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European Edition

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Bright future of FTTH

Why is the next FTTH Conference held in Luxembourg? How important is cooperation with politicians? What impact do the children have on the future of ICT? All these questions have been touched in the interview with Nadia Babaali- Communications Director of FTTH Council Europe.

On the 4th of November we were celebrating the third edition of the Gimme Fibre Day. Where comes this idea from and what were the results of this edition?

At the very beginning, the concept of celebrating fibre to the home on 4 November emerged in 2012 within the FTTH Council Global Alliance, the platform for cooperation of the five global FTTH Councils. The idea was to honour the only future-proof broadband access solution on the market and showcase how fibre has positively impacted communities across the world and what policymakers can do to help advance the roll-out of fiber optics. They chose the specific date of 4 November in order to commemorate the birthday of Sir Charles Kuen Kao, Nobel Prize in Physics for ground-breaking achievements in the transmission of light in fibres for optical communication.

We can proudly say that this third edition of Gimme Fibre Day has been a worldwide success and we are very happy that this event is getting more and more attention and support every year. More than 20 activities to mark the occasion were listed on our website, not to mention the many spontaneous actions throughout the world showing support for Gimme Fibre Day. We also organised a Facebook Selfie Contest "I want Fibre". The lucky winner, Fabien from Austria, won an iPad mini 4.

Also, France has been a strong advocate of fibre to the home (FTTH) this year, and this was reflected in the activities occurring around "La journée de la Fibre", the French edition of Gimme Fibre Day. For this occasion, we collaborated with the French operator Orange to organise online activities on social media and on the French Gimme Fibre Day website.

Three months after the Gimme Fibre Day, there will be annual FTTH Conference held in Luxembourg. What are the objectives of this edition?

It is rapidly approaching indeed! We are really excited about this 13th edition of the FTTH Conference. This year, we decided to hold it in Luxembourg City from 16 to 18 February 2016. This event is the perfect opportunity to learn more about every aspect of FTTH, FTTH equipment and FTTH services.

The FTTH Conference 2016 has been placed under the theme "Calling for a brighter future" because we strongly believe that fibre is a futureproof solution that will simplify and improve the way we communicate. In fact, our event totally reflects the FTTH Council Europe's objectives to create a connected continent and provide a brighter future for all citizens through fibre to the home roll-out. We are calling on policymakers, regulators, operators – both new and incumbent – and end users to attend this conference as we believe that the only infrastructure solution for the coming years is fibre.

We want this conference to be a place of exchange about FTTH-related topics concerning financing, deployment, marketing and services, as well as looking at the state of the market in Europe and inspiring case studies. Central and Western Europe will be a key area of focus during the three-day event, including a day of workshops and the twoday conference.

Why did you choose The Grand Duchy of Luxembourg to host the FTTH Conference 2016?

Our FTTH Conference has been held in a different European city since 2004. Choosing the right location is a crucial matter for us. On this topic, a lot is happening right now in Luxembourg. There is a high penetration of fibre in this country and a high engagement and support of politicians regarding this issue. Luxembourg is also one of the decision taking centres of the European Union and host to a number of services of the European Commission such as the European Court of Auditors, European Court of Justice, European Investment Bank (EIB), European Investment Fund and Secretariat of the European Parliament. We are also very pleased with the involvement of the Luxembourg Government for our FTTH Conference: the event has received the high patronage of Xavier Bettel, Prime Minister and Minister for Communications and Media of the Grand Duchy of Luxembourg. Xavier Bettel will also deliver the opening speech of the FTTH Conference, officially kicking off the largest FTTH-related event in the world!

The FTTH Council Europe seems indeed strongly involved in the work of lobbying regulators and politicians. Can you explain why and how do you take part in those discussions?

In line with our strategy to accelerate adoption of FTTH in Europe, we are asking decision makers and other stakeholders to create a favourable environment for fibre roll-out. Decisions regarding a European regulatory framework for fibre rollout need to be made today. In this context, it is only logical that at the heart of our organisation lies the strategy to reach and influence politicians and regulators throughout Europe. Governments cannot be expected to have the technological know-how required to find all the answers. This is where we are convinced that the FTTH Council Europe can bring ideas and solutions that can work for all Europe: we have access to a huge amount of information and studies, and also have the insights to analyse this information from different angles: regulatory, technological, business...

