



BROADBAND ON DEMAND

Cable`s 2020 Vision

solon

**BROADBAND
ON DEMAND:
CABLE'S
2020 VISION**

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Cable`s 2020 Vision

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**EXECUTIVE
SUMMARY
BROADBAND
ON DEMAND:
CABLE'S
2020 VISION**

EXECUTIVE SUMMARY

BROADBAND ON DEMAND: Cable`s 2020 Vision

High-quality network infrastructure and broad coverage are regarded as fundamental preconditions for a prospering and growing Europe. To support Europe`s way towards a modern information and knowledge society, the European Commission (EC) consistently drives the development of the broadband market. With the “Digital Agenda for Europe” (referred to as the Digital Agenda), it has now set new ambitious key targets for future broadband development: improved broadband availability and ultra high speed levels, a single digital market, and digital inclusion.

Cable operators provide European citizens with very high speed access to the digital space. Having originally been established to broadcast TV signals, cable operators made substantial investments in modernising their networks to introduce internet capability. At the end of 2010 about 24m households across Europe subscribed to broadband cable internet. A total of 112m households are in the technical footprint of European cable operators and can opt to subscribe to the TV, broadband and telephony packages offered by cable operators.

The European cable industry`s contribution to the Digital Agenda`s targets is outstanding in a whole range of critical areas.

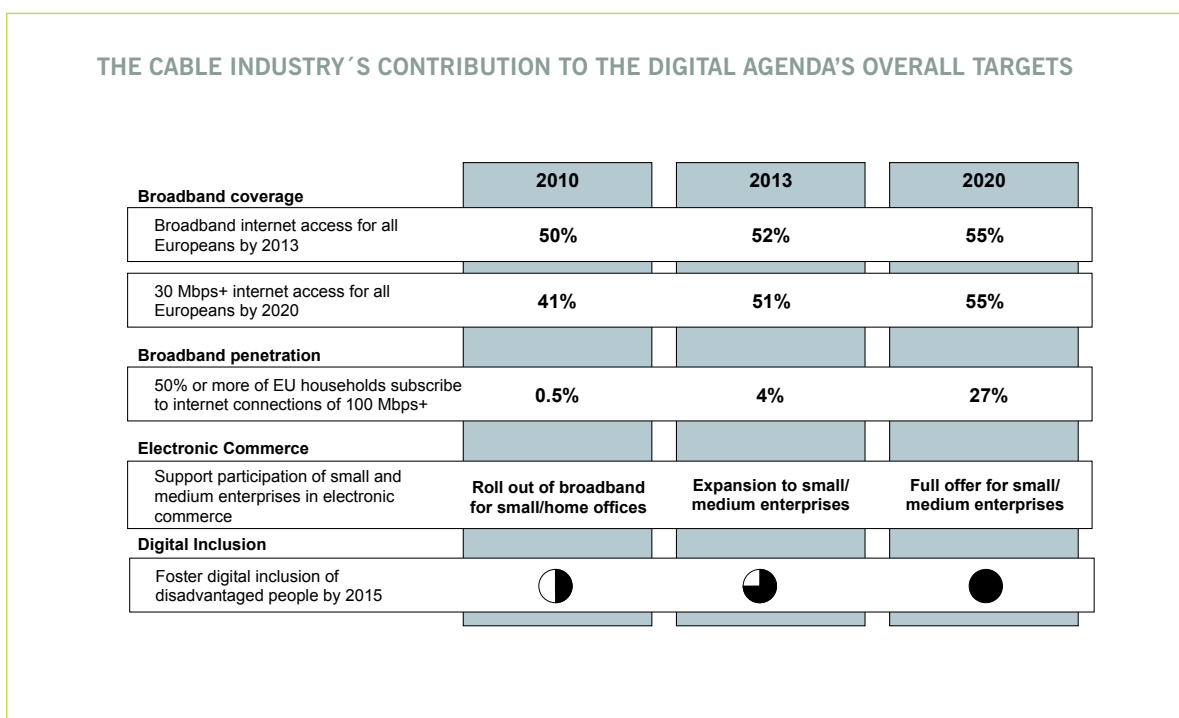
■ **Broadband coverage: cable brings ultra high speed to 50% of EU households**

- Today, 50% of households in the European Union (EU) are within the reach of cable broadband networks delivering speed levels between 10 and well over 100 Mbps. The reach of European cable is usually several times greater than the reach of pure fibre deployments. In some markets, cable even matches the wide reach of the incumbent.
- 51% of EU households will be reached with 30 Mbps via cable networks by 2013. By 2020, 55% of EU households will be within the reach of cable broadband networks delivering at least 30 Mbps.
- Cable operators are open to partnerships with public enterprises in order to bring ultra high speed infrastructure to rural areas that are currently underserved.

■ **Ultra high speed: 100 Mbps and more will be the cable standard**

- Cable operators lead the race to ever higher speed levels. Maximum speed levels of 100 Mbps and more are already quite common. With 20-25 Mbps, today`s most widely promoted cable broadband offers surpass the ADSL (6 Mbps) and ADSL2+ (<25 Mbps) speed levels usually offered.
- With the ongoing implementation of DOCSIS 3.0 (D3.0), a telecommunications standard that permits the addition of high-speed data transfer to an existing cable network, cable operators can offer maximum speed levels of up to 400 Mbps; in tests even 1.2-1.4 Gbps were reached.

- Supported by highly attractive high speed, low-price bundles, cable broadband users are spearheading the use of very high internet speeds: 73% of cable subscribers are currently taking packages of 10 Mbps and more, compared to only 29% in the total European broadband subscriber base.
- And this is just the beginning: 50% of European cable broadband subscribers can be expected to take packages with more than 30 Mbps by 2013, 13% even more than 100 Mbps. By 2020 the usage of at least 100 Mbps will be the standard, with close to 70% of cable broadband subscribers using these ultra high speed packages.



■ Broadband penetration: cable operators spur the broadband penetration

- Markets with cable-driven infrastructure competition achieve broadband penetration rates that are over 30% higher than in markets that focus on service competition. And higher penetration rates are reached much faster: cable-driven markets are usually 2 to 2.5 years ahead of their DSL-only peers.
- By 2020 at least 27m European households are expected to subscribe to 100 Mbps and more – relating to 27% of the ultra high speed EU penetration target. And there is a significant upside if cable operators can successfully activate the currently unconnected cable households within their network reach.

■ Affordability: low cost of cable broadband access supports uptake

- Over the past few years cable operators have decreased the price of broadband access much more quickly than DSL operators: according to most recent OECD data, the average 2008 cable broadband price was only 36% of the 2005 price, while the average DSL price was only reduced to 46%.
- Cable operators offer their broadband packages at significantly lower prices than the incumbent. Discounts range between 20% and 50%.

- The attractive price-value proposition is spurring the overall uptake of cable broadband and it also supports an inclusive information society, as high broadband access costs are among the biggest barriers to entry for many digitally excluded socio-economic groups.

■ **Electronic Commerce: cable supports entrepreneurship**

- Reliable and secure broadband access is a prerequisite for the successful participation of small and medium enterprises (SMEs) in electronic commerce and electronic collaboration.
- Cable operators across Europe are leveraging their upgraded high speed networks to offer attractively priced business packages, especially for the currently underserved SME market. Cable operators, therefore, contribute to the “eCommunication Directives” target of increasing the share of SMEs actively participating in electronic commerce.

■ **Digital Inclusion: cable operators take social responsibility**

- Cable operators across Europe work intensely on supporting digital inclusion.
- European cable operators support a range of programmes that facilitate the regular use of the internet, increase digital literacy and create opportunities by qualifying citizens to use digital products and services safely and effectively.

European and national policy-makers should support the cable industry in reshaping the broadband market and bringing very high speed broadband to both households and enterprises. Six policy areas are especially important for the future development of the European cable industry.

■ **Supporting cable as a leading Next Generation Access (NGA) network**

- Create a regulatory regime that spurs investment in NGAs and provides infrastructure-based competition with a chance to work.
- Develop an NGA policy that continues to encourage investment and innovation. Specific access regulation has the potential to jeopardise cable investment.
- Treat cable and fibre equally when it comes to public support.

■ **Continued support of infrastructure-based competition**

- Cost of regulated access should not discourage investment into new NGA infrastructures.
- Higher termination fees into NGAs can create incentives for further rollout.
- Introduce open access models only when there is a lack of infrastructure competition between various platforms, be it fixed, cable or mobile.

■ **State aid: careful use of public funds**

- Public support should be technologically neutral and support all NGA technologies with the same dedication.
- Public support must concentrate on developing networks in those areas that, due to market failures, are characterised by a persistent lack of commercial initiatives.
- Transparent and technologically neutral proceedings are critical in the case of public support. State aid must be proportionate to the market failure that it intends to correct.

■ **Moving towards a balanced net neutrality approach**

- The EC recognises the important role of legal and transparent traffic management practices designed to guarantee a positive online experience.
- It is important to apply appropriate sanctions to those who break the rules. The new “Telecom Package” and competition rules provide excellent tools for tackling individual companies that behave anti-competitively.

■ **Supporting cable in its role as key contender to telecom incumbents**

- Cable operators remain sub-scale in terms of financial resources, purchasing power and marketing reach compared to their main competitors, the incumbents.
- Consolidation on a national level should be generally supported as a means of sustaining cable’s contender role in infrastructure competition.

■ **Data protection: trust as fuel for the Digital Agenda**

- Being trusted by consumers is paramount to businesses (such as cable operators) that mainly target the consumer with their broadband offers. Companies must, therefore, ensure that consumers’ privacy and data are adequately protected.
- Sanctions serve as decent deterrents to the abuse of personal data. Wherever rules are broken, clear and simple sanctions should provide remedies for consumers.

**THE
DIGITAL
AGENDA:
SETTING
THE TARGETS**

THE DIGITAL AGENDA:

Setting the targets

“Fast broadband is digital oxygen, essential for Europe’s prosperity and well-being.”¹ Knowing this, the EC has driven the development of the broadband market over the past decade by setting ambitious targets and monitoring them closely. A lot of success has been accomplished in this timeframe. With the 2010 Digital Agenda, key targets for the next decade have been set: better broadband availability and higher speed levels, a single digital market, and digital inclusion. To support the broadband strategy, three complementary measures were adopted by the EC in September 2010. The package comprises:

Digital Agenda:
broadband
availability,
penetration and
higher speed levels

- the “European broadband: investing in digitally driven growth”, known as the Broadband Communication,² which outlines how best to encourage public and private investment in ultra high speed networks;
- the “Commission recommendation on regulated access to Next Generation Access Networks (NGA)”,³ which is intended to provide regulatory certainty to telecom operators;
- the “Proposal for a decision establishing the first radio spectrum policy programme”⁴ is intended to ensure the availability of spectrum for wireless broadband.

These three measures aim to help the EU realise the commitments set in the Digital Agenda. The following chapter gives an overview of these targets, both in the i2010 initiative, which defined the EC’s strategy for developing information and communication technology, and the Digital Agenda together with the Broadband Communication.

INCREASING BROADBAND AVAILABILITY AND SPEED LEVELS

High-quality network infrastructure and wide coverage are regarded as fundamental preconditions for a prospering and growing Europe. A key priority within the i2010 initiative was the completion of a single European information space that promotes an open and competitive internal market for information society and media. This flagship priority was underpinned by the objective to provide affordable and secure high-bandwidth communications, rich and diverse content, and digital services.

**i2010: affordable
and secure
bandwidth
communication**

Within the i2010 initiative, no formal availability goals or targeted speed levels were formulated. Yet, the reference to the transmission of ‘high-quality content’, such as high-definition video, indirectly relates to a target bit rate of up to 5 Mbps. This target has been developed more formally in the Broadband Communication, explicitly demanding full broadband coverage by 2013. By 2020 all Europeans should have access to the internet with at least 30 Mbps, with 50% or more of European households having subscriptions of 100 Mbps and above.

Many member states’ governments are currently substantiating these targets and developing their own national proposals on the transition to ultra high speed broadband. Examples include:

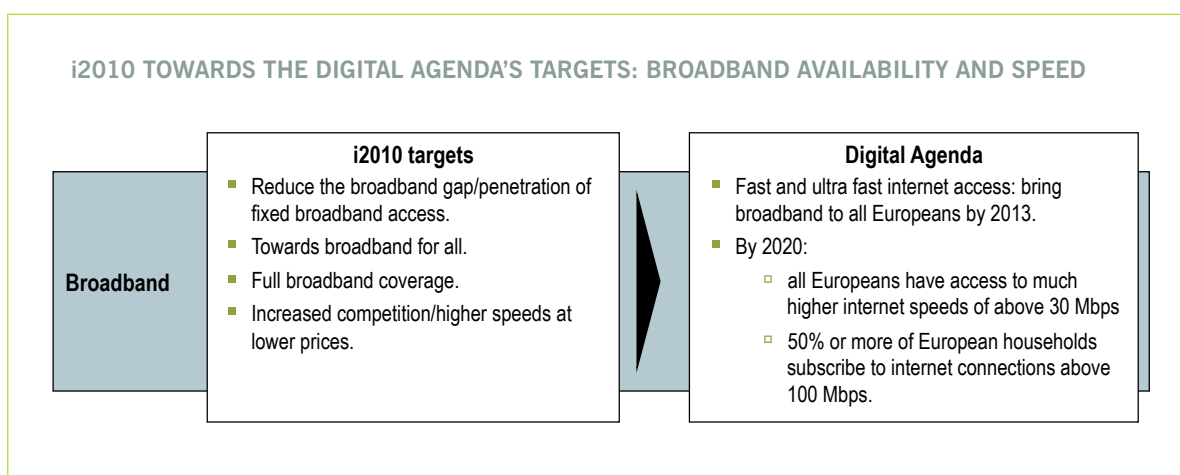
¹ Communication by Mrs. Neelie Kroes, Vice President of the EC on 12 March 2010.

² C(2010) 472.

³ C(2010) 6223.

⁴ C(2010) 471 final.

- “France Numérique 2012” which formulated the objective to ensure all citizens` have access to high speed internet by 2011;
- “Digital Britain” which announced that there should be 100% broadband coverage and universal access by 2012, with a minimum speed of 2 Mbps;
- the German “Breitbandstrategie” which aims to serve 75% of the population with 50 Mbps connection by 2014.



INFRASTRUCTURE COMPETITION

Infrastructure competition supports growth and productivity

Broadband competition is a key driver in growing broadband penetration. In particular, infrastructure competition with parallel networks reaching out for new subscribers results in higher broadband penetrations and steeper price decreases. It is therefore superior to service competition in which all competitors rely on using the network of the incumbent.

The beneficial impact of a growing telecommunications industry on the overall growth of the economy has been discussed and proven in many studies.⁵ Investment in telecommunications infrastructure spurs economic growth in several ways.

- Direct growth effect: the increased demand for network-related products (cable, switches and so on) directly increases demand and, thus, results in economic growth.
- Productivity effect: innovative telecommunications infrastructure and services allow their users to be significantly more productive.
- Spillover effect: investment in the telecommunications sector creates significant benefits and investments in other sectors, such as new jobs and more electronic commerce.

Two competing parallel networks are superior to one with service competition

Within its regulatory framework,⁶ the EC aims for full infrastructure competition between different infrastructures. Where there is a lack of infrastructure competition, regulation has to support service competition and consumer choice by securing access to existing networks. Once infrastructure competition

⁵ For example, Röller & Waverman: Telecommunications Infrastructure and Economic Development: A Simultaneous Approach.

⁶ Directive 2002/21/EC.

has developed, access regulation can be reduced.

