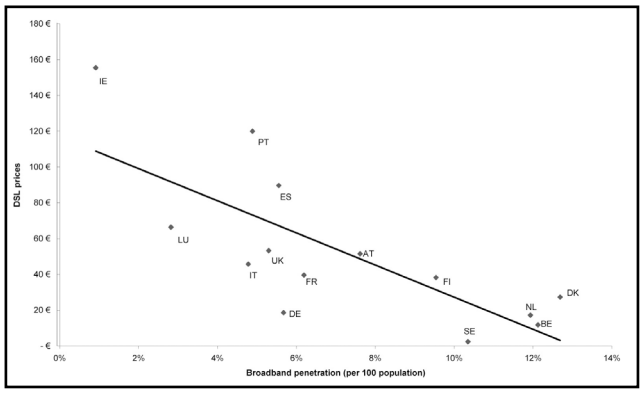


Figure 8: Lower costs of broadband leads to higher penetration (European Commission,2005:13)



Availability in terms of cost is still an important barrier that is strongly related to other barriers. While some years ago 'the cost as such' was identified as the most important barrier, we now see that its importance is decreasing. According to the previously mentioned Dutch study, the largest part of narrowband users (43% modem users and 36% ISDN users) are satisfied with their present connection and do not see a reason to switch to broadband. In the previous research 50% said the costs to switch were too high; this is now only 6%. Most narrowband users think they will not save money by switching to broadband (51% narrowband users and 40% ISDN users) If they do expect to save money, this concerns communication costs (stamps, phone costs, etc) and travel costs (19 and 21%) (Dialogic, 2005).

security

Internet and computers also have a negative connotation to some people. Negative elements such as spam, phishing, viruses, etc do frighten people. This is also the flip

side of the "always on" coin. These elements not only have an impact on the adoption of Internet, but also on the usage patterns of existing Internet users.

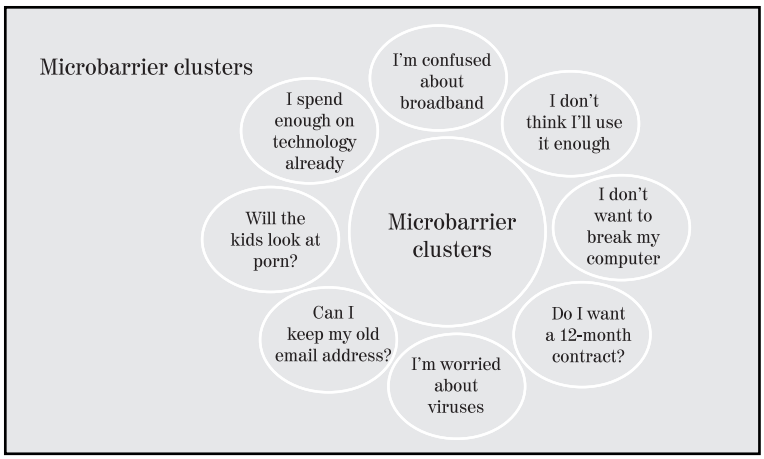
Dialogic (2005) found that in the Netherlands only 3 to 7% of Internet users are not bothered by any aspects of their Internet use. All other respondents get irritated by different things, including unsolicited e-mail or spam, pop-ups and viruses.

Together with the trustworthiness of the content on the Internet, these are issues that can form important barriers.

MICRO- AND MACRO-BARRIERS

The barriers mentioned above could be identified as what Crabtree and Roberts (2003) call "macro-barriers". This set of macro-barriers is a clustering of what they believe are major, more general barriers, such as availability, understanding (this can be related to the digital skills), cost and customer service. But next to these macro-barriers they have also identified micro-barriers. These barriers are more personal concerns and questions (Crabtree and Roberts, 2003).