As a consequence, we have high level discussions with the Commission and Parliament. For example, we are exchanging with Günther H. Oettinger, Commissioner for the Digital Economy and Society, and Andrus Ansip, VP for the Digital Single Market on the Digital Agenda. Our president Edgar Aker also met Luxembourg Prime Minister Xavier Bettel on 23 September 2016 to discuss the rollout of FTTH in the Luxembourg's broadband market and exchange views on the Digital Lëtzebuerg initiative. Our connections are very good and we influence and discuss with them quite openly. We are being acknowledged as one of the parties that can bring a good view from the telecoms industry.

Finally, on occasion of the FTTH Conference 2016, the FTTH Council Europe will make a donation to CoderDojo. Why have you decided to support this association?

We are very pleased to donate 3,500 euros to the Coder Dojo Foundation, a global initiative of free, volunteer-led, community-based programming clubs for young people. This association is a great example of the digital empowerment of kids. At the FTTH Council Europe we promote FTTHenabled services and their positive impact on the quality of life of European citizens so it is only natural that we support such an initiative. Children are our future, it is our responsibility to build the right environment for them to grow and develop. Of course, besides the mere donation, we will continue to explore new cooperation opportunities in the near future, for which we are pretty excited about!



Nadia Babaali

Communications Director FTTH Council Europe



Dear Readers!

It is a second time when the ICT Professional becomes a media partner of the FTTH Conference 2016, the biggest event dedicated to fibre optic technology. Therefore, we decided to issue a special edition of the magazine- ICT Professional EU. It is a great chance to present both Polish and European ISP market. The Polish telecommunications market is in continuous development. According to a research conducted by UKE (Office of Electronic Communications), in 2014, 90% of Polish households had an access to the Internet, and the ICT market had a value of 5,1 mld billion zloty (it is 11,5% more than in

2013). There were around 13 million Internet users, and the most popular service was an access to fixed broadband, which was chosen by more than half of the customers (more than 7,2 million). In turn, nearly 6 million users chose a mobile Internet. As stated by UKE, almost half of the Internet users (45%) was using the Internet from 2 Mb/s up to 10 Mb/s. Around 24% of people had an access to the network with a bandwidth of 10-30 Mb/s, while the access to over 100 Mb/s was 126% bigger than in 2013. It is also worth mentioning that 4,5% of people was using a bandwidth of 144 kb/s – 2 Mb/s, and 21,5% had an access to 30-100 Mb/s. The access to more than 100 Mb/s was 5,2%.

According to Digital Agenda for Europe, by the 2020, every resident of EU should have an access to the Internet with at least 30 Mb/s. How to achieve it? FTTH technology is the only solution to reach such speed. In Poland, there are around 1800 Internet operators and they has already built 3-4 million km of the fibre network. It constitutes a great foundation for providing fast Internet to all Polish residents.

Polish promising perspectives are not the only ones. As presented in our report about the European ISP market, all Europe cares about development of the Internet services. Every European country invests in the FTTH technology. And what is the future of this market? The FTTH Council Europe answers this question in their article.

We wish you a pleasant reading!

Klaudia Latasik

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Report - Internet and ISP market in Europe