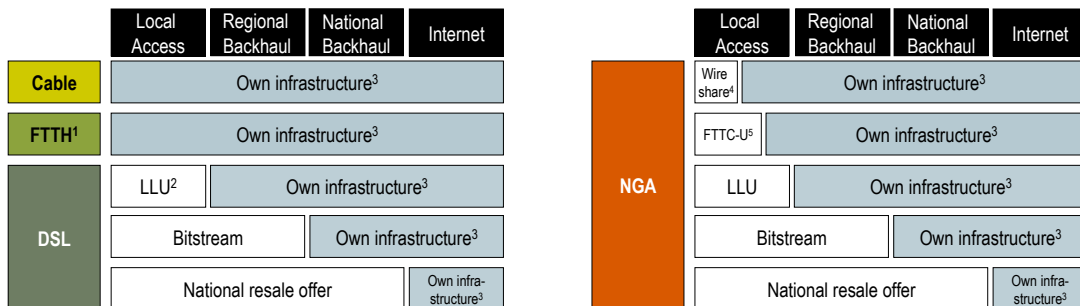
While backbone and backhaul infrastructures are increasingly based on fibre, the so called “last mile” is usually covered by copper twisted pair and/or coaxial cable. Transition from copper to fibre-based networks has a significant impact on competition. In the context of a FTTB or FTTH deployment, duplication of the terminating segment of the fibre loop is usually costly and inefficient (see the chapter on “Broadband Technologies”). In the new NGA recommendation, the EC is, therefore, promoting access to civil engineering infrastructure for the deployment of parallel fibre networks. This ensures that the costs of fibre deployment will at least be shared.⁷

INFOBOX: THE ‘LADDER OF INVESTMENT’ APPROACH

The ladder of infrastructure approach assumes that new competitors` services and infrastructure investments are made by a step-by-step approach. The initial step (at the bottom of the ladder) is usually service competition, which can be seen as a vehicle to infrastructure competition. Moving to NGAs, the most effective deployment strategy is likely to be a mixture of technologies to utilise locally specific characteristics of the network (for example, quality and topology of the existing networks, loop lengths, customer density and presence of multidwelling units).

In both cases, for the competitor, climbing up the ladder of investment means gradually developing its own infrastructure and bringing it closer to the end customer. But efficient infrastructure investments vary across countries and regions. While densely populated urban areas might support 2-3 fixed infrastructures, rural areas usually support only one fixed network. In order to maintain the level of competition reached, regulators have to adjust the wholesale access products to fit into the NGA hierarchy.

‘LADDER OF INVESTMENT’



¹ Fibre-to-the-Home
² Local Loop Unbundling
³ Either own or leased infrastructure, incl. duct sharing
⁴ Fibre-to-the-Home or Fibre-to-the-Building plus in-house wire sharing
⁵ Fibre-to-the-Cabinet unbundling

Yet, in addition to FTTH and FTTB deployments, very high speed cable as well as wireless networks are also available in many regions. Policy-makers deciding on infrastructure regulation should therefore answer two core questions.

⁷ SEC(2010)1037

- **Can the existing infrastructure meet coverage and speed requirements?** Fibre deployment might actually not be needed to meet mid-term customer needs. With the upgrading of existing coaxial networks, like DOCSIS 3.0 deployment, speeds of at least 100 Mbps can be reached. Trials showed the possibility of even higher speed levels in the range of 1.2-1.4 Gbps. This feature would already meet the 2020 targets. However, a full coverage with 30 Mbps might be too ambitious to achieve for cable alone and, therefore, needs private-public partnerships, especially in less densely populated areas.
- **How should infrastructure competition be approached?** Once multiple telecommunication networks are at least generally available, there needs to be discussions about how a single household can actually get access to competing infrastructures. In addition to fixed lines, mobile technologies must also be taken into consideration.

To ensure the desired infrastructure competition, regulators have to create a genuine and level playing field.

SUPPORTING ELECTRONIC COMMERCE AND ENTREPRENEURSHIP

The fragmented European market of 500m consumers prevents economies of scale, and this is even more the case in the digital economy. There is no technical reason why borders should hinder the flows of wealth creation. Thus, the European Commission works towards removing regulatory barriers, enhancing regulatory consistency and creating a level playing field for Europe`s operators.

Provide broadband access to SMEs

The reform of the “eCommunications Directives” (known as the Telecom Package) was adopted in November 2009. It not only improves the single market but, most importantly, gives consumers greater choice and increased transparency. The Digital Agenda further explores the goals of the “eCommunications Directives” and related communications. It aims for 50% of European citizens (currently 38%) to buy online and 20% to pursue cross-border purchases. Furthermore, it encourages small and medium enterprises (SMEs) to conduct more online purchases and sales. Powerful, integrated broadband infrastructure is a key prerequisite for reaching these goals. SMEs, in particular, should be provided with improved access to higher speed levels at an affordable price.

REACHING DIGITAL INCLUSION AND LITERACY

Bridge the digital divide and support digital inclusion

For governments facing an ageing population and problems with social exclusion, broadband can be used as a tool to provide excellent returns on investments in the longer term. The i2010 initiative was striving for an information society that is inclusive, provides high-quality public services and promotes quality of life. Within the i2010 initiative, the digital inclusion policy was launched with an emphasis on improving digital literacy as a priority objective. The programme has delivered significant progress, but gaps continue to exist in regular use of the internet and digital skills, both across countries and socio-economic groups. Currently, 150m Europeans, some 30%, have never used the internet. Evidence shows that the main reasons for households not having a broadband connection is a perceived lack of need, costs and lack of skills. The Digital Agenda sets targets to halve this figure by 2015. It also intends to increase internet use by 15% overall, and by 19% amongst disadvantaged people.

**BROADBAND
TECHNO-
LOGIES:
MOVING
TOWARDS
NGA**

BROADBAND TECHNOLOGIES:

Moving towards NGA

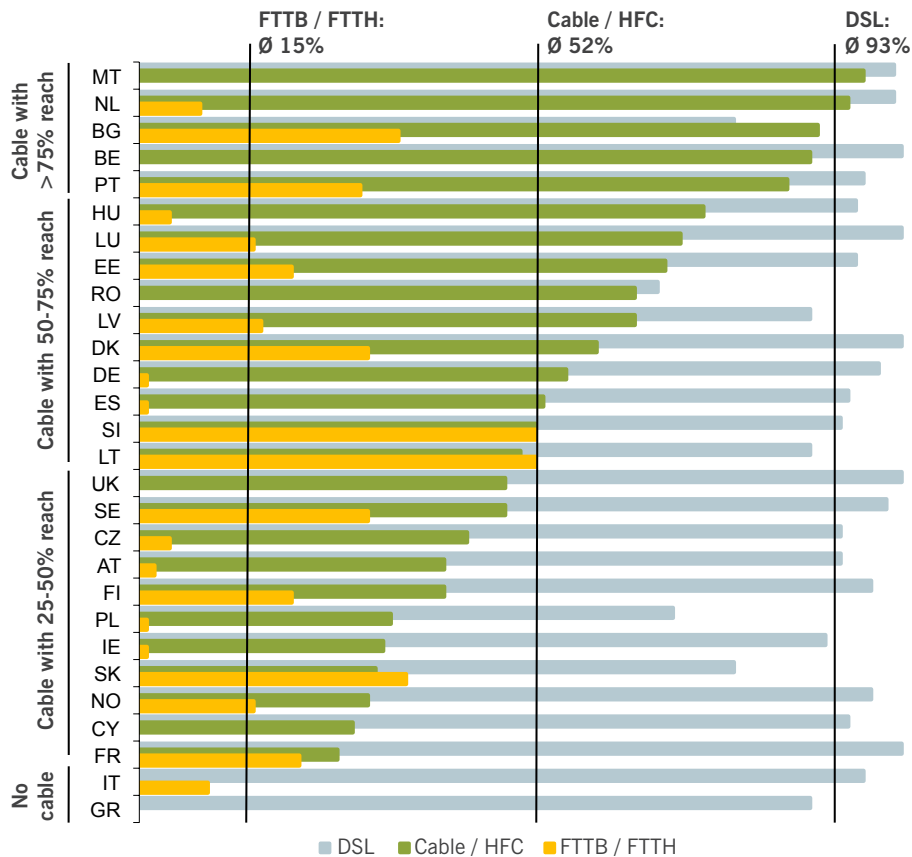
In reaching the Digital Agenda`s broadband targets, the rollout of NGAs plays a crucial role. These are fixed-line access networks capable of delivering very high speed levels. Typical fixed NGA infrastructures are very high speed digital subscriber line (VDSL), fibre to the basement (FTTB), fibre to the home (FTTH) and hybrid fibre coax (HFC) networks. Also, a range of next-generation wireless infrastructures can offer transfer rates of 30 Mbps and more. These so-called long term evolution (LTE) infrastructures, however, still have to be rolled out.

DSL infrastructure widely available but reaching its speed limits

In Europe, the most widely available fixed broadband infrastructure is DSL (digital subscriber line, usually in its mass market version ADSL). This technology makes use of the copper-based legacy telephone access networks once rolled out to deliver telephony services to all. DSL delivers broadband services to a very high percentage of the population across Europe. Currently, an average of 93% of Europe`s population is within the range of DSL infrastructure. As a legacy telecommunications network, the DSL infrastructure is generally controlled by the former incumbent. If this is coupled with a lack of infrastructure competition, regulatory intervention is required to generate service competition on the DSL infrastructure.

FIXED BROADBAND COVERAGE IN EUROPE

% OF POPULATION, END OF 2008



Note: EU-27 countries + Norway; data for Switzerland not available

Source: iDATE, European Commission, Solon

Cable is the second most important access infrastructure in Europe. According to the most recent EC/iDate data, at the end of 2008, 52% of the European population was within reach of existing cable networks. However, availability of cable networks varies significantly across Europe. In more than half of European markets, cable networks reach more than 50% of all households. In countries with a very high cable network reach (>75% of all households), such as the Netherlands, Belgium, Portugal, Bulgaria and Malta, cable and xDSL play an equal role and compete head-to-head with telecoms incumbents.

More than 50% of the EU population is covered by cable networks

The rollout of pure FTTB and FTTH networks has just started, usually driven by either the incumbent or local utilities. Currently, only about 15% of European households are within the reach of fibre networks: a share that will only increase slowly as it is driven by high investment costs and the complexity of rollout. Larger fibre footprints are usually found in smaller markets, while most of the bigger European countries are just beginning to see large-scale fibre rollouts.

Fibre rollout has just started – most countries with very limited fibre reach

To fully appreciate the impact of cable operators on the Digital Agenda, it is essential to understand the performance and investment profile of the different broadband technologies.

PERFORMANCE OF NGA TECHNOLOGIES

Key performance indicators for an NGA technology are down- and up-load speeds as well as latency times. In particular, the increased distribution of video content over the internet needs ever-growing download speeds. A high symmetry of down- and up-load speeds is especially required in the business-to-business (B2B) environment, where business partners collaborate in real time over the internet or use internet-based cloud computing services. Short latency times, that is minimal time delays in transmission, are required by a lot of innovative B2B services and applications such as eHealth, smart electrical grids, or on the consumer side of gaming.

Cable and Hybrid Fibre Coax (HFC) infrastructure

Historically, most cable networks were deployed with the sole purpose of transmitting TV signals. Currently, 67m EU households take at least one cable service, usually TV access. Broadband internet access is the cable operators' second most important service, with 24m households across Europe subscribing to high speed cable internet packages. The actual reach is even larger: a total of 112m European households are in the technical footprint of cable networks and can, generally, opt to subscribe to TV, broadband and telephony services offered by cable operators.

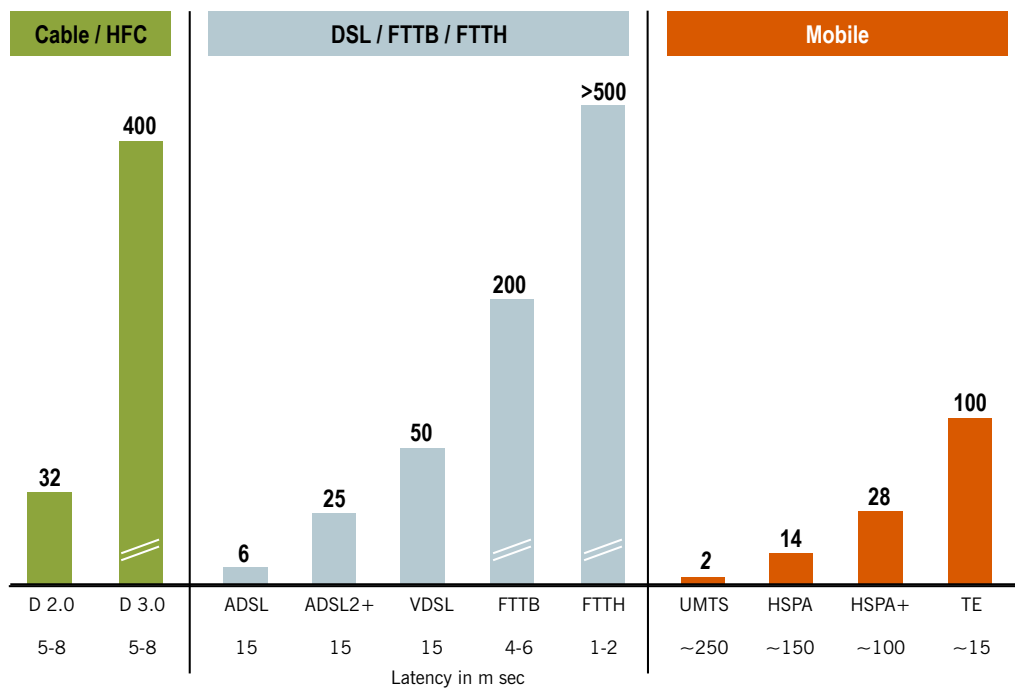
Over the past decade, operators made substantial investments in modernising their networks, which included the introduction of back-channel capability and the integration of optical fibre into the pure coax infrastructure. With their street-level fibre backbones, HFC networks are essentially comparable to VDSL and FTTC (fibre to the cabinet) networks – but with a significantly larger reach and higher speed levels.

With current upgrade level, cable networks capable of providing up to 400 Mbps

High speed levels are realised using a combination of two measures.

- Increasing bandwidth efficiency.** High bandwidth can be offered by using the available bandwidth more efficiently, for example, by freeing capacity through the digitisation of TV channels or by introducing DOCSIS 3.0, a technology that optimises the capacity used by broadband services. By rolling out DOCSIS 3.0, download speeds between 100 and 400 Mbps and upload speeds of up to 108 Mbps can be reached. Latency times of cable broadband networks are usually very low at 5-8 milliseconds (m sec). Current research shows that, by combining DOCSIS 3.0 with improved digital compression standards, even download speeds of up to 1.4 Gbps are possible. Respective field tests have recently been undertaken by Kabel Deutschland⁸ and Cablecom⁹. This levels out any differences between FTTH and HFC networks.

BROADBAND TECHNOLOGIES: MAXIMUM DOWNLOAD SPEED LEVELS IN 2010
MBPS, 2010



Source: Solon, Wikipedia, Nordig

DOCSIS 3.0 and deep fibre move cable to ultra high speed levels

- Cluster splits and deep-fibre deployment.** As demand increases and throughput capacity in a specific network cluster becomes insufficient, cable operators can split this cluster and bring fibre gradually closer to the home. Their fibre-powered HFC networks, essentially, therefore, follow a gradual evolution path towards FTTB and FTTH. Consequently, future cable networks will exceed the already high speed levels of DOCSIS 3.0, move towards more symmetric offers and reach even lower latency times.