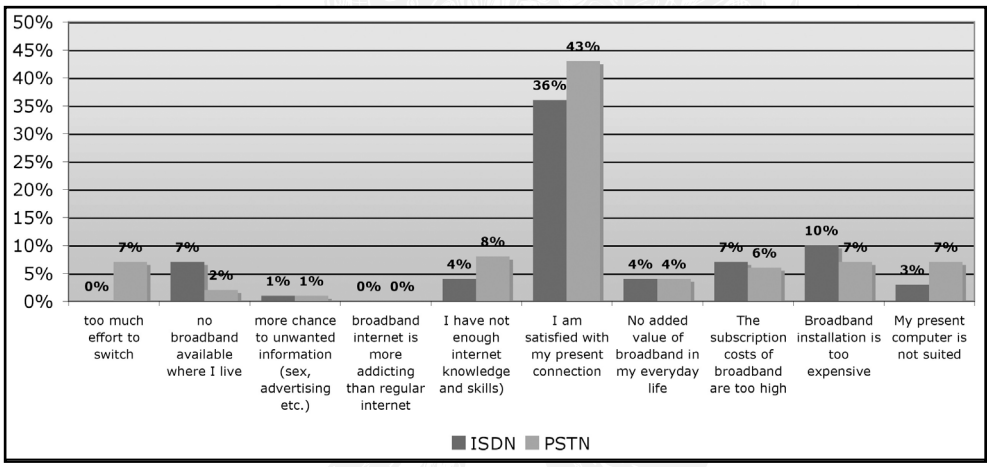
FIGURE 9: MICRO-BARRIER CLUSTERS



As these micro-barriers are more personal issues, they are also very important to understand the specific barriers in broadband adoption. The micro-barriers are specific questions people ask themselves in weighing up the decision of whether to switch to broadband or not.

These macro- and micro-barriers can also be found in the explanations people who have not (yet) adopted broadband Internet give when they are asked why they have not made the switch:

FIGURE 10: REASONS NOT TO SWITCH TO BROADBAND (DIALOGIC, 2005:26)



As the graph shows, the most important reason mentioned, is that users are satisfied with their present Internet connection. Cost-related aspects, like installation and subscription costs, are a second important reason.

SPECIFIC BARRIERS FOR DEVELOPING COUNTRIES

Although some developing countries are catching up, there are still some specific barriers related to access that developing countries, and specifically rural areas, have to cope with. The most important barrier in developing countries is the lack of infrastructure. There is not only a gap in access to telecommunications (eg telephone lines), but also in computers, the latter being the most important problem. In general, disparity in income, telephone density, legal quality and human capital are perceived as main factors for the low penetration of computers and Internet in developing countries. But research has shown that these factors do not differ substantially between developing and developed countries (Chinn & Fairlie, 2006). Although these factors are similar, the impact as well as the way to address these factors are much more difficult in developing countries as the regulatory framework in most of these countries is still lagging behind.

In addition, developing countries do encounter some other very specific issues which slowdown the uptake of broadband Internet. Firstly, in order to establish a clear added value, sufficient local content in the mother language has to be available. At the moment, most of the applications and services available on the Internet are in English and do not offer specific local content. And even if there is sufficient content, the e-literacy rate in the developing countries is often too low to make use of these services. Secondly, as argued in this paper, one of the main advantages of broadband