MICHAŁ KOCH

		CERMANY	EDANCE	SLOVAVIA	
Dometration rate	79.2 %		92 2 04	92 1 %	
Mobile Internet	T-Mobile, Vodafone, Telefonica O2 and U.fon. Airwaynet provides mobile Internet access.	T-Mobile, Vodafone, E-Plus, O2.	Orange and SFR have dominated the market, although recently a third player has joined the market - Bouygues Telecom. In 2012 Free Mobile introduced competitive prices for their services.	Orange, Slovak Telekom under the T-Mobile brand and Telefónica O2. Mobile prepaid is provided by Naymobile, Swan mobile, Tesco mobile and Funfón.	Omnitel, Bité and Tele2. By provider Omnitel (which created the brand Ezys offering even lower prices). A very dynamic market and the biggest market movement of all Baltic countries.
LTE	Telefónica O2 launched its LTE service in 2012. By the end of 2015, all cities are to be covered with the LTE as announced by Vodafone.	LTE was launched by Deutsche Telekom in 2010 and by Vodafone in 2011. Most users still do not have LTE connection and those who have it, spent half of their time without an active connection.	SFR, Orange, Free, Bouygues.	Telekom Slovenije has announced that agreement to use the LTE network of the Croatian provider T-Hrvatski Telekom (T-HT) has been signed. LTE services were activated in 2013 by Slovak Telecom (T-HT). Currently, the LTE is available in 200 cities and covers 80% of the country.	LTE covers 65% of the country.
Internet access	The access to the Internet is good in large cities, but outside these agglomerations there are problems with internet access. In Prague, there is also a problem with internet access because of its historic infrastructure.	Good access throughout the country, though it is still below average considering the rest of Europe. The Government plans to provide broadband access to the Internet in all parts of the country by the end of 2018, as described in the document 'Digital Agenda 2014-2017'.	FTTH enables connectivity across the entire country. However, the access to mobile broadband network is below the European average.	Poor access to the Internet. 13% of the urban area in Slovakia is not covered by a broadband network. However, there has recently been significant growth in regards to internet access.	Problem with access. 25% of the population do not use the Internet.
ISP	Fragmented market. There has been a shift from DSL to new technology, since Orange continues advancing its network technology. Very important was also emergence of FTTH. Broadband Internet remains a strong alternative. Other providers: O2 Czech Republic, Vodafone CR Nej TV, RIO Media. Vodafone Offers VDSL2. Cloud services are used by 20% of business market. Broadband Internet market continues to grow.	Cable Internet is provided by Kabel Deutschland and Unitymedia. According to data from January 2014, the monthly cost of the Internet and the phone was 25 euro for ADSL2 + and 30 euro for VDSL2. National providers are: Deutsche Telekom, Congstar, 1 & 1, Vodafone, o2, Versatel 30 million users connect to the Internet via cable. Annex B for ADSL, ADSL +, and VDSL2 are used for permanent Internet connection. Deutsche Telekom is the market leader. Telekom plans to introduce a service of 500 Mbit / s using Gfast, but no sooner than in 2015.	Orange 41.7%, Free i Alice 23.01%, SFR 22.95%, Bouygues Telecom 5.77%, others (DartyBox, NordNet, OVH, Prixtel, Budget Telecom, Coriolis Télécom, Virgin Mobile, Numericable, Vivéole, FDN, Nerim, Magic OnLine) 6,57 %. France has the 3rd largest consumer market of broadband network in Europe, DSL dominates, but FTTH has become a popular alternative, especially in the region of Paris. Orange provides VDSL2 to 60% of population. There are 21 million of DSL customers.	Slovak Telekom has a monopoly on market and it dominates also at the DSL market. It has recently resulted in series of merges and acquisitions among the Internet providers, so there is less operators at the moment. The government sold a 49% stake in Slovak Telekom to Deutsche Telekom. Slovak Telecom and T-Mobile Slovensko merged. Other providers include: AT & T Global Network Services Slovakia, Dial Telecom, Intercompany Services, Nextra, Slovanet, UPC Slovensko. Among the large number of providers throughout the country, there are: T-Com, T-Mobile, Orange Slovensko, and UPC.	Teo LT (the monopolist; includes digital television) and other providers such as: Bite, Omnitel, Baltneta, Kavamedia.
FTTH	In 2014, there were less than 20 thousand FTTH subscribers. In 2013, CentoNet launched a service of 1Gbit/s FTTH in Prague. RIO Media is developing the FTTH network.	In 2011, Deutsche Telekom introduced an offer of FTH/FTTB with a 200 Mbit/s downstream and 100 Mbit/s upstream. In 2014, FTTH was available in 884 thousand households (55 Euro for 100 Mbit/s and 60 Euro for 200 Mbit/s). Local providers also offer FTH/FTTB services, eg. M-Net in Munich, Wilhelm tel in Hamburg and NetCologne in Cologne. However, there is necessity to make bigger investments in fibre networks, in order to increase the speed of the Internet. Development of Deutsche Glasfaser by KRK, a global investment company, and by Reggeborgh, Danish investment company, will provide a significant capital for Deutsche Glasfaser, which will cover expenses of the FTTH development in Germany.	In 2016, Orange plans to cover 100% of the nine big cities with FTTH technology. They also plan to triple their investments in fibre optics by 2020, and to increase the number of subscribed households up to 4 million by 2018. There has been significant growth in 2015.	The first operator offering FTTH in Slovakia was Orange, which has been offering 250/100 Mbit/s since 2013. Another provider, Bonet, offers symmetrical broadband of 1Gbit/s for 25 euro. FTTH in Slovakia is also provided by Deutsche Telecom.	Has developed rapidly, and is currently the best country in Europe for internet access. Internet coverage reaches 100% of the population and in 2014, Lithuania was the 7th best country worldwide when it comes to the Internet access.