⁸ Largest German cable operator

⁹ Largest Swiss cable operator

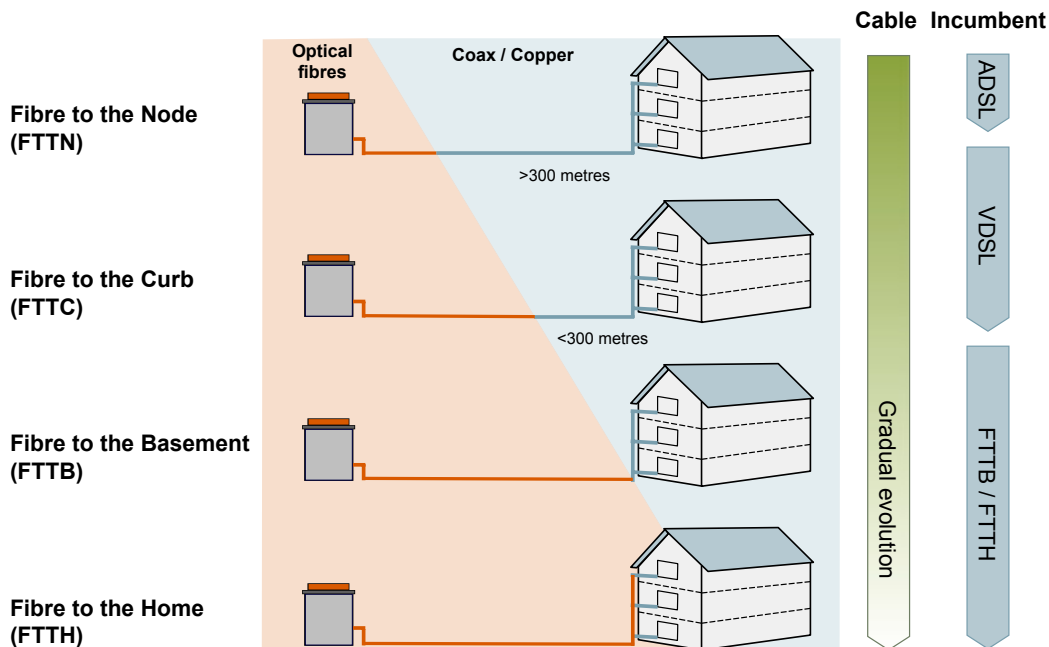
DSL and FTTx infrastructure

The infrastructure of the incumbent, and consequently also of alternative network providers, is usually based on a legacy copper access network. As the maximum capacity of copper-based networks is limited, both incumbents and alternative operators have started to deploy pure FTTB and sometimes even FTTH networks, especially in urban areas.

- ADSL/ADSL 2+:** The twisted pair, access network of the telecommunication incumbent was originally designed for low-bandwidth voice services. With the introduction of ADSL and later of ADSL2+, higher transmission rates became available. But, even with ADSL2+ and fibre in the backbone, transmission speed will not surpass 25 Mbps. This speed level can, however, only be reached under optimal conditions. The larger the distance between the subscriber and the central office, the lower the download speed. As a result, only a share of ADSL subscribers have access to more than 6 Mbps, and only a similar number of ADSL2+ subscribers have access to more than 16-18 Mbps.
- Within **FTTC** or **VDSL** solutions, fibre is brought down to the street cabinet and this can still be several hundred metres away from the actual consumer. The longer the loop-length remains, the more the bandwidth is deteriorated. FTTC or VDSL networks are capable of delivering a maximum download speed of 50 Mbps and 5 Mbps of upload. With 15 m sec, latency of VDSL is at the same level as that of ADSL.

Even ADSL2+ only capable of delivering up to 25 Mbps – under best conditions

FIBRE DEPLOYMENT APPROACHES: SCHEMATIC TECHNICAL OVERVIEW



Source: Solon

Only FTTB and FTTH are competitive with modern cable broadband

- **FTTB:** fibre is deployed to the basement of a multi-dwelling unit building, while the existing copper wiring is used for the in-house distribution. Depending on the final loop length, FTTB allows for a maximum downstream bandwidth of up to 200 Mbps, depending on the length of the twisted pair in-house wiring; upstream can reach 20 Mbps and latency is at a low 4-6 m sec.
- **FTTH:** the most advanced networks deploy fibre all the way to the customer's premises, thereby supporting maximum download speed levels in the range of 500-1000 Mbps and upload speeds of up to 100 Mbps. Latency times are negligible.

When deploying FTTH, operators can select between two network architectures: GPON (Gigabit Passive Optical Network) or P2P (Point to Point) Ethernet.

- **GPON** is a fibre-optic access network technology, in which passive optical splitters are used to enable a single fibre to serve multiple premises. GPON supports download streams of up to 2.5 Gbps and upload speeds of up to 1.25 Gbps. However, these have to be shared by all the users of the fibre. The use of a single fibre for multiple homes has two core advantages: lower investment costs per home and better usability for the classical point-to-multipoint TV distribution. Consequently, most fibre operators, especially the incumbents, currently opt for GPON when realising their FTTH deployments.
- In **P2P Ethernet** infrastructures every home gets its own fibre. The bandwidth available to a single household is, therefore, fully scalable and symmetric, and allows for speed levels of up to 10 Gbps. The higher flexibility of the P2P Ethernet approach, however, comes at a certain cost: compared to GPON, deployment is more costly (partly offset by lower operational costs) and the technology is less suitable for classical TV distribution. P2P Ethernet is, therefore, better for bringing fibre to business-to-business environments rather than residential consumers.

Gradual evolution towards fibre for both cable and fixed line

Fibre is also at the heart of cable networks

Ultimately, both the incumbents' and the cable operators' NGA strategies rely on bringing fibre closer to the home. However, through cluster splits, cable operators are able to deploy fibre through a more demand-driven, gradual approach that does not require high upfront investments as in the case of FTTB and FTTH deployment strategies used by the incumbent and alternative fibre operators. Mobile broadband technologies will bring higher speed levels to the end consumer especially in less populated regions. Yet, as mobile broadband is a shared medium, the actual capacity will depend heavily on the concurrent usage within the respective mobile cell. Urban regions, in particular, will see challenges in realising maximum speed levels.

ECONOMICS OF NGA TECHNOLOGIES

Strong economic differences: cable upgrade more efficient than fibre rollout

The various NGA strategies show strong differences in their economic impact. FTTx approaches used by the incumbent and alternative fibre operators require high upfront investment. Cable operators use the low-cost introduction of DOCSIS 3.0 to quickly reach very high speed levels across their networks and deploy fibre with a highly cost-effective, demand-driven approach. The specific investment needs and the suitability of the NGA approaches to different rollout scenarios (urban versus rural deployment) must be of particular consideration when it comes to public financing in the form of, for example, subsidies. It also has to be kept in mind, that the current strong investment activity of cable operators into their highly efficient NGA rollout can be jeopardised with a stronger focus on cable access regulation.

Economics of cable-based NGA in urban areas

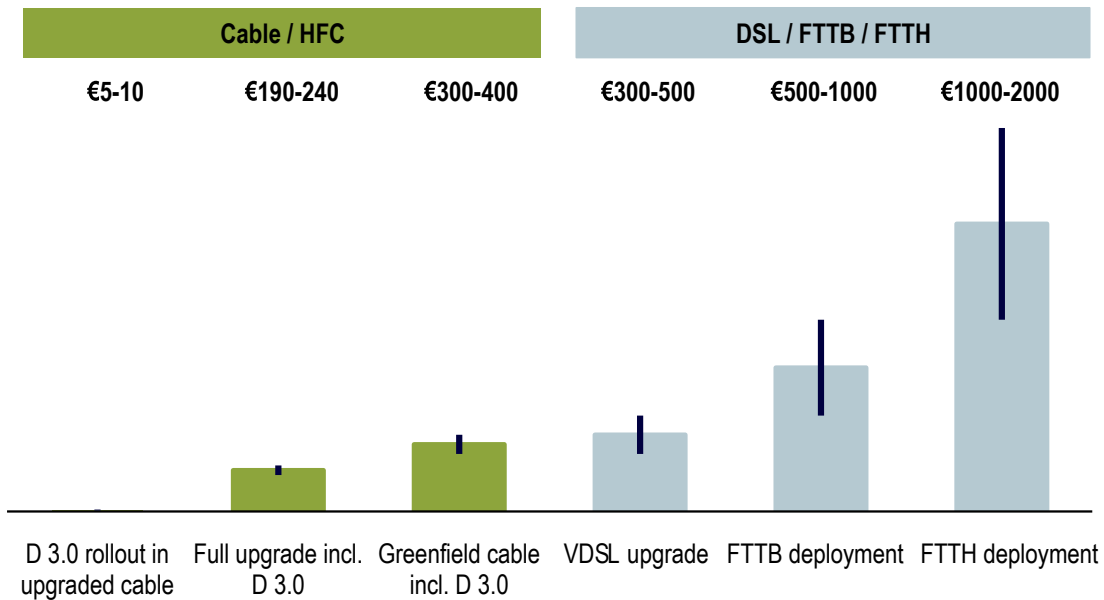
In many urban areas cable networks already show a significant footage. Here, two cases have to be differentiated.

- Non-upgraded cable network:** a full upgrade of a uni-directional cable network requires a total investment of € 190-240 per household; € 30-50 is needed for the upgrade of the street network, € 150-180 for renewing in-house cabling, and € 5-10 for the implementation of DOCSIS 3.0. In addition, every active cable broadband subscriber requires a cable modem, which adds € 30-50.
- Upgraded cable network:** over the past few years, the majority of cable networks were upgraded to deliver the internet. In this case, only the DOCSIS 3.0 investment of € 5-10 per home passed has to be paid, plus the modem investment for every active subscriber.

Upgrade of cable no more than € 240 per home, greenfield rollout up to € 400

Higher investments are only necessary if no cable network is available. In this greenfield rollout scenario approximately € 300-400 upfront investment is sufficient to connect a new internet-enabled household to the cable network, plus the modem for every active subscriber.

INVESTMENT REQUIREMENTS OF URBAN NGA DEPLOYMENTS
 € PER HOUSEHOLD EXCLUDING MODEM



D 3.0 = DOCSIS 3.0
 Source: European Commission, Solon

Economics of FTTx-based NGA in urban areas

Costly fibre rollout: € 500 per household for FTTC, and FTTH can be up to € 2000

Even in densely populated urban areas, the rollout of FTTx is significantly more costly than the upgrade and expansion of existing cable networks. Costs are only comparable if no cable network is available.

- **FTTC/VDSL:** rolling out fibre to the curb, as in the case of VDSL, requires an upfront investment of approximately € 300-500 per household reached, which is in the range of a greenfield cable expansion in rural areas. Yet, while cable operators can reach speed levels of up to 400 Mbps, VDSL is limited to a maximum bandwidth of 50 Mbps.
- **FTTB:** investments of € 500-1000 per home passed are required for the deployment of fibre to the basement.
- **FTTH:** if fibre is deployed all the way to the consumer's home, a minimum upfront investment of € 1000-2000 is required.

The main cost driver in rolling out FTTx is labour-intense groundwork. A key requirement of the Digital Agenda is, therefore, the coordination of groundwork across the infrastructures and providing improved access to preexisting ducts. Both have the potential to decrease the cost of a greenfield fibre rollout.

Deployment of NGA in rural areas

Rural areas are usually confronted with significantly higher costs for the rollout of new NGA networks. While cable network upgrades and DOCSIS 3.0 rollout still prove to be the most cost-effective option for delivering fast broadband for rural areas, the presence of cable networks in these regions is relatively low. A high investment requirement of approximately € 800-€ 1000 for cable greenfield rollout is the reason why cable networks have been focusing more on expanding in urban and suburban areas rather than rural and remote ones. Yet, the investment needed for the rollout of rural FTTx networks is even higher, and can reach up to several thousand euros in the case of FTTH.

Public-private partnerships might be the solution for rural NGA rollout

Under these circumstances, wireless technologies, and especially LTE networks, are becoming viable alternatives. Theoretically, LTE networks will be able to support speed levels of up to 100 Mbps. Yet, with a high level of parallel usage, as in the case of urban areas, practical bandwidth will not exceed 12 Mbps, on average. While being something of a mobile broadband complement in urban areas, LTE networks are expected to become a valid investment case for rural areas. However, to reach higher speed levels of at least 30 Mbps they need investments in cable or FTTx infrastructures, which could be realised by public-private partnerships.

CABLE AS FUTURE-PROOF NGA

Overall, continuously modernised cable networks show a very attractive set of features: they are capable of providing the very high speed levels and low latency times required by modern internet applications and, thus, supporting the uptake of very high speed internet by consumers and businesses alike. At the same time, it is comparatively inexpensive to develop an existing cable network. As TV distribution networks, cable networks are 'naturally' equipped with high capacity. It only requires limited investment to make this capacity available to broadband access. This unique combination of low rollout costs and attractive features has been the reason behind the success of cable broadband in the past few years.

High speed broadband internet has undoubtedly become a foundation of modern, knowledge-based societies worldwide. With the Digital Agenda, the EC has set prominent key targets within a broadband strategy: better broadband availability and higher speed levels, and the promotion of electronic commerce and digital inclusion.

The contribution of the European cable industry to broadband development has already been outstanding. During recent years, through heavy investments, cable operators have taken on a leadership role in delivering high speed broadband access to their customers. But cable does more than just deliver the highest speed levels to their subscribers. Increasingly, SMEs – so far underserved by the large DSL operators – will also profit from access to innovative cable broadband.

Outstanding contribution of cable industry to the Digital Agenda's targets

Based on an extensive set of future key performance indicators concerning broadband coverage and penetration, speed development and access costs, this report aims to demonstrate the efforts of the cable industry to reach and support the Digital Agenda's new targets.¹⁰

¹⁰ The results are based on the Solon Cable Survey 2009 as well as on a survey, called Solon Broadband Survey 2010, conducted amongst leading European cable operators in October 2010.

**BROADBAND
COVERAGE:
CABLE
BRINGS HIGH
SPEED TO
THE HOME**

BROADBAND COVERAGE:

Cable brings high speed to the home

One of the most fundamental targets explicitly set out in the Digital Agenda is to provide all Europeans with broadband internet access by 2013. By 2020 all Europeans should have access to much higher internet speeds of 30 Mbps and more¹¹. During recent years, through heavy investments, cable operators have performed extraordinarily in delivering high speed broadband access to their customers. Thus, the following chapter aims to outline the crucial role of the cable industry in reaching these targets in the Digital Agenda.

DOCSIS 3.0 ROLLOUT AND FIBRE DEPLOYMENT

Over the past few years, cable operators have made a strong effort to upgrade their networks from a broadcast video distribution platform (one-way) to a fully fledged e-communications network (two-way). Currently, the vast majority of cable networks are two-way upgraded and, thus, capable of providing high bandwidth broadband services. About 90% of the households within the networks of the surveyed European cable operators are two-way ready. Of the Western European players, close to half are even fully upgraded – with the others completing their upgrade activities over the next few years, where economically feasible. As a result, at least 95% of households in the reach of European cable networks will be able to subscribe to high speed internet services over cable by 2020.

Vast majority of cable networks already two-way upgraded

With this, cable operators will play a crucial role in reaching the Digital Agenda's broadband targets. Once cable operators' networks are two-way upgraded, available speed levels are increased with two approaches: firstly with the rollout of DOCSIS 3.0 and, secondly, supporting DOCSIS 3.0 with deep fibre deployment.

Following the introduction of speed levels in the range of 30-100 Mbps, cable operators have triggered competition and forced their competitors, especially incumbents, to invest in further VDSL and fibre rollout.

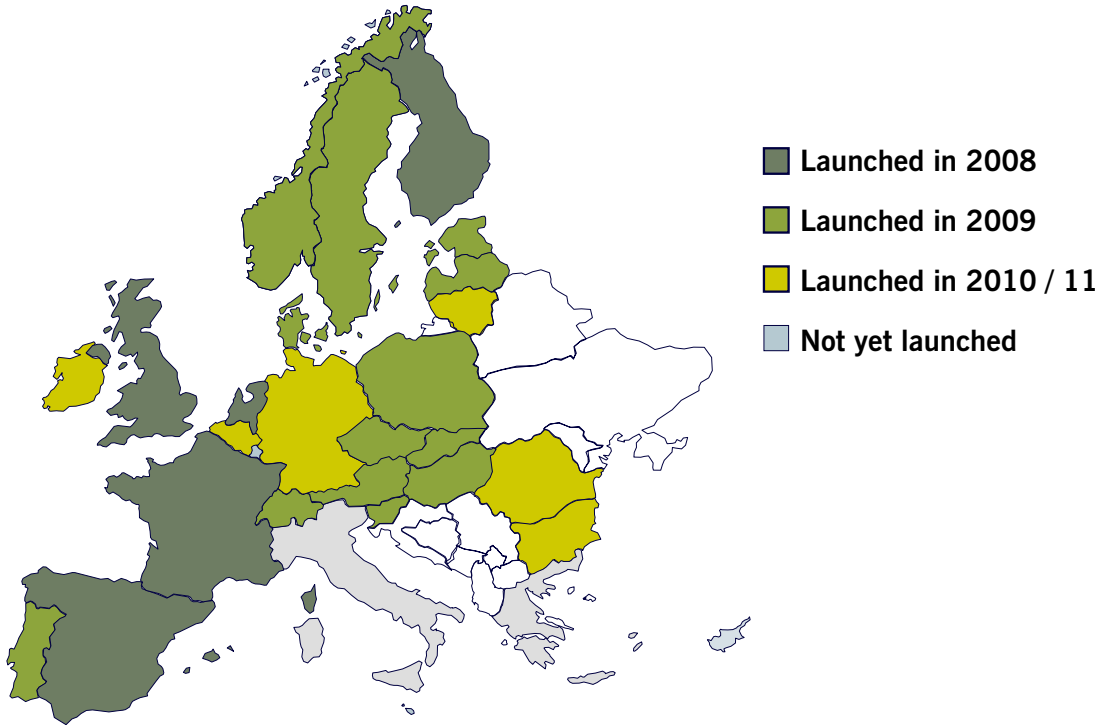
DOCSIS 3.0 rollout in full swing

The implementation of DOCSIS 3.0 is currently in full swing across Europe. By the end of 2010, the DOCSIS 3.0 launch was behind schedule in only two markets: Luxembourg and Cyprus. Remarkably, the DOCSIS 3.0 introduction is proceeding much faster than the cable operators expected just a year ago. Already 90% to 100% of the surveyed cable operators thought they would be upgraded by the end of 2010. By the end of 2013, close to all of them will be fully set to the DOCSIS 3.0 standard, enabling their homes to get access to 100-200 Mbps bandwidth and more. This accelerated rollout of DOCSIS 3.0 underlines the opportunity European cable operators have identified in becoming the lead provider of very high speed internet.