is the "always on" aspect. However, for Internet access, broadband is often not an option, as this requires enormous installation costs. For fixed lines or "wireline" technologies, like DSL, ISDN or cable modems, specific infrastructure is needed, which is not always available or possible. For DSL and ISDN, the distance causes a problem, as this technology cannot be provided 5km away from a switch, without remote switching gear. Cable is not an alternative either, as the cable that is available is not suited for a two-way service and in many countries or areas, there is no cable and the installation would be very costly. Alternatives for developing countries might be wireless personal networks (via cellphones) that can be used for primary services and even for public access. However, these wireless services provide limited bandwidth, with typically a maximum of 9 600 bits per second, which makes them acceptable for text messaging and simple e-mails, but not for real Internet access. Other alternatives might be 3G, Wi-Fi, WiMax and even Internet access via satellites. Hudson (2003) expects that the demand for broadband will grow in developing countries because of the increased reliance on Internet for information, commerce and entertainment. Many countries are already extending public access to the Internet via initiatives such as telecentres, public libraries, kiosks and community centres, to provide different groups of the population (eg entrepreneurs, students etc) access to the World Wide Web (Hudson, 2003). However, as we notice an evolution towards more individual (Web 2.0.) Internet services, that require an individual personal computer with regular access, the need for more personal computers in developing countries will probably keep growing.

The usage of broadband by residential users

Having identified some enablers and barriers for broadband, we will now look into the actual difference broadband makes for residential users. Do they use the Internet differently once they have broadband?

It is clear that it is not sufficient for people to merely purchase broadband Internet. In order to fully benefit from its possibilities and advantages, the technology should also be incorporated into people's everyday-life practices. This process of domestication or absorption refers to the fact that people experience broadband as a positive commodity and that they will keep on using it. Once broadband is no longer seen as a technical tool, usage becomes evident and a transition in user roles can be noticed. A more dynamic social process of creative interaction can deploy itself. Broadband usage is then no longer "consuming food, but is like cooking".

This adaptation process can occur by means of:

- Self-discovery: find out something new on your own, by accident or by a process of experimentation;
- Rediscovery: something you already know, but which works either better or only on broadband;
- Directed discovery: someone can suggest you do something new;
- Proxy discovery: someone can ask you to do something for them and in so doing find out something new

The impact of broadband on the user has already been the topic of much research. The general conclusion of these studies is that broadband definitely has an impact on the Internet usage of people. The PEW institute already discovered in 2002 that broadband users spend more time online; conduct a higher range of activities on the Internet; and do so more often than narrowband users. This was attributed to the fact that broadband users were typically early-technology adopters and therefore already had a more specific Internet profile (PEW, 2002).

But today it is not only the 'innovator' or 'early adopter' that is using broadband Internet. According to a report by McKinsey, spending more time online is one of the first signs of adaptation. This is related to the fact that people are getting a faster and more intense experience (Berchtold et al, 2001). When we look at Internet usage in a more general view, we see that although representing 32% of Internet users, broadband users in the US are responsible for 49% of total web pages viewed online (comScore Media Metrix) and that only 5% of users are responsible for 85% of network usage (Crabtree & Roberts, 2003).

Once people have switched to a broadband connection, this is immediately reflected in their Internet activities. Research of the IAB has indicated that for broadband users:

- The average number of users increases a little;
- The average sessions per user per month increase a little more;
- The average time per month online increases more (18%);
- The average number of websites (domains) increases even more (23% to 79 sites); and
- The average number of page views increases the most (36%).

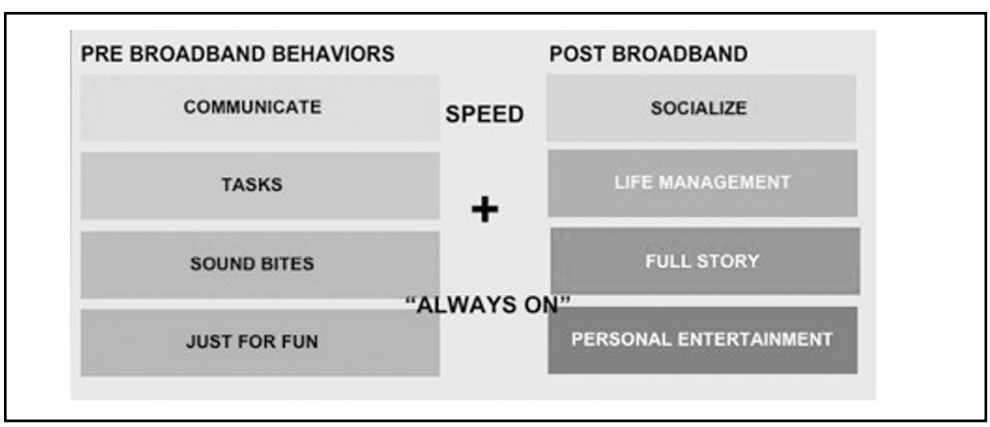
In order to explain these different usage patterns, the concepts of speed and time, (although not always identified as such by the end-user), do play an important role in understanding the social impact of broadband. Firstly time in an 'always on' connection can be defined as 'timeless time' since there is no meter ticking. According to Castells, this element of 'timeless time' is, also one of the key concepts