How high is a percentage of the Internet users in Romania or France? What is the market in Netherlands, Cyprus, or Denmark distinguished by? Which country has the biggest FTTH network? To find out, read the report below.

Dynamically growing/well-developed market Requiring investments/poorly developed market					
UKRAINE	NETHERLANDS	SPAIN	AUSTRIA	MONTENEGRO	
41.8 %	95.7 %	74.8 %	86.8 %	56.8 %	
The mobile market is growing steadily, but slowly. Access to mobile services is already common in most of the urban, railway and port areas. A multitude of public hotspots. It is estimated that 36% of Ukraine's population has an access to the mobile Internet. Kyivstar is the largest telephone operator, which also provides other possibilities of a mobile connection. Other operators are: Astelit, MTS Ukraine, Ukrtelecom, Beeline (Kyivstar).	Providers: KPN, Orange Netherlands, Tele2, Versatel, Vodafone Netherlands. 1/3 of citizens do not use mobile Internet.	Providers: Movistar, Orange, Vodafone, Lebara, Lycamobile. Mobile Internet segment is well developed due to the popularity of the mobile telephony.	Providers: Orange, 3 Austria, A1, T-Mobile, Tele2. Very rapidly expanding market.	Providers: Crnogorski Telekom (Telekom Montenegro), M.tel, Telenor.	
Large interest in the LTE and WiMax technology market. It is predicted that by 2020, 5% of the population will be using LTE, and it will be due to the construction of a network, which is going to begin in 2017.	At the end of 2013, LTE was offered by KPN and Vodafone. T-mobile plans introducing such a service.	The world's fastest network, with an average speed of 18 Mb/s.	Hutchison Drei Austria (Drei), with its 4G LTE, covers 98% of populated areas in the country.	Crnogorski Telekorn, which provides mobile services under the T-Mobile brand, has announced that they are testing 4G technology reaching up to 300 Mb / s. T-Mobile has launched this service in 7 cities: Podgorica, Nikisc, Budva, Bar, Kotor, Tivat, and Herceg Novi.	
Internet market is well developed and not affected by the economic crisis. In 2011, Ukraine was among the top 10 Internet countries in Europe.	High speed Internet is available to 98% of population. The most popular method is cable connection (41% of population). Popular are also: DSL and FTTH. According to studies, Netherlands has the highest percentage of Internet access per 100 inhabitants (along with Switzerland). There are no transfer restrictions.	No problem with the general access but there are still some gaps in access.	No problems.	No problems.	
Market dominated by DSL, but cable and FTTH/B remain alternatives. Wireless services and LAN are present on a smaller scale. Digital TV is available via cable and satellites. There has been also growth of DTTV Ukrtelecom (the biggest), MTS Ukraine, Velton. Telecom, Lucky Net, SvitOnline (Golden Telecom), Vega (Optima Telecom). Volia is the second largest provider, specialised in cable connection with a television broadcast signal.	Well developed market and infrastructure, thanks to the Government's financing. The country has a complex offer of the DLS and cable network, and is also expanding ADSL2+ Ethernet in order to satisfy a customers demand on the triple play services. Although there are other operators, the cable sector is consolidated by UPC Netherlands. Other providers are: T-Mobile, UPC, Ziggo, Vodafone, KPN, XS4ALL, Tele2.	Internet users have to cope with high prices and poor transfers. • Jazztel, • Ono, • Orange, • Movistar, • Vodafone, • Ya.com (acquired by Orange). Movistar, Ono, and Orange offer an additional TV service. Telefônica, under the Movistar brand, introduced a wide range of services offering fast data transfer.	Market is dominated by providers of DSL, and the major operators rare: Telekom Austria, UPC, Tele2, kabelPlus, Xlink. Market is also quite fragmented and 200 providers are associated in the organization called ISPA. Access to the Internet is aprox. 99%. Prices are affordable, as Austrians must spend only 1% of their income to get access to the broadband network (the European average is 1.4%). UPC Austria dominates the market, while Telekom Austria has most of the DSL market and has invested in VDSL and G.fast technology on the areas where FTTH hetwork is not developed. The Government offered one billion euro for development of broadband network.	Internet services are provided by Crnogorski Telekom and MTEL. Crnogorski Telekom provides dial-up and ADSL access, while MTEL provides WiMAX access. Another operator is M-Kabl, which uses DOCSIS technology.	
FTTH was introduced in 2013, offering to its subscribers 300 Mb/s. The Ukrainian and Russian market is able to add another 14.8 milion subscribers to the 14.5 milion subscribers in Europe. This highlights the huge market capacity. Ukrtelecom launched services based on optic fibre for the SME market.	In 2014, the amount of optic fiber was increased up to 2,3 million. The market was dominated by Reggefiber - 85%. The rest of the market belongs to CIF. FTTH Council Europe highlights a great progress in 2014, and expansive and effective fibre infrastructure.	Vodafone and Orange (they acquired ONO) has created networks in 12 cities, including Madrid, Barcelona, Sevilla, Malaga, and Valencia. There is a huge demand for FTTH, as asserted by FTTH Council Europe. In 2014, statistics were optimistic. Jazztel provides a symmetrical broadband of 200 Mbt/s. Overall access to the FTTH in 2014 reached around 609 000 households.	Poor development. During 2014, Austria connected to network less than 20 000 new subscribers. Energie AG Oberösterreich Data GmbH now offers up to 300 Mbp/s by a unique network resources in northern Austria. In some regions, a triple play service based on GEPON technology is offered.	Crnogorski Telekom has invested 7.4 million euro in building the FTTH infrastructure. 10 regions were covered by this project, and it enables a connection of 37 000 households. In the capital, every second home is connected to the FTTH network.	

