



UNI ICTS FOR THE LONG-RUN

BROADBAND: WHAT HAPPENED SINCE ATHENS 2007?



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Overview

Access to broadband has become essential for full participation in the economy and society at large. Fast broadband networks have the potential to create jobs and boost economic output. UNI global union and its affiliates have been very active in this field and their campaigns to influence policy and action in this area are too numerous to mention individually.¹ In the US, a recent study showed that every percentage point increase in broadband penetration leads to the creation of 300,000 jobs. According to the World Bank, in low-and middle-income countries every 10 percentage point increase in broadband penetration improves economic growth by 1.38 percentage points. And business agrees, with the Federation of Small Businesses (FSB) in the UK arguing that broadband

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is a vital utility for small businesses and broadband provision should be a universal service obligation.²

During the 2nd UNI Telecom World Conference held in Athens in 2007 we launched the “UNI Telecom for the long-run campaign” which called for:

- 1 Universal and Affordable Service.
- 2 Quality Jobs and Service.
- 3 Financial Equity & Transparency.

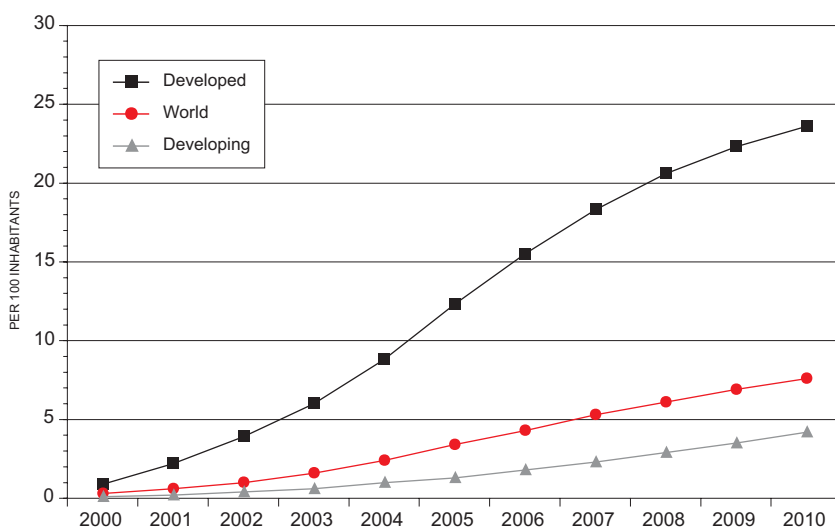
Four years later it is time to give an update on where we stand on these topics. Since 2007 the world has considerably changed together with the ICT industry. To reflect these changes the IT and Telecom sectors are merging into one to form UNI ICTS. Additionally, the sector decided to focus on the first two points and their evolution since 2007 as point number three is less relevant to the sectors’ strategy.

On a global level, the proportion of people connected via wired broadband grew by 43% since the last UNI World Telecom Conference. The increase in the devel-

¹ We know that unions such as Prospect, Ver.di, CWA, CWU-UK, CCOO, UGT, Dansk Metal, Pro and Sintetel are deeply involved in their respective national debates, among others.

² *Broadband: Steps for an incoming Government* (Federation of Small Businesses, May 2010).

Fixed wired broadband subscriptions per 100 inhabitants, 2000-2010



The developed/developing country classifications are based on the UN M49, see: <http://www.itu.int/ITU-D/ict/definitions/regions/index.html>. Source: ITU World Telecommunication /ICT Indicators database.

oping world (over 80%)³ has been more impressive than in developed countries (29%). However, the penetration rate remains much lower in developing economies with 4.2% than in the developed world with 23.6%. The proportion of households having access to broadband in the EU 27 and US reached more than 60% in 2010.