in the information society (Castells, 1996). Because of the fact that computers can stay on and therefore stay connected, they are perceived as user friendlier. In a narrowband connection users always have to switch on and switch off for every connection. Secondly, speed permits one to do more activities online, as the "www" is no longer a synonym for the "world wide wait". However, this is not always reflected in an increased level of usage. This means time and speed are not the only factors for specific Internet usage. It also depends on the activity as well as the ability to get tasks done more quickly and more efficiently (see also Crabtree and Roberts, 2003).

The difference in usage between broadband and narrowband is that more content is being produced and shared by people. We see that with broadband, information and communication become part of the same process. More than ever, because of the new online applications that could be developed (Web 2.0 applications in particular), broadband users increasingly interact in a creative way rather than just as passive consumers, eg self-help groups, alternative medicine, weblogs, communities with a common interest, etc.

When people make the switch to broadband, the essence of this transformation can be summarised by the figure below. In short, their Internet activities and present practices can obtain an extra dimension, in the different domains in which they use the Internet.

Figure 11: Essence of broadband transformation (Yahoo, 2005:10)



These four "post broadband" domains can be linked to the four functional domains of the household, as defined by Zerdick *et al* (2000) (see above). A broadband connection provides the opportunity to use the Internet as a social

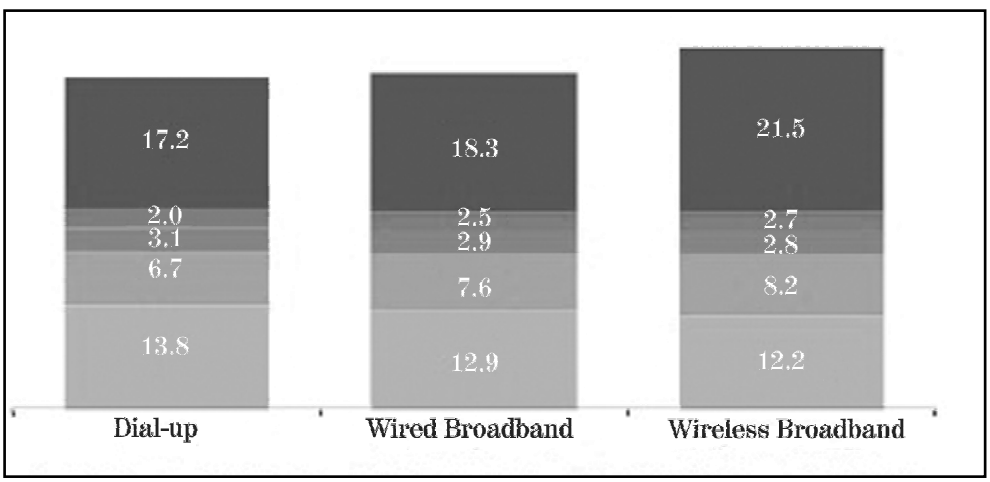
communication medium; different services can help in the organisation of the daily life or life management; and broadband connection is a gateway to a source of unlimited information and entertainment.