	GREECE	BULGARIA	CROATIA	CYPRUS	DENMARK
Penetration rate	59.9 %	59.0 %	70.9 %	68.6%	97.3 %
Mobile Internet	Wind Hellas, Vodafone Greece and Cosmote. A development of market enabled Cosmote to invest on the LTE market and to acquire smaller providers of the Balkan region. Vodafone and Wind Hellas concluded an agreement to share their network infrastructure, but Vodafone did not agree to share the LTE infrastructure. The statistics show that in a group of 100 people only 41 people use mobile services.	Providers: Vivacom, Mobile, GloBul. Only 60% of people have an access to mobile Internet.	There are plenty of smaller providers but the market is dominated by three of them: T-HT, Vipnet, Tele2 Croatia.	Two main providers: Cytamobile- Vodafone and MTN Cyprus. The third provider- PrimeTel Mobile appeared in 2011, and was awarded a multi-license in 2014.	The mobile services market is at an advanced level. Providers: TDC, Telenor Denmark, 3 Denmark, Lycamobile, Tele2.
LTE	LTE provided by Vodafone and Cosmote. LTE-A is being tested.	Telecom launched its LTE service access to citizens. After redevelopment of their network, Telecom announced that they are able to provide LTE services to 99% of the population. M-Tel is extending a scope of the LTE services.	No data	Plans concerning a development of large-scale LTE access. LTE service launched by MTN and PrimeTel so far.	TDC Mobile, Telenor Denmark, Telia, and Hi3G are four major LTE providers and they continue expanding their networks.
Internet access	99% of households have the ability to connect to the network, but 37% of them did not do it. Although Greece has improved its score, it still remains below the European average.	Access to high-speed Internet varies, but is still below the European average which is 97%.	Joining the EU resulted in market liberalisation. At the moment, only 61% of population have access to the broadband network.	28% of population have never used the Internet.	99% of urban areas, and 97% of rural areas have access to the Internet.
ISP	Fast and significant development of the market, including ADSL2 which allows launching services of digital TV. After the liberalisation of the market, there was a large range of providers, but due to current economic situation, investments in the market has been reduced. It has affected smaller enterprises which are now forced to leave the market.	There is a division between DSL, FTTH/B, WiMAX, LAN, and cable on the market. Good access to digital TV via broadband networks and satellites. The market copes very well with connections of very fast transfer. Major providers are: BTC, Balchik.Net, Bulgaria Online, Euro Integra, Orbitel. The market is fragmented.	Access to the broadband Internet is available via various technologies: ADSL2+, cable, FttX, and WiMAX. Providers focus on enhancing the quality of triple play and digital TV. There is one cable Internet provider. Croatia, B.net Hrvatska d.o.o. offering triple play service. Telekom Austria Group declared that they acquirred Amisco, the owner of Amis, which provides broadband Internet in Croatia and Slovakia.	Market is hardly developed, DSL remains the most popular way to access the internet. Only 68% of population has an access to fast broadband network. It starts changing thanks to the Government which supports a development of the broadband Internet.	Denmark has one of the most solid markets in Europe. Operators provide TV and Internet alongside with other services, such as VolP, VOD, and mobile services. At the beginning of 2015, VDLS network of an operator TDC was shared with the rest of operators, in order to fulfil governmental requirements. They must provide an access to 100 Mb/s bandwidth to all Internet users.
FTTH	A huge demand for investment.	In 2013, Bulgaria had a good access to the FTTH. Vivacom invests a lot in the FTTH. Vivacom FiberNet has announced that they will have connected one million households by the end of 2014. The growth is caused by customers resigning from DSL. ITD Network and Mitel also expand the FTTH network and try to reach new subscribers. There are also other local operators offering the FTTH.	The Croatian Regulatory Authority for Network Industries (HAKOM) has announced new guidelines for the FTTH infrastructure development. It will be possible for building owners to chose one company which will build a fibre optic infrastructure. The company will then have to make this network available to the rest of providers, so that residents may chose any other operator. HAKOM claims that this strategy will lower costs of the network development.	Launching of the FTTH services is at the moment a matter of future. There are no binding plans for creating the FTTH infrastructure.	Optic fibre networks are rapidly being developed due to customers' demand and Governmental funds. TDC are in the process of implementing their plans of building their own fibre network.