DOCSIS 3.0 rollout to be completed by 2013

¹¹ In technical terms, we refer to this as 'coverage' or 'reach' of a broadband network.

DOCSIS 3.0 ROLLOUT STATUS WITHIN EUROPEAN CABLE MARKETS



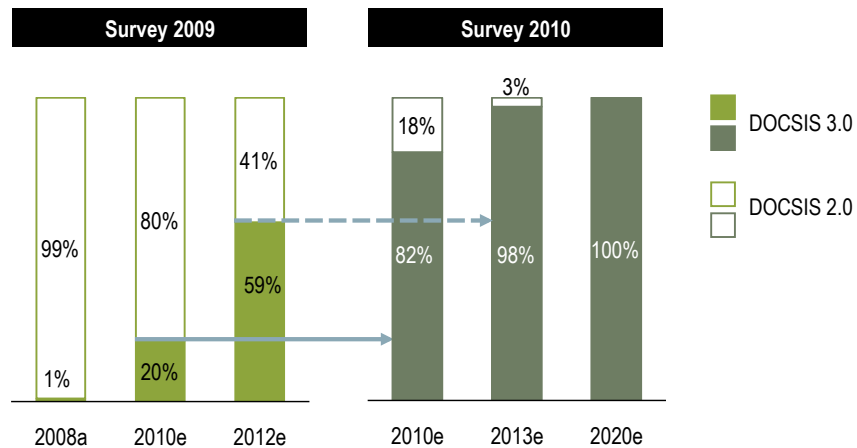
Source: Merrill Lynch, Screendigest, company information, Solon

Fibre rollout of cable operators gains momentum

Parallel to the rollout of DOCSIS 3.0, the majority of European cable operators have deployed fibre to the node to adapt to their customers' ever-increasing need for additional bandwidth capacity. A few operators, such as Numerciable in France, started with deep fibre deployments and deliver FTTB or FTTH for a growing share of their customers.

DOCSIS 3.0 ROLLOUT OF EUROPEAN CABLE OPERATORS

% OF HOMES SERVED BY DOCSIS 3.0



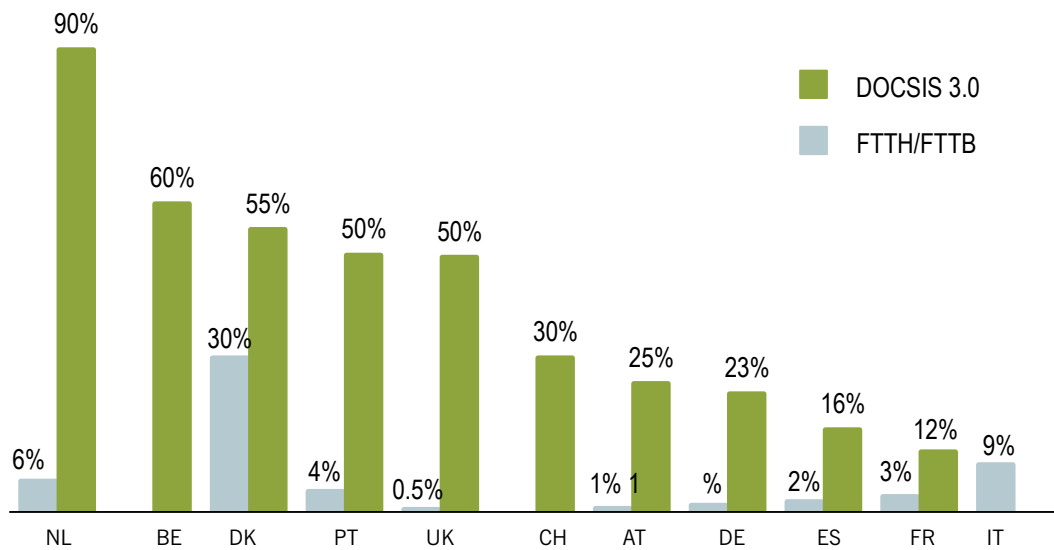
Source: Solon Cable Survey 2009, Solon Broadband Survey 2010

Cable operators have different upgrade strategies to meet market demand in 2020, depending on the condition of their current HFC networks. Some cable operators assess their current HFC network to have ample capacity to meet market demand. Others expect to implement deeper fibre rollout in the years to come. Some cable operators even expect to reach up to 70% of their households with a FTTB or a FTTH approach.

With their ultra high speed levels and wide reach, modernised cable broadband networks are the benchmark for successful and fast NGA rollout. DOCSIS 3.0 is already widely available in most cable networks; overall availability of very high speed cable access is, therefore, rather driven by the general reach of cable networks. At the same time, FTTB/FTTH coverage of pure fibre players is only as widespread as upgraded cable infrastructures in a very few markets. On average, only 15% of the European population is within reach of fibre networks. In close to half of the European markets, fibre does not even reach 5% of the population. The case study on the next page shows cable’s strong footprint in reaching the EU broadband goals in Germany, compared to FTTB/FTTH.

Modernised cable broadband is benchmark for NGA deployment

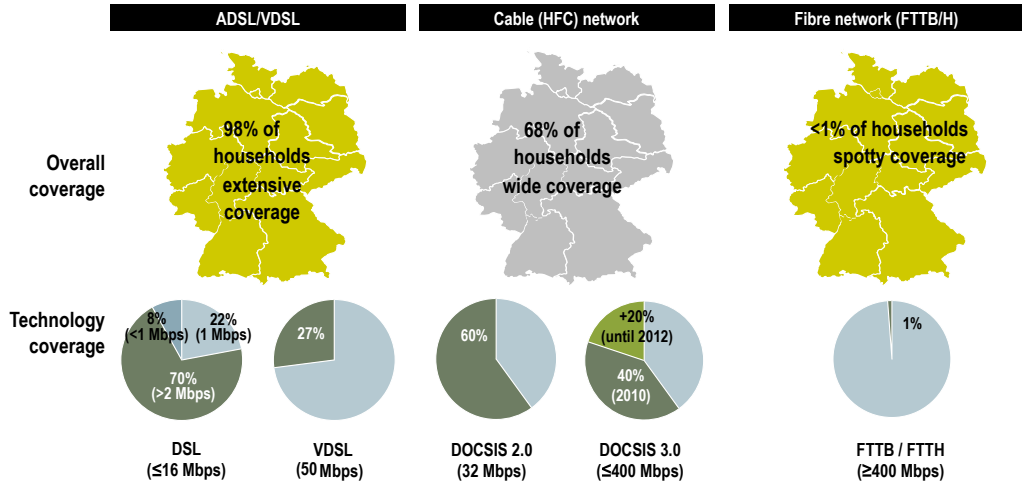
COVERAGE OF NETWORKS WITH 100 MBPS AND MORE
% OF HOUSEHOLDS, 2010, SELECT MARKETS



Source: Cullen International, Solon

At the beginning of the new century many telecom incumbents deliberately decided that they would not invest in fibre and concentrated their resources on buying expensive frequencies and rolling out their mobile networks instead. Consequently, the rollout of fibre is likely to remain limited and concentrated on populated urban areas. To close the urban-rural gap, state subsidies or public-private projects are essential.

CASE STUDY: REACHING THE 2013 BROADBAND GOALS IN GERMANY



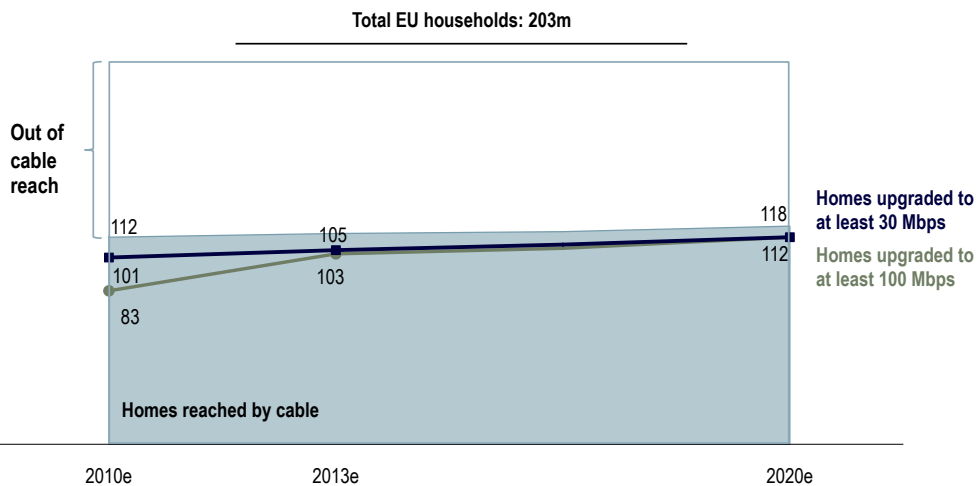
Source: Bundesnetzagentur, company information, ANGA, Solon

CABLE'S CONTRIBUTION TO EU COVERAGE TARGETS

By 2020, cable will cover 55% of EU households with 100 Mbps+

Using their upgraded networks the cable industry is currently capable of serving more than half of EU households (this is 101m households) with broadband access of at least 30 Mbps, going up to 55% (this is 112m households) by 2020. With this, the majority of national cable industries will be core contributors to reaching the Digital Agenda's coverage target of nationwide availability of 30 Mbps by 2020. Completing the DOCSIS 3.0 rollout, speed levels of 100 Mbps and more will become the standard. By 2013, cable networks will cover 51% of EU households (currently 103m households), by 2020 this will increase to 55% (currently 112m households).

CABLE COVERAGE THROUGHOUT EUROPE M, HOUSEHOLDS WITHIN EU-27



Source: Screen Digest, Solon Broadband Survey 2010

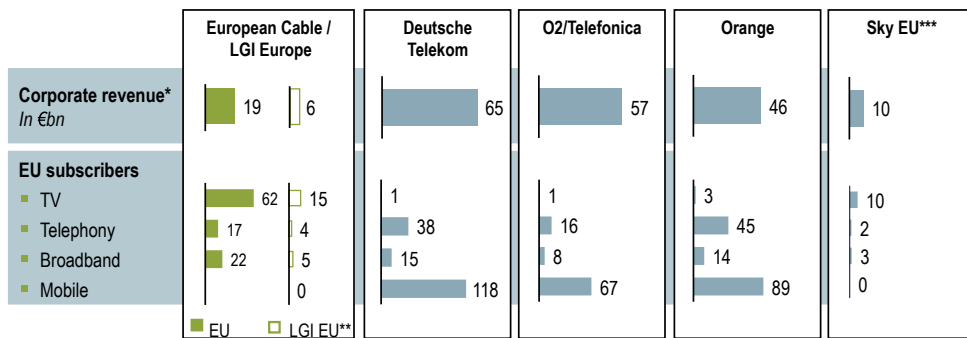
When considering cable operators' contribution to the availability of very high speed networks it is important to mention how the cable industry, being a fraction of the increasingly consolidated DSL market, yet is able to create sustainable infrastructure competition. This is especially remarkable since, at the same time, most of the European regulators still focus on creating service competition based on the networks of the large incumbents.

EU cable operators are still running on small industry scale

Even the largest European cable entity, described by the combined cable assets of Liberty Global in the chart below, operates on a significantly smaller industry scale than other major telecom multinationals, both in terms of revenue and subscribers.

SIZE AND REACH OF EUROPEAN CABLE INDUSTRY COMPARED TO INTERNATIONAL TELECOMMUNICATION MULTIS AND SATELLITE PROVIDERS

€ BN, MILLION SUBSCRIBERS, 2009



* Industry revenue for European cable; ** All European cable assets of Liberty Global, incl. UPC Broadband and Share in Telenet; *** Including BskyB, Sky Italia and Sky Deutschland
Source: Solon

The size of single cable operators is even smaller, as most cable markets are still characterised by regional fragmentation, usually with at least 2-3 cable operators being active, each in its distinctive area. The number of cable operators counts in the hundreds for some markets such as Germany, Poland or Denmark. This is significantly reducing the relative market power of cable operators, especially if compared to the nationally active incumbent. National cable broadband campaigns that could match the incumbent's activities in terms of investment levels, sales and marketing power are not possible.

Cable operators are subcritical compared to telco incumbent

Against the background of this comparison, it seems appropriate to support cable operators in reaching a critical industry size to further grow their broadband infrastructure. The continued consolidation of the national cable industries should be reviewed in the light of generating a level playing field against the national broadband incumbent – in terms of both size and reach.

In summary, cable currently occupies a prominent second position in the European broadband landscape with a significant presence in the majority of European markets and incremental expansion potential through further network upgrades and greenfield rollouts. The ongoing rollout of DOCSIS 3.0 is making cable the number one NGA. With continued investment, cable operators will continue to be key contributors to the Digital Agenda's high speed coverage targets, in particular that of nationwide availability of 30 Mbps by 2020. It is then up to subscribers to make use of these speed levels and help reach the targeted broadband usage rates.

Cable is number one NGA network in terms of reach

**ULTRA HIGH
SPEED:
100 MBPS
WILL BE
CABLE
STANDARD**

ULTRA HIGH SPEED: 100 MBPS will be cable standard

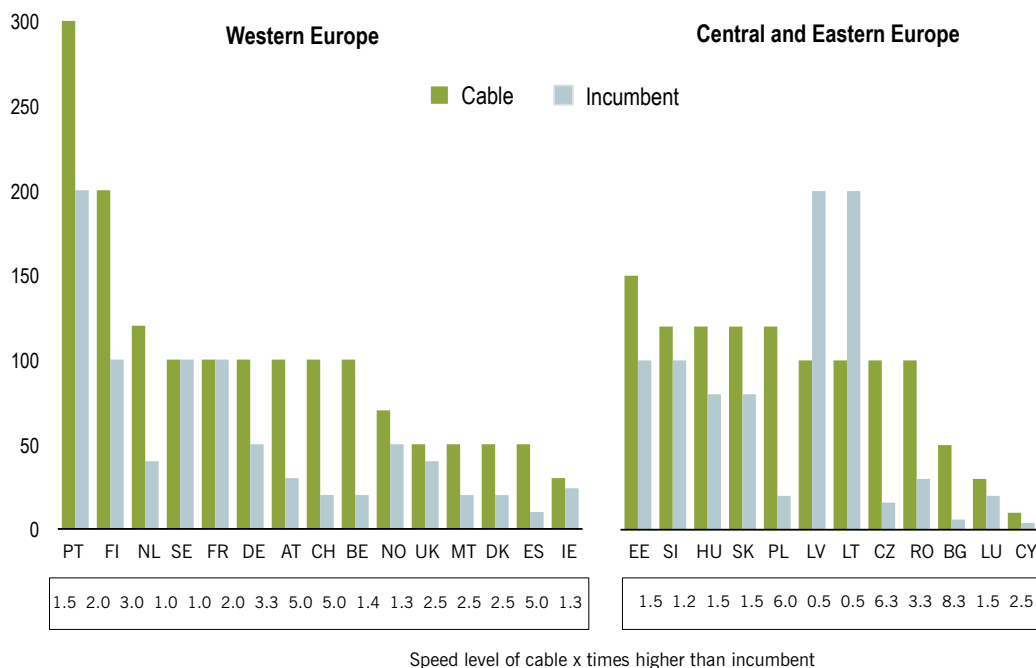
The Digital Agenda also highlights the importance of ever higher access speeds. Driven by applications such as video streaming, file sharing and online gaming, the appetite for bandwidth will continue to increase. This chapter discusses the speed levels offered by cable industry and fixed-line operators today and in the future. With their NGA networks, cable operators will be in a comfortable position to satisfy consumers' demands for bandwidth. Already, today, 100 Mbps packages are offered by cable operators – ready to be picked up by cable subscribers.