For broadband users, the "always on", high-speed connection expands the scope of their online activities and the frequency with which they do them. It transforms their online experience. According to Horrigon and Rainie (2002:3), "the online surfing patterns of high-speed users reveal two values that policymakers, industry leaders, and the public should bear in mind:

- **an open Internet is appealing to broadband users**. As habitual posters of content, broadband users seem to desire the widest reach for what they share with the online world. As frequent searchers for information using their "always-on" connection, broadband users seek out the greatest range of sources to satisfy their thirst for information. Walling off portions of the Internet, which some regulatory proposals may permit, is an anathema to how broadband users behave;
- "**broadband users value fast upload speeds as well as fast download speeds.** They indicate this not only in their preference to create content, but also in their extensive file-sharing habits."

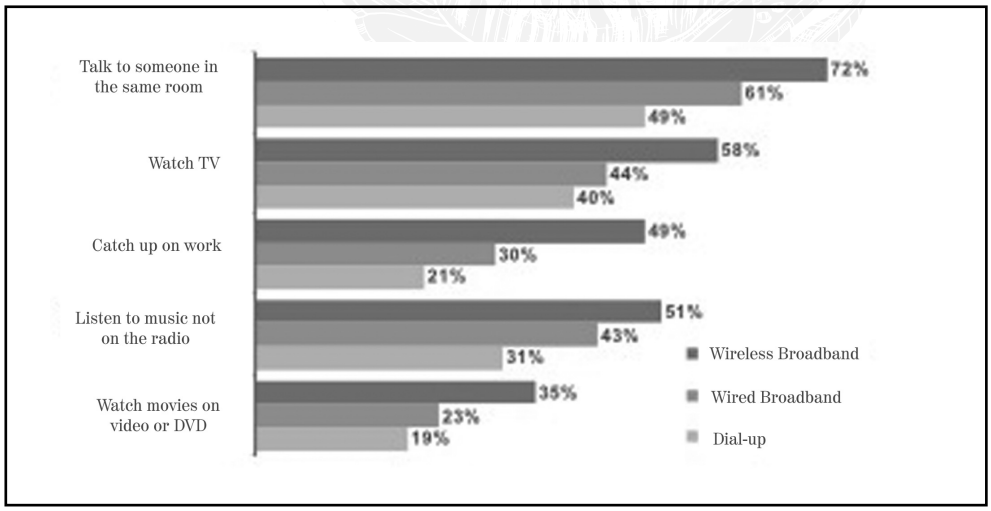
There are also indications that there is a shift in the recreation activities and media consumption by broadband users. The fact that these users spend more time online seems to influence their television consumption. Although this influence is relatively limited for the moment, we believe that it will increase in the future, for example because of the increasing offer of online video content.

FIGURE 12: MEDIA USAGE ACCORDING TO THE TYPE OF INTERNET CONNECTION (YAHOO, 2005:19)



The "flat fee" principle, the "always on" feature, as well as the higher connectivity level, results in a multi-task behaviour. Broadband users often combine the time they spend online with other activities. While they are online they also watch television, listen to music, etc.

FIGURE 13: OTHER ACTIVITIES PERFORMED WHILE BEING ONLINE AT HOME (YAHOO, 2005:21)



All of the above could create the impression that broadband users are always on or connected to the Internet 24 hours a day. Although this is the most advanced stage of Internet adaptation, it is clear that it is not always the case and therefore cannot be generalised. There are everyday barriers that have an impact on being "always on". First of all, the computer is not always on. Secondly the computer is not always located in a central place, so people have to move to a specific place to get connected (not the case for portable computers).

Despite these barriers, broadband is intruding into the everyday life of people on various levels. Therefore we can state that people with a broadband connection are domesticating the Internet. This is demonstrated by the fact that people use their connection much more extensively to support and manage their lives. Therefore it can be argued that broadband access triggers a change in people's use of the web.

With the broadband boom people readily explore (IAB Europe, 2005:18):

- downloading music and videos;
- watching television shows online;
- using the Internet to make phone calls (Skype etc);
- using Messenger and chat products.