Dynamically growing/well-develop	ed market Requiring	investments/poorly developed market	With a tendency of regression/stagnated n	narket
HUNGARY	LATVIA	PORTUGAL	ROMANIA	UNITED KINGDOM
74.5 %	75.2 %	64.9 %	51.4%	89.8 %
The mobile market is divided by T-Mobile, Telenor and Vodafone Hungary.	Four major providers: Latvijas Mobilais Telefons, Bité, Telekom Baltija, and Tele2.	The market is divided by Meo, Vodafone, and NOS.	UPC Romania launched free WiFi for their customers. The mobile market consists of 5 major operators: Orange Romania, Digi Mobile, Lycamobile, Cosmote Romania, Vodafone.	Wi-Fi is provided by BT (previously known as Openzone; 4.5 million hotspots in UK). It has also agreements with public companies to provide public WiFi. Recently, the number of WiFi hotspots has increased by 40%.
T-Mobile is testing LTE-A services, while Magyar Telekom reports that they have more than 250 thousand LTE users. In 2014, T-Mobile Hungary, which belongs to Magyar Telekom, announced that they have 450 thousand users and they cover 80% of the country.	LTE service was launched in 2011 by TellaSonera and since then it has developed steadily. Latvijas Mobilais Telefons (LMT) extended the range of their LTE network to 50% of population of the country. In turn, Bité is alming to reach 1.4 million citizens.	MEO was the first operator to offer LTE .Vodafone now offers 450 Mbit /s by a tested LTE-A service and ensures 90% coverage of the country.	Cosmote offers LTE service, while Orange introduces LTE for smartphones. LTE market is growing rapidly.	LTE in the UK is provided by: EE O2, Vodafone, and Three. Three began to provide LTE-A in Birmingham and London. EE aims to provide LTE services access to 99% of population by 2017. Vodafone and O2 have launched 4G service at the end of 2013. Currently, EE provides the largest 4G access, while O2 and Vodafone are lagging far behind.
Internet access has improved in recent years, and now the infrastructure is being developed. Access to VDSL is also improving.	90% of population have access to broadband Internet.	Very good access. High speed Internet is available to 100% of the population.	Internet access remains below the European average because of the high prices.	No problems with the access. Wide range of services and large selection of providers result in constant increase of a number of connected households. Above the European average.
DSL and cable Internet dominate the market (there is a strong competition between them), while a constant desire to enhance the quality of services pushes operators towards FTTH/B. Operators on the market include: UPC Hungary, Maygar Telecom, Hungarotel, GTS Datanet. Smaller enterprises are stationed mostly in Budapest.	Market must cope with uneven development, though due to to the Governments intervention development is rather calm and steady. The Internet is characterised by the high data transfer rate.	Market divided between cable and DSL technology. Market of digital TV is highly regulated. Portugal Telecom obtained licence for digital transmissions in 2008. Difficult market situation has significantly slowed down development and results in the sale of companies (eg. Cogeco sold Cabovisao) and tendencies to merge. The most interesting is growth at the cable internet market, partially rebranded by NOS, which focuses on development of this network. All operators focus on the increase of their services' speed. The biggest operators are Portugal Telecom and Sonae.	