BANDWIDTH OFFERING

With the introduction of DOCSIS 3.0, cable operators lead the speed development and offer the highest speed levels throughout their networks. Currently, in 85% of all European markets, cable operators offer a higher maximum bandwidth than the incumbent. While 100 Mbps has become standard in many cable networks, only a few incumbents reach speeds levels of more than 50 Mbps. In Switzerland, Belgium and Spain, cable operators even provide speed levels which are 5 times faster than the incumbent's offer; and in Bulgaria the speed cable offers is 8 times higher.

DOCSIS 3.0
generally offers
higher bandwidth
than incumbent

MAXIMUM BANDWIDTH OFFERS ACROSS EUROPE: CABLE OPERATORS COMPARED TO THE INCUMBENT
MBPS, 2010



Note: EU-27 countries excl. Italy and Greece (no cable coverage) + Switzerland and Norway
Source: Company information, Solon

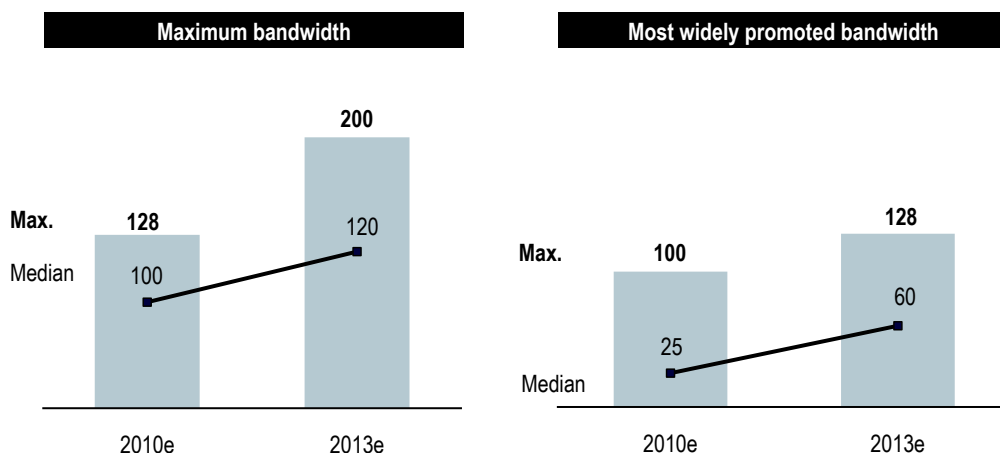
With their legacy xDSL infrastructure, fixed-line operators have reached their technical limits. As a consequence, incumbents and DSL contenders alike are shifting towards the rollout of VDSL and fibre and, thereby, keeping the speed competition in motion.

Cable speed levels will significantly increase within the next three years

By the end of 2010, the maximum bandwidth provided by cable operators will have reached an average of 100 Mbps across Europe; by 2013, this will have increased to an average of 120 Mbps. Central and Eastern European operators, in particular, are planning a radical effort to increase speed levels and even quadruple their maximum bandwidth from 30 Mbps to 120 Mbps within the next three years.

It is not only the lead offering, usually only taken out by a limited share of subscribers, which will increase. Even more importantly, standard cable broadband products are also expected to significantly adjust their speed levels within the next 3 years. Based on expectations of the surveyed cable operators, the European cable industry assumes the most widely promoted cable broadband offers to reach an average speed level of 25 Mbps by the end of 2010. And this is likely to rise to an average of 60 Mbps across Europe by 2013.

DOWNLOAD BANDWIDTH: MAXIMUM AND MOST WIDELY PROMOTED PACKAGE MBPS, 2010e AND 2013e



Source: Solon Broadband Survey 2010

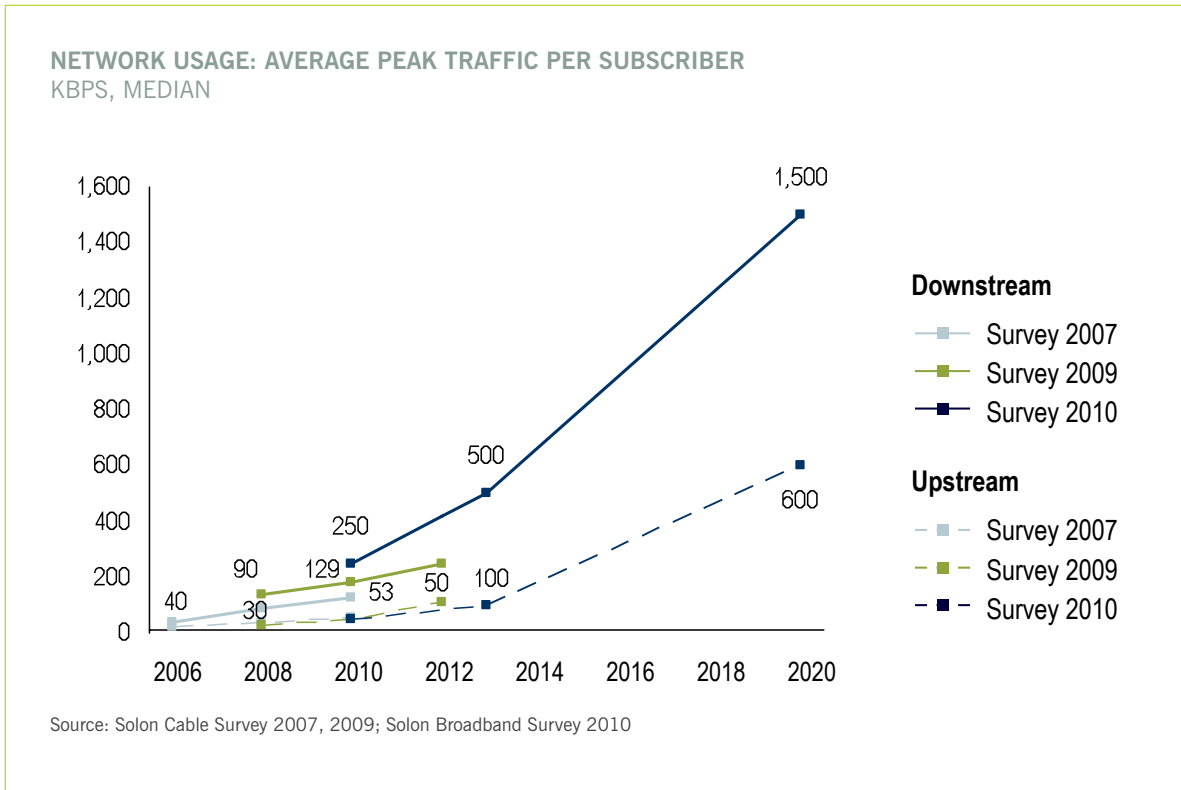
Bandwidth-hungry video services drive growing demand

Modernised cable networks have excellent technical capabilities with high down- and up-stream bandwidth and low latency time. With these, cable operators provide the appropriate infrastructure for bandwidth-hungry applications such as online video. Video-on-demand already belongs to the standard digital TV offering of many cable operators. Catch-up TV is following suit with 50% of operators already including this in their offering. Increasingly, own IPTV or web TV offers are making their way into cable networks. Such value-added services were formerly declared to be 'fibre-specific' and are now driving the bandwidth demand of the consumer.

CONSUMERS' BANDWIDTH DEMANDS

With their high-speed offers, cable operators both spur and satisfy the growing hunger for greater bandwidth. Driven by the uptake of video and user-generated content consumption, the traffic generated by cable broadband subscribers is expanding rapidly. For the next few years, average peak downstream and upstream traffic is expected to continue growing exponentially.

Average peak traffic per subscriber grows exponentially



Distribution of broadband subscribers according to bandwidth

Knowing this, it is not surprising that ever-higher speed levels have also made their way into the subscriber base. The actual uptake of higher speed levels has significantly increased over recent years across Europe, especially in the cable subscriber base.

Broadband speed levels across Europe have increased rapidly

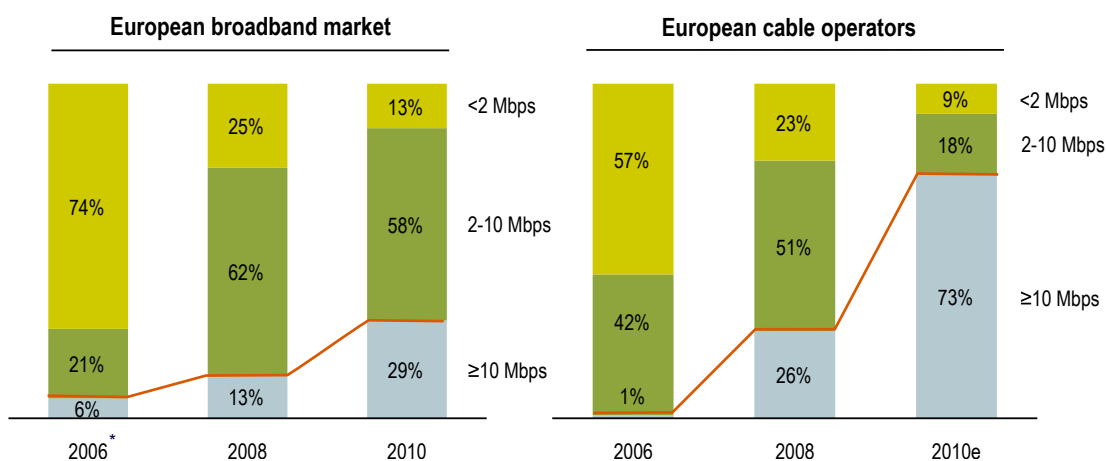
Looking at the total European broadband market, the vast majority of internet subscriptions still had a downstream bandwidth of less than 2 Mbps in 2006, and only 6% of the connections were able to provide a download speed of more than 10 Mbps. Driven by the ever-increasing bandwidth requirements of internet applications, actual user demand for higher-speed packages has increased rapidly. In July 2010, 29% of EU broadband lines had speeds of at least 10 Mbps, up from 13% two years earlier.

The overall market includes both DSL and cable networks, and, increasingly, also fibre access. However, the share of lines provided through access technologies other than DSL is increasing. While ADSL networks are reaching their speed limit, cable networks are already able to deliver up to 400 Mbps. As a consequence, cable broadband subscribers tend to opt for higher speed levels than the average broadband subscriber. While in 2006 the share of broadband connections with > 2 Mbps download speed was only 27% in the EU broadband market, cable operators had already managed to move 43% of their subscriber base to packages of 2 Mbps and more.

Cable broadband subscribers take higher speed levels

By 2008, more than a quarter of cable broadband subscribers took high speed packages of 10 Mbps and more (compared to 16% within the total base). In 2010, the high speed segment (>10 Mbps) has widened to 73% of the cable broadband subscriber base (compared to 29% of the total broadband subscriber base).

EU BROADBAND SPEED DEVELOPMENT: OVERALL MARKET COMPARED TO CABLE OPERATORS
 % OF TOTAL BROADBAND SUBSCRIBERS COMPARED TO CABLE SUBSCRIBERS PER DOWNSTREAM SPEED



* Split in 2006 : <2 Mbps, 2-8 Mbps, >8 Mbps; Source: European Commission, Solon Cable Survey 2009

Two-thirds of cable subscribers are likely to take at least 100 Mbps packages by 2020

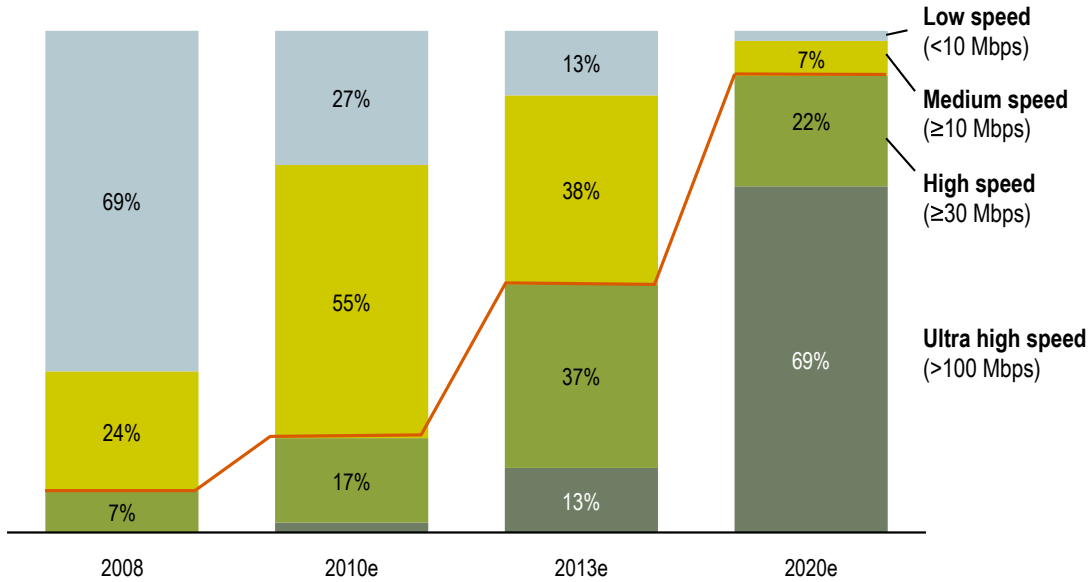
In particular, within the cable subscriber base, the migration to higher-speed packages is expected to continue in the coming years supported by the availability and attractive prices of cable broadband packages. Findings from the 2010 survey show that already a significant 20% of cable subscribers across Europe subscribe to broadband products of 30 Mbps or more at the end of 2010. By 2013, the share of high and ultra high speed broadband connections is expected to radically increase to at least 50% in Western Europe and even to 54% in Central and Eastern Europe. Applying this development to a forecast of speed distribution in 2020 results in a penetration rate of two-thirds of cable subscribers taking 100 Mbps packages or more. Of these, about 50% can be expected to opt for the 100 Mbps product, with another 15-20% of subscribers even reaching out for the new premium product of 200 Mbps+. This would more than fulfil the Digital Agenda's target.

CABLE'S CONTRIBUTION TO EU ULTRA HIGH SPEED TARGETS

Cable is leading the race across Europe to supply sufficient bandwidth for present and future broadband applications. The maximum bandwidth packages of European cable operators either already meet or exceed the Digital Agenda's top-level target (100 Mbps) at the end of 2010. And, at an average of 25 Mbps, the mass-market standard packages only just fall short of the 30 Mbps target as set in the Digital Agenda. Therefore, cable operators across Europe are in a comfortable position to meet the Digital Agenda's bandwidth targets much earlier than required, as soon as demand follows.

DISTRIBUTION OF SPEED LEVELS

% OF CABLE SUBSCRIBERS WITH RESPECTIVE MAXIMUM DOWNSTREAM BANDWIDTH



* High speed in 2008 survey: ≥ 20 Mbps
 Source: Solon Cable Survey 2009; Solon Broadband Survey 2010

Cable subscribers also seem to be early adopters in terms of high speed packages. In 2020 nearly all subscribers will have at least 30 Mbps, and close to 70% will have packages with 100 Mbps and more. Cable has proven to be a flagship platform that attracts other consumers to very high speed broadband internet.

**BROADBAND
PENETRA-
TION: CABLE
SPURS HIGH
SPEED USAGE**

BROADBAND PENETRATION:

Cable spurs high speed usage

A second prominent target set by the Digital Agenda is that 50% or more of European households subscribe to internet connections above 100 Mbps by 2020.¹² Although broadband penetration has been growing strongly across Europe over the past few years, there are significant differences in how rapidly broadband has been taken up in specific European markets and the penetration levels that have been reached. This chapter discusses how infrastructure competition, on the one hand, and the cable networks' direct footprint, on the other, are supporting stronger and faster broadband uptake.