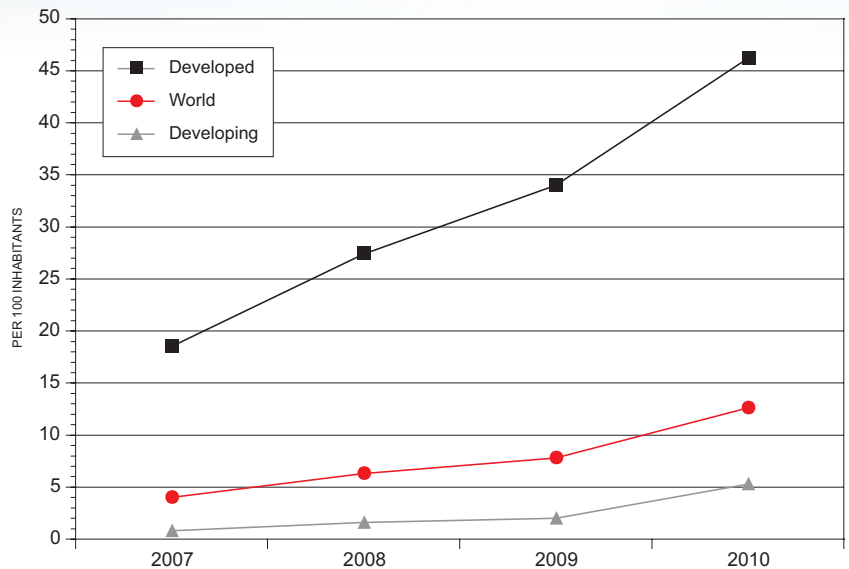
In comparison, active mobile broadband subscriptions per 100 inhabitants tripled worldwide since 2007. Although the penetration remains low in the developing world (5%) the increase has still been outstanding there with a penetration rate being 6 times higher in 2010 than in 2007. In developed countries this proportion “only” grew by 150% with almost half the population now having mobile broadband access.⁴ Clearly the growth in active mobile broadband subscriptions is driven by the increasing use of mobile phones to surf the internet.

In 2007 19% of mobile phone owners in the US used their phone to access the Internet, and by May 2010 the share had doubled to 38%. In the EU 27, the use of mobile phones to access the Internet by individuals jumped from 7.4% in 2008 to 13.8% in 2010. During the same period of time, the number of persons using their mobile phones to access the internet more than tripled in the UK. In Korea more than 50% of wireless internet users declared to use their phone to surf the web in 2009.

Universal service still a long way off

The digital divide doesn't exist only between developing and developed nations but also within a country between urban and rural areas, rich and poor. In the US only 50% of adults in rural areas subscribe

Active mobile broadband subscriptions per 100 inhabitants, 2007-2010



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to broadband while this share reaches 68% in cities. And the divide exists not only among geographic areas but income as well. Ninety-three percent of American households earning more than USD 75,000 annually have access to broadband compared to 40% of those earning below USD 20,000. In the UK, if market solutions were the only options in place for broadband access only two-thirds of households would gain access to new superfast broadband. That is the reason why the UK government and more than 40 governments around the world now explicitly mandate access to broadband in their universal service definitions according to the International Telecommunication Union (ITU).⁵

Governments have very diverse strategies when it comes to funding. Funds specifically dedicated to Universal Broadband Access (UBA) are more prevalent in the de-

³ The proportion of fixed wired broadband subscriptions grew from 18.3% to 23.6% in developed countries while it grew from 2.3% to 4.2% during the same period in developing ones.

⁴ The number of mobile broadband subscriptions refers to subscriptions that have access to a high-speed mobile network. It must be used with caution and rather indicates a potential for Internet access since it does not necessarily mean that subscribers are actual users of those services (they may just be using their mobiles for telephone calls or SMS messages).

⁵ The 40 countries are: Albania, Andorra, Argentina, Azerbaijan, Bahrain, Brazil, Burkina Faso, China, Colombia, Dominican Republic, Egypt, Finland, Ghana, Grenada, Guinea, Haiti, India, Kazakhstan, Liechtenstein, Malawi, Malaysia, Mongolia, Morocco, Nepal, Nicaragua, Nigeria, Oman, Pakistan, Peru, Samoa, Saudi Arabia, Sierra Leone, Sri Lanka, Spain, Sudan, Suriname, Switzerland, Trinidad & Tobago, Uganda, United States. (ITU Stat-shot January 2011 (www.itu.int))

veloping world than in the developed. For example, only 9 funds exist in developed countries for UBA whilst in Africa they are commonly used and funded through operator levies, government contributions and/or donor funds.

Policies to implement UBA also vary greatly from country to country:

Switzerland included broadband in USO⁶ as a way to expand coverage (2008). The universal service provider charged with USO must provide a broadband connection to the whole population, via DSL or satellite or other technologies.

Finland broadband access is a legal right and by the end of 2015, 99% of permanent residences should have access if they reside within 2 kilometres of a fibre-optic or cable network.