There has been a significant growth in the market, since many providers have a highly developed infrastructure. These platforms concern cable TV, micro LAN, DLS, wireless links, and fibre optics. Digital TV is available via cable, satellites, and Digital Terrestrial Television. Among providers are: UPC Romania, RCS&RDS, Telecom Romania, DigiTV, Boom TV, Dolce. Local internet market is characterised by the high data transfer rate, due to considerable resources of smaller, local providers.	Highly competitive market, with very affordable prices, although worth mentioning that lower prices usually come alongside with poorer quality (esepcially speed). The biggest and the cheapest ISP is Sky Broadband, and it also provides TV services. Sky Broadband offers free of charge access to the Internet with a possibility to use up to 2 Gb. However, most of the customers is interested in the Sky Broadband Unlimited (ADSL2+ up to 17 Mbps) for 7.5 pounds per month. This price includes unlimited access to the Internet, wireless SkyHub, and free parental control. Virgin Media is another ISP, which offers affordable network, but it is said to lack good customer service.
Market includes 235 000 customers, and market movement reaches 6%. The market is very fragmented, and a part of FTTH providers works on the small areas. In 2011, the biggest operator on the market was Magyar Telekom.	The FTTH development is a part of governmental plans. The best speed is offered by Lattelecom - 500 Mb/s. In the nearest future they aim to cover 75% of the country.	According to FTTH Council Europe, the rate of FTTH network development in Portugal is at a good level. Vodafone has signed an agreement to share the fibre network with Portugal Telecomi, and implements 1Gb/s. They plan to reach 2 million households by the end of 2015 (what is predicted to be achieved). Portuguese operator Dstelecom has been awarded a price, FTTH Operator [*] for a development of fibre network on the rural areas located in the north and south of the country. The provider has installed 9000 km of optic cables for 50% of households.	The fibre optic sector of this country has recently become one of the most solid in Europe. According to FTTH Council Europe, the rate of FTTH network development in Romania is at a good level. RCS & RDS is one of the biggest operators in the Southern-Eastern Europe and the biggest cable-satellite company in Romania. They offer cable TV, cable Internet, VOIP; 3G sevices, and satellite TV (DigTV). Telekom Romania, available in the whole country has launched FTTH broadband of 1Gbp/s in 13 cities. RCS&RDS is the biggest operator on the Romanian FTTH market.	UK remains far behind the rest of Europe, and is also the only country which does not fulfil a condition of "FTTH maturity", which means a prediction of 20% of households connected to FTTH by the end of 2020. The majority of FTTx is available through the cheaper but slower FTTC connection. FTTx in UK is provided by BT, Hyperoptic, and Cityfibre. High cost and long building time is a problem which stops a FTTH development. Ironically, smaller operators have the greatest contribution there. Sky Broadband offers FTTC (up to 38 Mbps) and Sky Fibre Pro (up to 76 Mbns).