IMPACT OF INFRASTRUCTURE COMPETITION ON BROADBAND PENETRATION

A key driver for broadband penetration is competition in a multiple-infrastructure market, the so-called 'infrastructure competition'. Markets with a significant presence of cable (and fibre) networks tend to have higher broadband penetrations than their 'low-cable' peers, which mainly rely on service competition based on the incumbent's network. Even though regulation initially focused on service-based competition, in many cases infrastructure competition prevailed and cable operators were the first to challenge the incumbent by investing in faster broadband products and offering lower prices for the mass market. To stay competitive, DSL operators and, in particular, the former incumbents have to follow suit with investment in high speed, more attractive products and price adjustments.

Cable operators were the first to challenge the incumbent by investing in faster broadband networks

At the end of 2009, penetration in Western European markets with infrastructure competition was on average 68% of households.¹³ This was a significant 31% higher than broadband penetration in those Western European countries which, in the absence of alternative infrastructures, had to rely on service competition (average penetration of 52%). In most markets, infrastructure competition was driven by cable; also, a few markets had already built a strong fibre reach. Especially strong cable markets, such as the Netherlands and Belgium, had reached an outstandingly high broadband penetration (77% and 63% of households, respectively). Low-cable countries only reached comparably high penetration levels, when, in addition to cable operators, fibre players contributed to competition. Examples are Sweden and Finland, where cable broadband market share was slightly below 20%, yet fibre operators got a strong foothold and stimulated the broadband uptake. Other markets, such as France and Luxembourg, also seemed to be following this path of development.

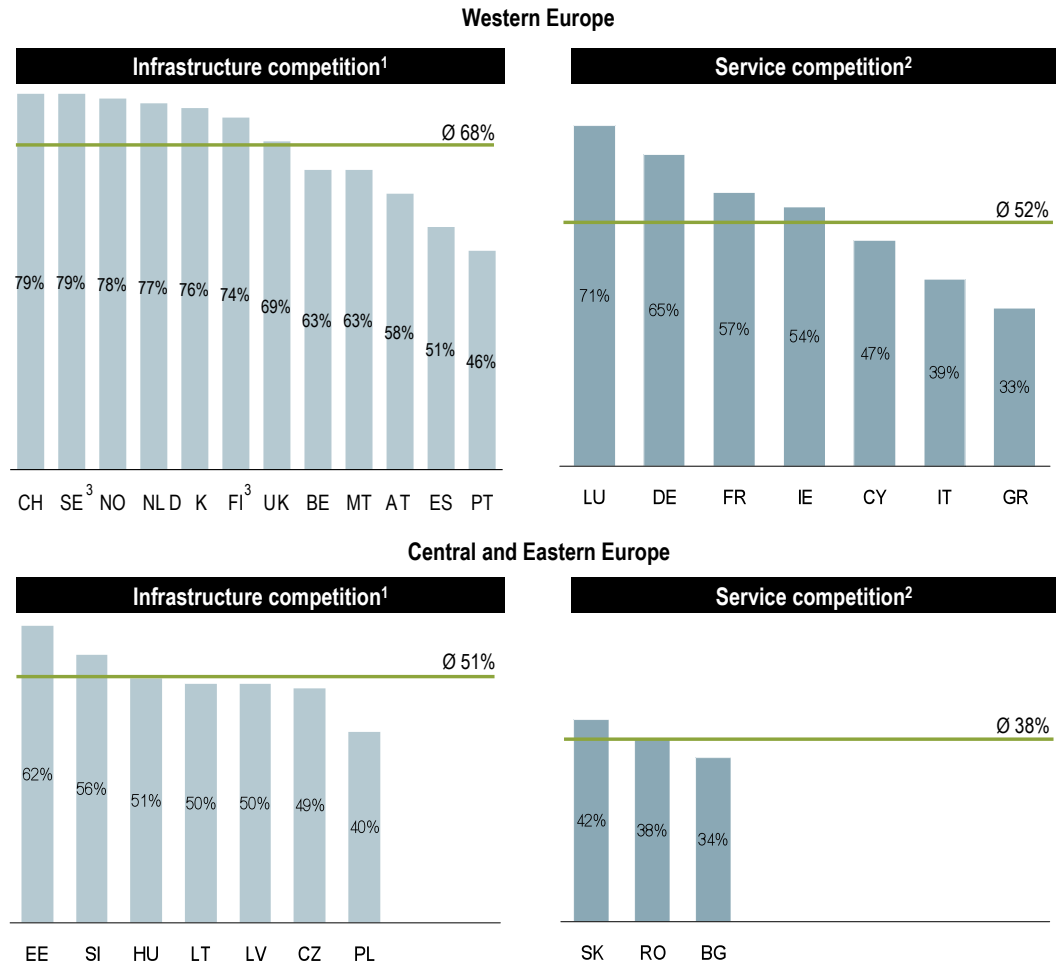
Infrastructure competition is key driver for higher broadband penetration levels

In Central and Eastern European markets, the impact of cable seems to have been most beneficial to the development of the broadband market. In this region, there are only three countries where cable accounts for less than 20% share of the broadband market (Slovakia, Romania and Bulgaria). Whereas average penetration was 38% of households in these countries at the end of 2009, it was 51% (or 34% higher) in strong cable markets with infrastructure competition.

¹² In technical terms, we refer to the actual usage of broadband as 'broadband penetration': the number of people who actually subscribe to and actively use broadband access.

¹³ Infrastructure competition: broadband market share of alternative infrastructures, that is cable or fibre, larger than 20%; service competition: market share of alternative infrastructures lower than 20%.

BROADBAND PENETRATION IN EUROPE
% OF HOUSEHOLDS, 2009

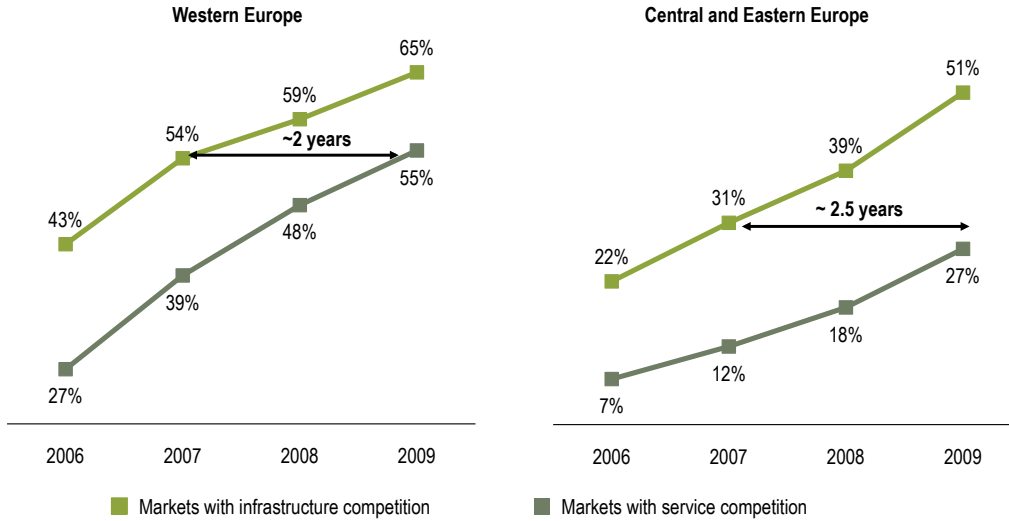


1) Market share of Cable and Fibre > 20%,
 2) Market share of Cable and Fibre < 20%,
 3) Although cable market share is slightly less than 20% in Sweden and Finland, strong fibre presence suggest high degree of infrastructure competition, Note: EU-27 countries + Switzerland and Norway
 Source: Eurostat, Screendigest, Solon

Cable-driven infrastructure competition pushes for faster diffusion of broadband

Infrastructure competition by cable operators does not only result in higher broadband penetration levels, but also pushes a faster broadband diffusion. If national markets with infrastructure competition are considered as a single entity, and all other markets where service competition takes place as another entity, it can be seen how much time each requires to hit a certain penetration level. In Western Europe, markets with infrastructure competition are approximately two years ahead of markets with a focus on service competition. In Central and Eastern Europe, cable-driven markets are close to 2.5 years ahead of their peers with a dominant infrastructure. In these markets, broadband uptake began to accelerate only after local loop unbundling became available and provided sufficient space for service competition to pick up. Still, in most of these markets, the degree of competition and the resulting broadband uptake fell far behind.

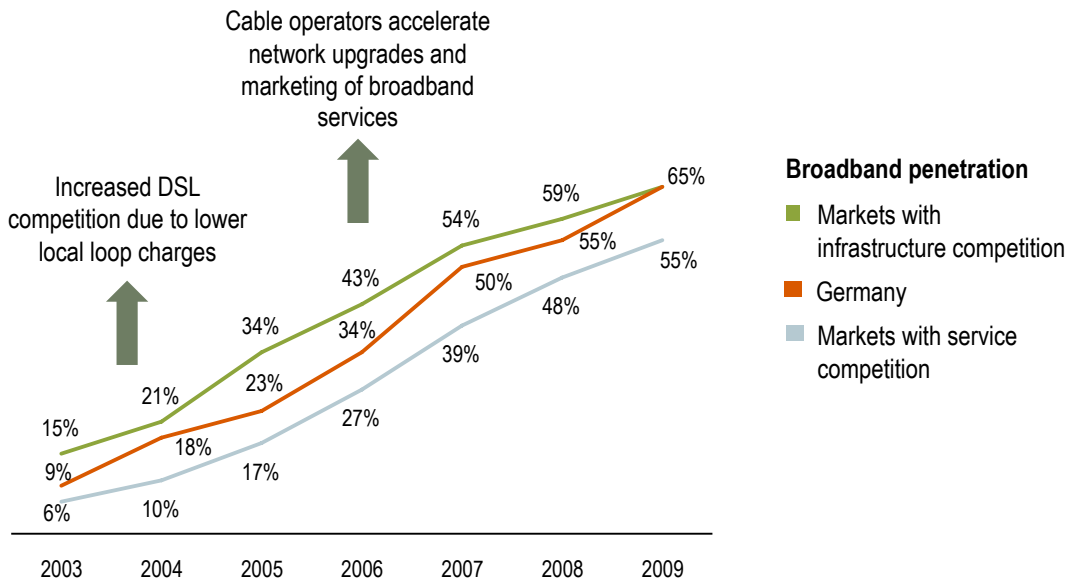
BROADBAND UPTAKE IN CABLE AND NON-CABLE COUNTRIES
 % OF BROADBAND HOUSEHOLDS, 2006-2009



Note: EU-27 countries + Switzerland and Norway
 Source: Eurostat, Screendigest, Solon

The case of the German broadband market shows that even a late start into infrastructure competition can significantly accelerate broadband uptake. With a cable broadband market share of only 9% (plus 1% for fibre networks) in 2010, the German market can still be classed as a market with service competition.

CASE STUDY GERMANY: IMPACT OF CABLE COMPETITION ON BROADBAND UPTAKE
 % OF HOUSEHOLDS, 2003-2009



Source: Eurostat, Screendigest, Solon

The introduction of lower local loop charges and subsequent development of service competition in 2003 only briefly stimulated broadband uptake – which, in 2005, had already slowed down again. It needed the forced broadband market entry of cable operators (starting in 2006) to give the German broadband uptake a new momentum. Broadband penetration in 2007 jumped from 34% to 50%, compared to the previous year. Subsequently, German cable operators are considered to be the main drivers in the catch-up race with more developed Western European broadband markets. By 2009, Germany had closed the gap in the average broadband penetration of markets with infrastructure competition.

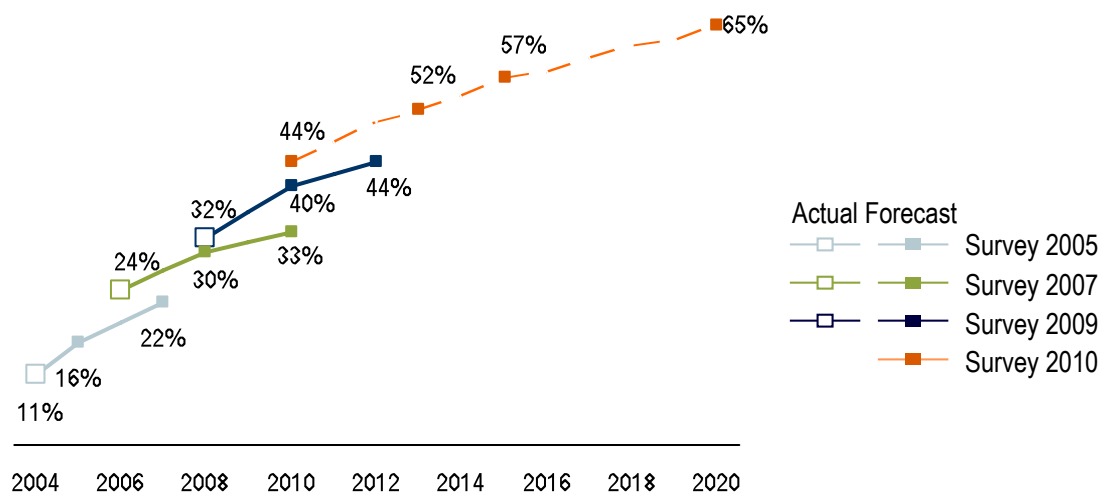
In summary, markets with cable-driven infrastructure competition have contributed more to the development of Europe’s broadband penetration and digital competitiveness than single infrastructure, DSL-centric markets. Service competition on a single dominant infrastructure can, therefore, only be perceived as a second-best option.

CABLE’S DIRECT FOOTPRINT ON BROADBAND PENETRATION

Broadband uptake is constantly surpassing the expectations of cable operators

In addition to infrastructure competition’s positive impact, cable operators also directly contribute to EU broadband penetration. Cable operators not only successfully deploy very high speed technologies within their networks; they also successfully market these high speed services to end consumers. Average European cable broadband penetration has doubled in just four years and is expected to continue growing strongly. Actual penetration regarding broadband uptake has been constantly surpassing the industry’s expectations. At 44%, actual 2010 European cable broadband penetration has already reached the level cable operators expected for 2012, as stated in the 2009 survey. Driven by an excellent price-value offering, cable penetration can be expected to continue growing strongly over the years to come, potentially up to 65% by 2020.

BROADBAND PENETRATION: CONSTANTLY SURPASSING EXPECTATIONS
CABLE BROADBAND SUBSCRIBERS AS % OF HOMES CONNECTED



Source: Solon Cable Survey 2005, 2007, 2009; Solon Broadband Survey 2010

However, despite the generally wide availability of upgraded broadband cable infrastructure, the penetration rates vary strongly across the different markets. Western European cable operators generally display a higher broadband penetration (on average 48%) than their Central and Eastern European peers (an average of 36%). But even within these regions, penetration rates differ significantly. Single countries, such as the UK (84%) or Spain (78%), are showing penetration rates significantly above average.

The analysis shows that the wide availability of very high speed networks does not necessarily translate into higher broadband penetrations. In markets with a low broadband uptake, it appears more appropriate to stimulate demand for high speed internet than to subsidise further fibre investments.