Chile WiMAX⁷ operators also include regional providers with the regulator planning to award additional spectrum to any new operator on the third-generation networks. On the demand-side strategy has included programs for e-literacy, e-government, and ICT diffusion. For example, by 2008, almost all municipalities had Internet access, and 80% had Web sites.

Malaysia the government is concentrating on third-generation WiMAX and FTTH⁸ platforms to expand broadband adoption and the network will be rolled out by Telekom Malaysia under a public-private partnership.

India the government's plan includes: financial support for infrastructure sharing, supporting backbone infrastructure, exemption from spectrum charges for niche operators, discount on annual fees and spectrum fees linked to rural areas, and abandoning rights of way charges for rural networks.

Portugal will provide investors with a EUR 800 million credit line to develop NGNs⁹

France aims at access for all by 2012 through the creation of a certificate to be granted to those providers offering a minimum of 512 Kbps at an affordable price of less than USD 48 per month.

Australia and **New Zealand** have taken the initiative to fund and own broadband infrastructure to guarantee maximum coverage.

UK the regulator threatened to shorten license validity, should coverage obligations not be met.

Finally, infrastructure competition continues to prove efficient in Asian nations such as Korea, Hong Kong and China. Generally speaking, alternative platforms like wireless networks have a crucial role to play in the debate, since they can provide competitive services in remote areas.

Significant investments are required to achieve the ambitious targets set by governments. As the EU Commission declared, "action needs to be focused on providing the right incentives to stimulate private investment, complemented by carefully targeted public investments..." In the EU the amounts needed are difficult to calculate but a review of recent studies indicates that between EUR 38bn and EUR 58bn would be needed to achieve the 30 Mbps coverage for all by 2020 and between EUR 181bn and EUR 268bn to provide sufficient coverage so that 50% of households are on 100 Mbps services.

Broadband speeds

Recently, particular attention has been given to the fact that actual speeds don't match advertised ones. For example, in the UK, Ofcom¹¹ reported that advertised speeds increased by nearly 50% between April 2009 and May 2010, while actual speeds delivered increased only by 27%, and averaged just 46% of the advertised speeds. A number of OECD countries (France, Korea, Portugal, and Spain)

⁶ Universal Service Obligation

⁷ Worldwide Interoperability for Microwave Access

⁸ Fiber To The Home

⁹ New Generation Networks

Table 1: Broadband public investment goals and targets, selected countries (2010)

	Public Investment	Goals	Penetration targets	Speed targets
Australia	Up to AUD 43 billion (USD 46 billion) over 8 years.	Creation of a National Broadband Network	90% of all homes and businesses connected by fibre	100 Mbps for 90%, 12 Mbps for the remaining 10%.
Brazil	R\$ 13 billion (USD 8.1 billion)	Reactivate the dormant optical fiber network to connect 12 million households to the internet at low prices by 2014.	75% of households	Minimum speeds of 1 Mbps with prices starting at R\$35 (\$23).
Canada	CAD 225 million (USD 230.1 million)	To encourage the expansion and availability of broadband connectivity to as many currently unserved and underserved households as possible.	As many households as possible.	1.5 Mbps download
EU-27	EUR 3.9 billion ¹⁰ (USD 5.6 billion)	By 2020, all Europeans should have access to internet.	100% of households should have access to internet of above 30 Mbps	At least 30 Mbps for everyone and at least 50% of households with 100 Mbps connection.
Japan	JPY 185 billion. (USD 2.4 billion)	Eliminating the digital divide, promoting the development of wireless broadband and fostering digital terrestrial broadcasting.	Broadband: 100% by 2010. Ultra-high speed: 90% by 2010.	n.a.
Korea	KRW 1.3 trillion (USD 1.2 billion) over 5 years.	u-BcN based on All-IP network. Mobilising further KRW 32.8 trillion from the private sector.	50-100 Mbps service to 14 million residents by 2012 (1 Gbps service by 2013).	Fixed: 1 Gbps (maximum). Mobile: 10 Mbps (average).
Malaysia	USD 700 million	Create a fiber optic network that will connect about 2.2 million urban households by 2012.	n.a	n.a
United States	USD 350 million.	The development and maintenance of a national broadband map. Funding will be directed to high-quality projects that are designed to gather data at the address level on broadband availability, technology, speed, infrastructure, and average revenue per user (ARPU) across the project area.	n.a.	n.a.
	USD 2.4 billion.	The expansion of broadband service in rural areas through financing and grants to projects that provide access to high-speed service and facilitate economic development in locations without sufficient access to such service.	n.a.	Two-way data transmission with advertised speeds of at least 768 kbps downstream and at least 200 kbps upstream to end users, or providing sufficient capacity in a middle-mile project to support the provision of broadband service to end users.
		To extend broadband access to unserved areas, improve access to underserved areas, and expand broadband access to a wide range of institutions and individuals, including vulnerable populations	n.a.	Two-way data transmission with advertised speeds of at least 768 kbps downstream and at least 200 kbps upstream to end users, or providing sufficient capacity in a middle-mile project to support the provision of broadband service to end users.