It is clear that information is crucial in our present society, and will probably become even more important in the following years. Access to information is therefore important to all members in society.

This evolution is also recognised by Governments. Where, in terms of broadband promotion, a strong access-oriented policy used to be maintained, we now see that there is increased attention to other barriers, on a macro- as well as a micro-level, in order to increase broadband adoption. Currently, the objectives even go beyond the take up, as policy strategies such as the EU's i2010 programme are also beginning to focus on the adaptation or domestication of broadband Internet.

The present and future importance of broadband in society, ensures that the promotion of broadband is strongly encouraged. The ITU (2003) described four common characteristics of successful broadband economies that are valid despite the differences in culture, landscape and technology:

1) Informing the public about broadband: awareness about the available products and its benefits is important.
2) Making effective use of broadband through applications and content. ITU found that broadband connection is higher in countries where people make use of the current broadband applications, such as IP telephony, video/audio via broadband, online gaming and telecommuting. The availability of content in local languages is also a key issue.
3) An environment that fosters broadband innovation. There should be policies and incentives that create a fertile environment for broadband content and application development.
4) A competitive market structure that keeps prices low. An efficient running market with true market competition is a key element for broadband adoption (ITU, 2003).

In addition to these specific characteristics, it is also important to provide socially weaker groups with the necessary skills. An example of this is the Internet for Everybody (*Internet voor Iedereen*) project, that was implemented in Belgium. The Belgian government started the project to give every citizen the possibility to connect to the information superhighway as an attempt to bridge the digital divide. The project offers all citizens the opportunity to buy a specially priced computer or laptop with a broadband subscription for one year, with free pc and Internet education. This initiative tries to tackle different barriers with a

single approach. As stated above, it is important that broadband connectivity is addressed in a holistic way.

Conclusions

Today we notice that the Internet, by means of services and applications, plays a role in the individual's professional and personal environment. Whether it is to maintain their social network; organise their daily life, be informed or just relax, people use the Internet to do these things. This explains the success of services like MySpace, YouTube, SecondLife, etc. But in order to operate these services there is a requirement for broadband.

Firstly we see that besides a natural transition of people switching from narrowband to broadband connection, new users increasingly choose a broadband connection. The motivation for doing so can be found in the core dimensions of broadband: "flat fee", "always on" and high speed, in combination with diminishing broadband prices, due to competition.

Secondly, the transition to broadband also encounters a number of barriers. Some of these are related to more general barriers for Internet take up, while others are specifically related to broadband. Barriers such as access, cost and security have already been identified and addressed by Governments. But motivation, adequate skills and micro-barriers (personal level) also constitute important factors in broadband uptake. While Governments emphasise the economic advantage of broadband, the main motivation for people to switch to broadband does not seem to be purely economical. The main reasons for, and the true advantages of, getting a broadband connection, are to be found in the four functional domains of our everyday lives. The Internet today is specifically known as an information and entertainment medium. Communication and practical issues in the organisation of our daily lives are also key elements. For developing countries where general Internet access is not yet available, we expect Internet penetration to grow. As students and entrepreneurs in developing countries discover the different possibilities of the Internet, we can expect the Internet to play a role in the different areas of their everyday life as well.

Thirdly, more and more there is a direct relationship between offline and online behaviour. This is especially the case for broadband users. Once connected via a broadband connection, compared to narrowband users, there is a difference in usage patterns. The Internet becomes ubiquitous for broadband users and gradually spreads into their lives, an indication of growing domestication of this technology.

Broadband Internet access is a necessity for the 24/7 society and the concept of "timeless time" in the networked society.

Finally, when looking into the future, it is our belief that broadband and being connected through a high-speed Internet connection is no longer sufficient. The new challenge will be to address the new dimension in connectivity: people have to be connected anytime, anywhere, to anything. ❑

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