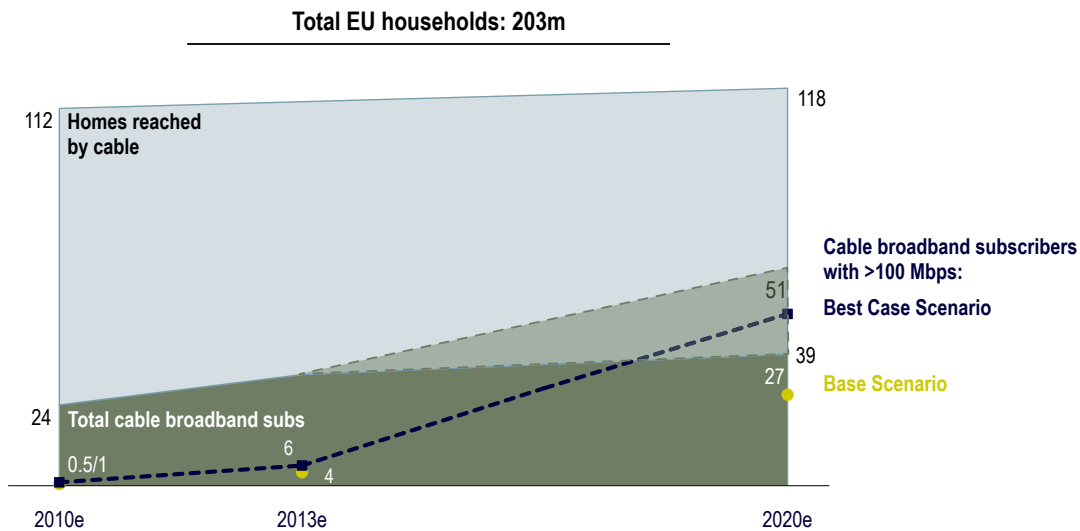
CABLE'S CONTRIBUTION TO EU PENETRATION TARGETS

At least 27m, or 13%, of EU households are expected to subscribe to 100 Mbps+ cable broadband products by 2020. With this, already a quarter of the Digital Agenda's target to connect 50% of EU households to ultra high speed internet will be fulfilled by cable subscribers.

Cable industry might have up to 51m 100 Mbps+ subscriptions by 2020

There might even be a significant upside of possibly 51m ultra high speed subscribers if cable operators are able to activate the current non-cable homes within their network reach. This would be further supported by limited network overbuild with FTTB and FTTH.

CABLE PENETRATION THROUGHOUT EUROPE
M, HOUSEHOLDS WITHIN EU-27



Source: Solon Broadband Survey 2010

The direct impact of cable operators on broadband penetration is only half the story, though. As outlined earlier, driven by cable-based infrastructure competition, incumbents and alternative fixed operators are forced to invest in NGA networks and bring ultra high speed access to their customers, too.

AFFORDA-
BILITY: LOW
BROAD-
BAND COSTS
SUPPORT
UPTAKE

AFFORDABILITY:

Low broadband costs support uptake

The affordability of high and very high speed broadband packages is a key driver to both quickly increasing the adoption of broadband services and to making broadband available to low income user groups. Without the strong broadband price decrease of the past years, penetration would not have reached its current high levels.

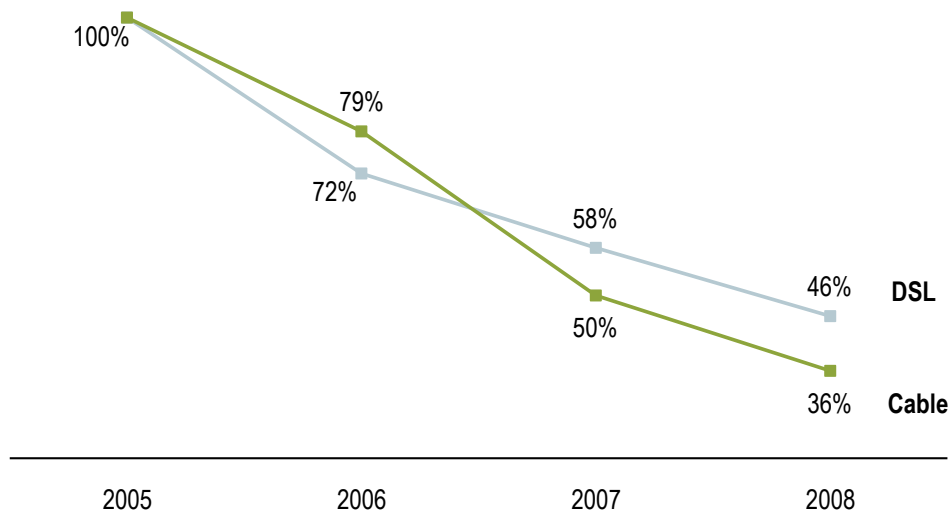
COST DEVELOPMENT

In order to compete, cable operators have opted for more aggressive price-value propositions than their DSL peers and, particularly, the incumbent. In most markets, cable operators, therefore, offer either higher speed levels at the market price or market speed packages at lower prices. Driven by this strategy, cable operators have taken a lead role in reducing broadband access costs. Since 2006, cable operators have adjusted average cost per Kbps significantly compared to their DSL peers. By 2008, the average cable operators' broadband costs per Kbps were only 36% of their 2006 costs, while DSL players only halved their costs.

Cable operators push down broadband market prices

BROADBAND PRICE DEVELOPMENT

AVERAGE PRICE PER KBPS OF REPRESENTATIVE BROADBAND OFFERS, 2005 = 100%



Note: average is based on the price development in approximately 20 countries (Greece, Italy – DSL only, Netherlands – cable only)

Source: OECD, Solon

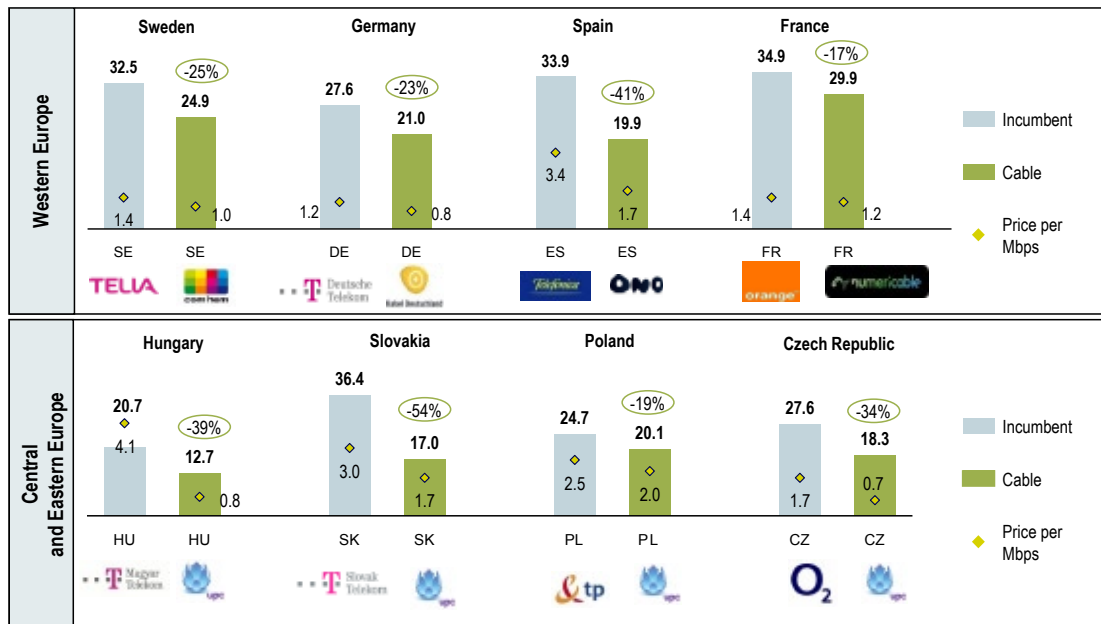
CURRENT PRICE LEVELS

The direct comparison of similar broadband packages provides an even more impressive perspective on the aggressive pricing of cable operators. The following analysis compares double-play packages, that is broadband and telephony, of leading cable operators and their incumbents.

Aggressive cable broadband pricing drives broadband uptake

In the clear majority of European markets, cable operators offer similar packages at a significant discount compared to the incumbent. The discount ranges from -19% in Poland to a very high -54% in Slovakia. Due to its market challenger position and superior technical capabilities, cable offers better performance for less money and, thus, clearly drives current broadband uptake.

TELEPHONY AND BROADBAND DOUBLE-PLAY OFFERS: CABLE COMPARED TO INCUMBENT'S DSL
MONTHLY SUBSCRIPTION FEE AND PRICE PER MBPS IN EUR, PRICE DIFFERENCE IN %, 10/2010



Note: currently advertised basic fixed-line telephony and broadband double-play packages on promotional price. If double-play package was not offered, line rental fee or the subscription fee of a basic telephony package was added to a broadband subscription at comparable speed level. Loyalty period and promotional months (i.e. reduced price for a certain period of time) were taken into account to calculate equivalent monthly subscription fees. Broadband offers were compared on the basis of maximum upstream bandwidth in Mbps. Source: Company information, Solon

CABLE'S CONTRIBUTION TO EU TARGETS: HIGHER PENETRATION AND INCLUSION

With the highly attractive price-value proposition of their broadband packages, cable operators significantly contribute to two of the Digital Agenda's targets.

- **Increased penetration:** the strong broadband uptake of cable subscribers was clearly driven by cable operators' aggressive pricing. Yet, to stay competitive, fixed-line operators have to match these prices and, thus, support the overall broadband uptake.
- **Digital inclusion:** high broadband costs are one of the greatest barriers to increased broadband uptake by low income user groups. With their low cost broadband packages, cable operators contribute significantly to the EU target for digital inclusion.

**ELECTRONIC
COMMERCE:
CABLE
SUPPORTS
ENTREPRE-
NEURSHIP**

ELECTRONIC COMMERCE:









Cable supports entrepreneurship

Cable industry brings affordable ultra high speed to SoHos and SMEs

Broadband internet access is seen as one of the largest supporters of productivity and growth throughout the EU economy. Keeping this in mind, the European cable industry is progressively expanding towards the business-to-business (B2B) segments, which were historically dominated by fixed-line operators. Several cable operators have been growing their business customer base rapidly over the last few years. Within the B2B market, the small office/home office (SoHo) segment is the natural entry point for cable operators for two reasons: it is the market segment most similar to the residential market; and, traditionally, it has been underserved by incumbent telco players. Some cable operators target SME customers and large corporations equally.

European cable operators are widely capable of providing ultra high speed internet with 100 Mbps and more, which is essential for business customers. Very high bandwidth symmetric access is also provided by some large cable operators. Upload speed levels offered to B2B customers are expected to increase from a current high 30 Mbps to 100 Mbps in 2020, making cable broadband access a viable and attractive alternative to the offers of fixed-line operators for many business customers. The list below indicates that many European cable operators have already introduced value-added service packages specifically for various business segments such as data security software, multi-site hosting solutions or integrated business applications.

EXAMPLES: CABLE BROADBAND OFFERS TARGETING THE BUSINESS MARKET
2011

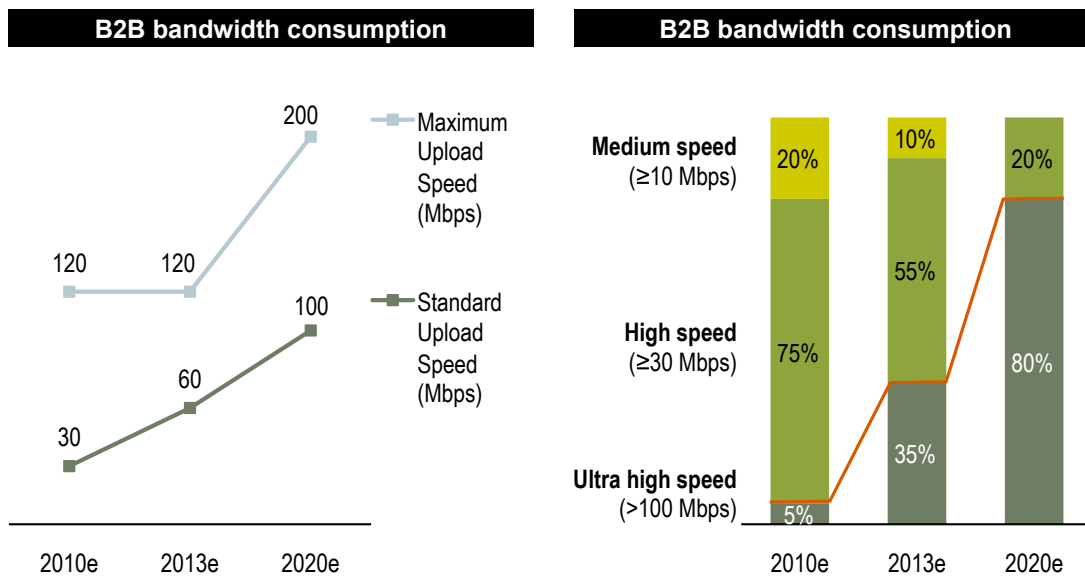
	Segments			Services				
	SoHo	SME	Corporate	Ultra high speed internet (>100 Mbps)	High bandwidth symmetric access	Security H	osting	Business applications
UPC Austria 	✓	✓	✓		✓	✓	✓	✓
telenet 	✓	✓		✓		✓	✓	✓
Unitymedia KDG 	✓	✓		✓		✓		✓
UPC Ireland 	✓	✓	✓			✓	✓	✓
Ziggo 	✓	✓	✓	✓	✓	✓	✓	✓
UPC NL	✓	✓	✓	✓		✓	✓	✓
Cablecom 	✓	✓	✓	✓	✓		✓	✓
UPC Polska 	✓	✓	✓	✓		✓		✓
Aster	✓	✓	✓	✓	✓	✓	✓	✓
UPC Czech 	✓	✓	✓	✓		✓	✓	✓

Source: Company information, Solon

CABLE'S CONTRIBUTION TO EU ELECTRONIC COMMERCE TARGETS

Affordable broadband access is a prerequisite for successful participation in electronic commerce. SoHo and SME customers in particular, traditionally undervalued by the large DSL operators, will profit from access to an innovative cable broadband network. By subscribing to cable broadband services, these businesses will receive an improved access to higher speed levels at an affordable price. The ultra high download and upload speeds, as well as low latency times of cable broadband access, will provide SoHo and SME customers with a whole new range of business opportunities. This will increasingly encourage SMEs to move more of their business online, be it in terms of more online purchases and sales or increased online collaboration with clients and suppliers, as explicitly demanded in the EC's 2020 strategy.

CABLE B2B BANDWIDTH OFFERING AND CONSUMPTION IN MBPS, % OF SUBSCRIBER BASE



Source: Solon Cable Survey 2010

**DIGITAL
INCLUSION:
CABLE
OPERATORS
TAKE SOCIAL
RESPONSIBI-
LITY**

DIGITAL INCLUSION:

Cable operators take social responsibility

The i2010 initiative declared the promotion of a more digitally inclusive information society. A number of specific targets were set in the “Riga Ministerial Declaration” of 2006 aimed at reducing disparities between disadvantaged groups and the general EU population, especially in relation to two key areas: regular internet use and digital literacy. In this context, digitally excluded socio-economic groups are older people, people with disabilities, women, people with lower education, the unemployed and the residents of less-developed regions.

Regular use of the internet has increased from 43% in 2005 to 56% of the population in 2008 and it has become more inclusive. Significant progress has been made with regard to increasing the inclusion of the most disadvantaged socio-economic groups. At the same time, inclusion of the people living in sparsely populated rural and remote areas shows very little progress and, therefore, remains a target for the Digital Agenda.

The so-called ‘Second Digital Divide’ is a new phenomenon. While basic use of the internet becomes more common, the adoption of complex functionalities (for example, using internet banking, eGovernment services and eCommerce transactions) seems to be the next social gap. Perceived lack of need, lack of equipment, prohibitive access costs and lack of skills are still the most important factors hindering the uptake of broadband internet and more complex internet applications.

‘Second Digital Divide’: complex functions re-open social gap

In order to facilitate the progress of reducing digital divides, the report on “Europe’s Digital Competitiveness” has identified and formulated the need for policies. It focuses on:

- encouraging the use of the internet by reducing psychological barriers and increasing familiarity with its possibilities and benefits;
- facilitating access for the old and disabled;
- reducing financial barriers;
- encouraging the acquisition of skills and continuous learning.

The private sector, and especially a range of media and broadband players, has substantively contributed to progress in these areas, and will continue to do so.

Cable as a driving force behind digital inclusion

In recent years, the European cable industry has played a flagship role in reducing digital divides. European cable operators have actively launched digital inclusion programmes that support public policy goals. One example is Liberty Global/UPC. In Europe, the company operates cable networks in 10 EU member states as well as Switzerland. Its “Digital Inclusion Framework” is built on three pillars corresponding to the key areas identified by the EC in the i2010 initiative:

European cable industry supports inclusion with many dedicated projects

- widening access (facilitating regular use of internet);
- enhancing skills (facilitating digital literacy);

- creating opportunities (ensuring users are able and qualified to use digital products and services safely, securely and effectively).