Source: OECD Information Technology Outlook 2010, European Commission 2010 and the World Bank 2010. NB: Exchange rates based on www.xe.com on August 31st, 2011.

¹⁰ We used planned expenditure of EU ERDF structural funds on broadband when government sources were not available.

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consequently developed a framework to measure and report the quality of broadband services. Regulators in the US, Denmark, Estonia, Norway and Korea are providing consumers with tools to measure the speed of their broadband lines directly. An OECD data collection revealed that the average advertised speed of all platforms increased by more than 20%, from October 2009 to September 2010 due to initiatives to upgrade broadband by many network operators.

Advertised vs. Observed Speeds

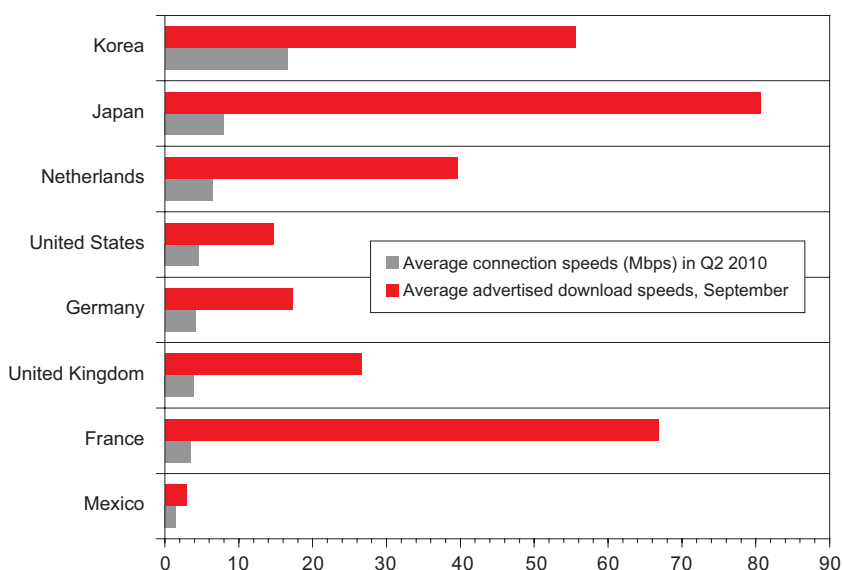
In September 2010, France and Japan had the fastest median advertised download speed of up to 100 Mbit/s. Korea was third with up to 50 Mbit/s of median download speed. Some countries presented a large gap between average speeds and median speeds. Sweden had the fastest

average advertised download speed of up to 85.6 Mbit/s but the median was 12.3 Mbit/s. Similar gaps were seen in Portugal, the Slovak Republic and Slovenia. Across all OECD countries, the median advertised download speed was 15.4 Mbit/s in September 2010, compared to the average advertised download speed of 37.5 Mbit/s.

As for real observed average speeds they have increased by 6.1% from 2009 to 2010 with Korea leading the way in the OECD with 16.6 Mbit/s while Mexico had the slowest connection with 1.5 Mbit/s. An earlier analysis, based on a commercial sample of home computers during the first half of 2009, suggested that median and average advertised download speeds for purchased services were about 7 Mbit/s and 8 Mbit/s respectively, while the median and average experienced speeds were about 3 Mbit/s and 4 Mbit/s.

¹¹ Independent regulator and competition authority for the UK telecommunications industries

Observed and advertised average connection speeds, selected OECD countries, Q2 2010



Source: OECD Communications Outlook 2011

The comparison between advertised speed and observed ones below has to be viewed with care as it doesn't necessarily show that providers are not furnishing the service they advertise. In fact, it may well be that those differences are mainly due to the fact that the majority of people choose slower connections than those advertised for cost reasons which make the advertised speed a questionable measurement.

Speed is crucial for important innovations such as online applications in fields like Telemedicine and Educational services which can't be used without high-speed broadband connection as shown in table 2. Those countries that do not put in place the necessary infrastructure to offer sufficient connection speeds to its citizens will lose out.

Table 2: Speed ranges needed for various online Applications

Upstream and Downstream Speed Range	Applications	Upstream and Downstream Speed Range	Applications
500 kbps – 1 mbps	Voice over Internet Protocol telephony Basic email Web browsing (simple sites) Streaming music Low quality video (highly compressed)	10 mbps – 100 mbps	Telemedicine Educational services Broadcast video SD and some High Definition IPTV-High Definition High quality telepresence High Definition surveillance Smart/intelligent building control
1 mbps – 5 mbps	Web browsing (complex sites) Email (larger size attachments) Remote surveillance IPTV-Standard Definition (SD) (1-3 channels) File sharing (small/medium) Digital broadcast video (1 channel) Streaming music	100 mbps – 1 gbps	High Definition telemedicine Multiple educational services Full High Definition Broadcast video Full IPTV channel support High Definition Video on Demand Gaming (immersion)
5 mbps – 10 mbps	File sharing (large) IPTV-Standard Definition (multiple channels) Broadcast Standard Definition video Video streaming (2-3 channels) High Definition video downloading Medical file sharing (basic) Remote diagnosis (basic) Remote education Building control and management		

Source: California Broadband Task Force, The State of Connectivity: Building Innovation Through Broadband, Jan. 2008 (available at www.calink.ca.gov/pdf/CBTF_FINAL_Report.pdf)

Network neutrality

The network neutrality debate started in the early 2000's and encompasses several subjects such as the openness of the Internet to certain types of content, applications or equipment depending on the definition considered. The central issue for regulators is to decide whether access providers can prioritise some types of traffic over others or slow down traffic, according to certain criteria¹²; or whether Internet traffic should be treated as "neutral". Generally, neutral means that access providers should not treat third-party service providers differently than the services of their own subsidiaries.

The European Commission launched a consultation process which covers the convenience of ISPs¹² adopting traffic management practices; any possible harm for users; impact on competition in conjunction with the new European regulatory framework; and whether the EU needs to act on this issue. The EU's view is that the Internet should be neutral and open.

Recently Chile's Parliament passed an amendment, stating that ISPs must not interfere, discriminate against or hinder access to content, application or services, except for security reasons.

Last year, a US Federal Appeal's Court judged that the FCC¹⁴ had limited authority to prevent a company from treating traffic in a non-neutral manner. After that decision, the FCC adopted an "Open Internet Order", which encompassed three basic rules that are designed to: promote transparency by requiring providers to disclose their network management practices, performance

characteristics and terms and conditions of their broadband services; prevent blocking of lawful content, applications, services or non-harmful devices; and ensure there is no unreasonable discrimination in transmitting lawful network traffic.

Finally, the Canadian Radio-television and Telecommunications Commission issued a decision that establishes a framework to guide ISPs in their use of Internet traffic management practices.

Conclusion

Broadband adoption has dramatically increased since we last met in Athens in 2007 and is more than ever a central issue for the ICT industry. Nonetheless, many efforts and coordinated investments both from governments and the private sector are still required to achieve universal service and develop broadband infrastructure without threatening the neutrality of the Internet.

It is crucial that unions ensure citizens and workers are at the centre of this debate, especially when it comes to the (re) skilling of the workforce and the creation of good quality jobs. This is particularly relevant for UNI Global Union affiliates now that we have a merged sector formed by members representing both IT and Telecom workers. Additionally, UNI and its affiliates should promote high-speed broadband. Speed matters when it comes to job creation, enhancing economic growth, and supporting high-tech innovations in various sectors of the economy. The high-speed broadband debate is essential for UNI ICTS to break through in a digital world.

¹² e.g. bandwidth management, willingness to pay, etc

¹³ Internet Service Providers

¹⁴ Federal Communications Commission

UNI GLOBAL UNION is the Global Union for skills and services. We represent 900 trade unions and 20 million workers worldwide.

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