The summary below shows select initiatives that have been launched by Liberty Global/UPC within its digital inclusion framework; in many cases these have been extended to multiple countries across Europe.

EXAMPLE: INITIATIVES WITHIN LIBERTY GLOBAL/UPC'S FRAMEWORK FOR DIGITAL INCLUSION

	Company	Target group	Description
Widening access	▪ Telenet (Belgium)	▪ Underprivileged children	▪ Telenet Foundation raised €15,000 to build a computer room for underprivileged children at the Antwerp-based youth centre in Nov 2009
	▪ Telenet (Belgium)	▪ Mentally challenged children and adults	▪ Telenet Foundation funded a project to provide ICT classes for mentally challenged children and adults
	▪ UPC Romania	▪ Low-income families	▪ Offering low-income CATV customers free basic Internet access of 256 Kbps
	▪ UPC Romania	▪ Non-governmental organisations	▪ Providing >300 NGOs with free internet access
Enhancing skills	▪ Liberty Global/UPC	▪ Children, parents, teachers	▪ Printed family toolkit (so called 'eSafety Kit') for parents, teachers and children to explore online safety issues in an educational manner
	▪ Liberty Global/UPC	▪ Children	▪ An interactive eSafety website was launched in Feb 2010 to help protect children while using the web
	▪ UPC Poland	▪ Elderly	▪ Teaching digital literacy and internet usage to people aged 50 and over (so called 'E-Senior Academy' and 'M@turity in the Net')
	▪ UPC Hungary	▪ Elderly	▪ A programme called 'Click on it Grandma' in 2006 to provide practical courses on digital awareness and computer literacy to seniors
Creating opportunities	▪ UPC Netherlands Ziggo	▪ Blind and visually impaired	▪ A special internet connection that helps these people (approx. 350,000) to access a range of spoken information (for example talking books)

Source: Liberty Global/UPC, Solon

Many other European cable operators are taking social responsibility and are supporting digital inclusion. They are targeting various groups of digitally excluded people, with a focus on children, the elderly and women. Exemplary operators and programmes include the following.

- **Virgin Media (UK)** launched two major projects in 2008.
 - Children in low income families: collaborating with a foundation, children across five UK cities are provided with free internet access and given an information pack on online usage and internet security for their parents.
 - Elderly people: together with Digital Unite, an organisation that helps older people get online, Virgin Media provides sheltered housing with a 'get online' package (free broadband access for a year, two computers, software and a training programme). In a survey, 71% of the participants said they would continue to use the computer and internet.

- **Multimedia Polska (Poland)** launched a multimedia portal to encourage women to use digital media. The website demonstrates how multimedia technologies and services work and gives easy-to-understand insights into new digital opportunities.
- **DNA-Welho (Finland)** provides a special customer care service for its elderly customers that devotes special attention by patiently listening to their problem and providing customised solutions. Employees also provide customers with tips on how to find information on topics that interest them. DNA also published a senior guide.
- **Livest (Austria)** launched an information campaign for those over 50 years old to explain how technologies work, and allows them to try out different products.

These examples can only highlight a few of the wide range of activities the cable operators have undertaken. Through these activities, the cable industry plays an important role in the push for a more-inclusive digital society.

CABLE'S CONTRIBUTION TO EU DIGITAL INCLUSION TARGETS

Cable operators have two means of supporting digital inclusion. The most important 'approach' is the low cost of cable broadband access, as outlined in the chapter on affordability. But offering aggressively priced broadband access is not enough for most operators. With a broad range of digital inclusion programmes, cable operators are reaching out to disadvantaged socio-economic groups and helping them access the internet.

POLICY IMPLICA- TIONS




POLICY IMPLICATIONS

Both the analysis of the European cable industry's contribution to the i2010 initiative and its perspectives on the Digital Agenda show the critical role cable operators are taking in supporting Europe's path to becoming a modern information society for the EU's 500m consumers.

- Broadband coverage: cable already brings broadband to 50% of EU households.
- Ultra high speed: 100 Mbps and more will be the cable standard.
- Broadband penetration: cable operators spur the broadband penetration.
- Affordability: low cost of cable broadband access supports uptake.
- Electronic commerce: cable supports entrepreneurship by connecting creative electronic commerce ventures and SMEs.
- Digital Inclusion: cable operators take social responsibility.

It is important to recognise that the ICT market is not only focused on economic growth, but is also an important engine for the sharing of cultural goods whose values are nearly impossible to assess. The role cable operators and their ICT industry peers have in providing access to information and content to European citizens is something that should not be underestimated. The social value of connectivity continues to play a leading part in the daily lives of European citizens.

CABLE INDUSTRY'S CONTRIBUTION TO THE DIGITAL AGENDA'S OVERALL TARGETS

	2010	2013	2020
Broadband coverage			
Broadband internet access for all Europeans by 2013	50%	52%	55%
30 Mbps+ internet access for all Europeans by 2020	41%	51%	55%
Broadband penetration			
50% or more of EU households subscribe to internet connections of 100 Mbps+	0.5%	4%	27%
Electronic Commerce			
Support participation of small and medium enterprises in electronic commerce	Rollout of broadband for small/home offices	Expansion to small/medium enterprises	Full offer for small/medium enterprises
Digital Inclusion			
Foster digital inclusion of disadvantaged people by 2015			

With its fibre powered, ultra fast networks, the European cable industry plays a crucial role in achieving the Digital Agenda's key goals. Cable's potential contribution of reaching at least 27% of the broadband penetration target is remarkable considering the relatively small footprint of cable compared to telecom incumbents and mobile. Yet, reaching the full coverage and penetration targets is not something that cable can do on its own. Ultimately a mix of technologies needs to be deployed in the European marketplace if the consumer is to be the winner.

European and national policy-makers should support the cable industry in reshaping the European broadband market and bringing very high speed broadband to both households and enterprises. Six policy areas are especially critical for the future development of the European cable industry.

Supporting cable as leading NGA

Create regulatory framework that supports NGA investments

The encompassing deployment of NGA will be crucial in reaching the Digital Agenda's 2020 targets. Cable networks are at the forefront of these developments in Europe, with 100 Mbps being available in close to all markets. Some operators are already offering very high speed packages of up to 120 Mbps. Upgraded cable networks, therefore, represent one of the first NGAs in Europe and are very well positioned to compete with the incumbents. The Commission's "Broadband Communication"¹⁴ shows that this perspective is starting to be widely recognised. When accepting the fact that HFC, FTTx and mobile networks are equally positioned as NGA infrastructures, it is crucial to ensure that rules are not only case studies in better regulation, but are also considered 'future proof' by the very market players whose investment determines the well-being of Europe's economy.

A policy that prioritises infrastructure-based competition is key in driving and maintaining an attractive investment climate for cable and many other infrastructure players. A supportive regulatory framework should consider the following aspects.

- Creating a regulatory regime that spurs investment in NGAs and provides real infrastructure competition with a chance to work.
- Developing an NGA policy that encourages, rather than discourages, cable operators to invest and be innovative. The policy must recognise that cable is still the contender and as such should not be overregulated by symmetrical or technology-specific regulation.
- Treating fiber powered cable and pure FTTB/FTTH networks equally when it comes to support is preferable to focusing the use of public funds on fibre networks.

Continued support of infrastructure competition

Infrastructure competition, especially between the incumbent and cable operators, has been a key driver for greatly increasing broadband penetration, reaching ever-higher speed levels and lower prices.

Maintain focus on infrastructure competition

Given new uses for spectrum, mobile broadband is also increasingly challenging fixed broadband. In light of regulatory progress achieved to date, underscoring the importance of competition between a mix of technologies is vital. Yet, convergence in the ever-changing European ICT marketplace forces regulatory efforts to look further at the importance of respecting competition law and less at prescriptive rules that only focus on the fixed market.

Future regulation must also continue to encourage alternative operators to invest in their own infrastructure. A core lever is the development of incentive-compatible pricing of the dominant operator's wholesale offers.

¹⁴ C(2010)472.

Typical incentives for infrastructure competition include:

- setting costs of regulated access to a level that does not reduce the willingness to invest in new NGA infrastructures;
- increasing termination fees for high speed networks, such as cable or FTTx;
- recognising that open access models are only useful when there is a lack of infrastructure competition between various platforms, be it fixed, cable or mobile.

State aid: careful use of public funds

With the evolutionary, demand-driven, rollout approach, cable operators are following a highly efficient investment strategy. Investments in the rollout and modernisation of HFC networks must, therefore, get the same consideration as alternative NGA infrastructures, be it pure fibre networks or mobile broadband. This will guarantee that the citizens who are funding the initiatives are also able to benefit from efficient investment.

Public support only if lack of commercial initiatives

A precondition of well-guided funding support for NGAs is the acknowledgement of pre-existing NGA competition.

- National as well as local policy-makers should support cable operators with the same dedication as other fibre or LTE networks. One-sided support, especially of the incumbents' future fibre networks, be it by preferred access to ducts or subsidies, has the potential to distort competition and reduce the incentive to invest in cable.
- Public funding must focus on the development of networks in those areas that, due to market failures, are characterised by a persistent lack of commercial initiative by any private infrastructure providers to invest in NGA infrastructure. Connecting rural and less densely populated areas is a critical component of the Digital Agenda where inclusion is concerned. It makes the careful spending of public funds even more important.
- If public support is granted, transparent and technology neutral proceedings must be guaranteed. State aids should be proportionate to the market failure they intend to correct. For example, instead of crowding out private initiative by building a full network to the end consumers from scratch, state aid could take the form of funding a trunk network to towns with a lower-population density so that it is profitable for private investors to deploy their access networks there.

Moving towards a balanced net neutrality approach

There are probably more definitions for 'net neutrality' than there are network operators. So far, the concerns in this debate centre around citizens potentially being disenfranchised or excluded from Europe's information society due to claimed network capacity. While the heated debate continues on both sides of the Atlantic, there is little evidence in Europe that citizens have actually been negatively affected. The debate essentially boils down to how companies should manage their networks in a world of rapidly increasing information flows.

Provide operators with opportunity to manage network quality

Downstream online video offers such as YouTube and Netflix/Lovefilm are examples of the heavy data flows that are placing pressure on some networks. Advanced two-way activities such as gaming and video applications will continue to push the need for greater network capacity. Ensuring the quality and functionality of these services in the light of ever-increasing traffic turns out to be one of the most pressing challenges for network operators.

Fibre-backed cable broadband access improves the internet experience for consumers, whether they subscribe to a basic internet offer or opt for a premium service. To support this experience, members of Europe's cable industry association, Cable Europe, do not block content or applications.

It is worth noting that the European Commission has recognised the important role of legal and transparent traffic management practices that are designed to guarantee both consumers and business users a positive online experience, regardless of platform or package. It is also important to recall the exhaustive nature of the consultation that served as a basis for the sweeping reform of the European telecoms legislation and provides guidance to regulators and stakeholders alike in this area.

There are excellent tools in the new "Telecom Package" and competition rules for tackling individual companies that behave anti-competitively. There is an important distinction between applying appropriate sanctions to those who break the rules as opposed to regulating an entire sector for a potential issue.

Supporting cable in reaching critical size

**Help cable
overcome
fragmentation and
reach critical size**

With a high level of innovation and investments, European cable operators have managed to become the NGA leaders and drive infrastructure competition. Yet, compared to their industry competitors, be it the telco incumbent or international telco giants like Telefonica, Deutsche Telekom, Orange or Vodafone, even the largest cable operators are still comparatively small. Cable operators will, generally speaking, remain more competitive if they can consolidate into networks and operations with national reach, and develop national brands and product offerings.

EXAMPLE: CONSOLIDATION OF CABLE TO SUPPORT INFRASTRUCTURE COMPETITION

The Wallonian broadband market was significantly lagging behind the Flanders market in terms of broadband penetration and attractive broadband products. A study was commissioned by IBPT, the Belgian regulatory office, to evaluate different options that could improve the broadband market. Amongst other measures, the study suggested supporting the consolidation of the fragmented Wallonian cable market. It assumed that only a consolidated, single Wallonian cable operator could have the critical mass to invest and engage in head-to-head infrastructure competition with the telecom incumbent Belgacom.

Source: Belgian Institute for Postal Services and Telecommunications (4/2009): Consultation at the request of the minister on the strategic options to promote the development of the broadband market.

Policy-makers and competition authorities have started to embrace cable consolidation as a means to developing sustainable broadband market structures and strengthening cable operators relative to the incumbent. Even so, consideration of competition in the TV market still stands in the way to many necessary consolidation moves.

- Driven by IPTV, hybrid TV networks and over-the-top offers¹⁵, competitive pressure is increasing significantly in the traditional cable TV business. The formerly-assumed market power of cable operators is deteriorating rapidly.
- At the same time, infrastructure competition from cable operators has significantly improved the overall situation in the broadband market making higher speed levels available at lower prices.
- Further consolidation of regional cable operators into operators with national reach should, in general, be supported as a means to sustaining infrastructure competition even in an NGA environment.

Data protection: trust as fuel for the Digital Agenda

In a rapidly changing society where technology acts as a catalyst to even faster change, it remains crucial that fundamental European values such as privacy and data protection are managed in a balanced manner. The exchanges of information – and their scale – would not have been imaginable even a decade ago. Yet rapid change in information technology will also push the need to ensure that rules and legislation governing personal data are up to date and functioning properly.

Ensure adequate consumer protection and sanction abuse of personal data

Placing the consumer at the centre of the rules is a formula for ensuring that both companies and the rules by which they abide cater for a positive user experience. Trust has a large role in this: it is the lifeblood of business models that are based on holding onto existing customers by keeping them satisfied and attracting new ones.

Given the role that the ICT industry has in growth, consumers' trust is paramount to businesses (such as cable) that mainly target the consumer with their broadband offers. It is, therefore, a business objective and an overarching political objective to get privacy rules right:

- companies must ensure that consumers' privacy and data are adequately protected;
- sanctions serve as decent deterrents to the abuse of personal data. Wherever rules are broken, clear and simple sanctions should be in place to provide remedies for customers.

Bringing it back to the consumer

The cable industry has direct relationships with its 67 million consumers in the European Union. These relationships are the very reason that the industry is keenly aware of the importance of building sound legislation around the consumer. Whether the concern is net neutrality, reviewing data protection legislation or competition rules, the cable industry recognises that the European consumer is ultimately at the receiving end of the effects of legislation governing the European market.

The cable industry and those devising regulation and competition policy share a common goal: to protect the consumer by offering the most competitive market possible. Competitive marketplaces create more diverse service offerings as players are forced to compete on price and performance. This helps to explain the cable industry's drumbeat like message of the importance of infrastructure-based competition. Competition between platforms puts the consumer in the driving seat when considering which platform can best deliver the high-quality services that meet both needs and budget.

¹⁵ Over-the-top: Platform independent, web TV offers.

ABBREVIATIONS

ABBREVIATIONS

ADSL	Asymmetric digital subscriber line
B2B	Business to business
DOCSIS	Data over cable service interface specification
D 3.0	DOCSIS 3.0
DSL	Digital subscriber line
FTTB	Fibre to the basement/building
FTTC	Fibre to the cabinet
FTTH	Fibre to the home
GPON	Gigabit passive optical network
HFC	Hybrid fibre coax networks
LTE	Long term evolution (4th generation mobile networks)
NGA	Next generation access networks
P2P	Point to point
VDSL	Very high speed digital subscriber line

Project Leader: Dr. Dorothea von Wichert-Nick



Dorothea von Wichert-Nick is Managing Director at Solon Management Consulting. Her project work includes M&A support, strategy and new business development as well as regulatory advice for cable operators, telcos, media companies and their investors. Dorothea is the driving force behind the biannual Solon European Cable Survey, the largest strategic and benchmarking study of European cable. Finally, Dorothea is a board member at CTAM Europe, the marketing organisation of European cable operators.

Team:

The preparation of this study was supported by Dr. Florian Hottner, András Sóstói and András Nagy.

Solon Management Consulting

Solon is the leading consultancy for the European telecommunication and media industry. Services range from the development and implementation of corporate strategies to M&A transaction support. Clients include cable operators, telecommunication and media companies as well as banks and private equity funds.

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