FTTH/Bmarket panorama & forecast

ETTH COUNCIL EUROPE

The creation of a future-proof Europe is challenging, but inevitably underway, with a significant increase of fibre subscribers over the last two years.

he number of fibre to the home (FTTH) and fibre to the building (FTTB) subscribers in Europe has increased by 50% over the 12 months ending December 2014, according to the latest update to the FTTH market panorama, prepared by analyst firm IDATE for FTTH Council Europe¹.

There are now nearly 15 million FTTH/B subscribers on the European continent (14.5 million to be exact) - not including Russia and the Ukraine, which would add a further 14.8 million homes to the total. Although there were no new countries in the FTTH Ranking 2014, there is a new momentum in Germany where alternative operators like Deutsche Glasfaser are pushing ahead with fibre deployment. The country will very likely enter the next update of our FTTH Ranking by reaching the gualifying threshold of one per cent of homes subscribing to fibre. Good progress was also reported in countries like Spain, Romania, France, Netherlands and Portugal. In Spain, incumbent Telefonica clearly played an important role, overpassing its initial objectives: overall the number of FTTH/B subscribers in the country increased by 137 percent year-on-year, reaching a total of nearly 1.4 million subscribers. Fibre deployment in the country is also impressive, with 13.8 million homes passed at the end of 2014.

Yet, a number of European countries are still holding back on their fibre roll-outs and are missing out on the socio-economic advantages that FTTH can bring. Countries like Austria, Belgium, Czech Republic or the United Kingdom connected fewer than 20,000 new FTTH subscribers during the whole of 2014. As a matter of fact, much work needs to be done before Europe can be considered a mature market. According to Heavy Reading², a country only reaches fibre maturity when 20 percent of its households are FTTH/B subscribers. So far only nine countries³ around the world have reached this threshold, and only three of them are European, namely Lithuania, Sweden and Latvia.

Nonetheless, the number of FTTH/B subscribers in the European region is set to more than double over the next five years as the pace of roll-out has been increasing drastically for many countries recently. By 2019, in the European Union (EU) only, the total of FTTH/B subscribers is forecast to be almost 29 million, or 14.2 percent of all homes in the EU. Considering the whole European continent, comprising 44 countries from Iceland in the west to Russia and Kazakhstan in the east, 62 million households are expected to be FTTH/B subscribers in the countries covered – this is about 19 percent of all homes in the region.

In the five coming years, Heavy Reading forecasts that the gap between the best and the worst performers will continue to increase. In absolute numbers, Russia is expected to remain the leading market in Europe by the end of 2019, with more than 22 million FTTH subscribers. France is expected to become the second largest market for FTTH after Russia, as incumbent Orange plans to cover almost 60% of all the households by 2020. As far as penetration is concerned, while a handful of countries such as Italy and the UK will continue to lag far behind with less than five per cent FTTH/B adoption, most of them will have passed the 20 percent "fibre maturity" household penetration line by 2019.

In terms of FTTH/B roll-out, aggregate expectations are up across Europe compared to previous vears, due to stronger than expected build-out in key FTTH/B markets such as Portugal, Spain and France, along with an ongoing massive rollout in Eastern European markets. Furthermore, a competitive land-grab in an increasing number of countries coupled with an improving regulatory environment with more collaboration among builders and lower costs should also increase fibre roll-out in the coming years. This is phenomenal progress, and it proves that FTTH/B is poised to become THE mass-market broadband product in Furope, However, while the Digital Agenda Target plans that 50% of Europe's households should be subscribed to broadband above 100 Mbps by 2020, there is a highly damageable risk that those connections will not be fibre-based. It is therefore necessary that decision makers in the Member States take strong measures today to ensure that future-proof broadband solutions are implemented, to avoid a situation in which Europe reaches its 2020 broadband targets but realises then that it took the wrong decisions. Creating a future-proof Europe based on fibre-access networks available to as many European households as possible is our goal, and we are confident that this is more achievable than ever!

Europe should choose future-proof broadband now

Internet, broadband and next-generation information and telecommunications are the pillars upon which Europe will be built. We must make the right decisions today in order to create a future-proof Europe. The EU can be a strong player on the global telecommunication and broadband services market, but getting there is challenging. Strong leadership is required to support decisionmakers in their choice for the only future-proof broadband access solution: fibre to the home!

FTTH Council Europe is aware there is a long and difficult road ahead. Europe's governments and decision-makers are questioning the DAE targets, to delay steps and bring down targets, instead of facing the challenge and leading Europe into a competitive future. Let's subject their main arguments to a reality check:

• There is no market evidence that higher speeds are needed

• Financing networks is not possible

 \bullet Europe has more urgent problems than broadband

No evidence?

Many larger operators admit fibre to the home is the "end game" solution, yet claim that there is no proof of broadband demand. The FTTH Council Europe has investigated take-up rates of fibre networks that have existed for several years. The result? Consumers WILL subscribe to high-speed fibre products, even at a premium price. Take-up is a question of time and consumers who have experienced high bandwidth and quality of services are very loyal. However, many Europeans mistrust advertised bandwidth as studies show huge differences between promised "up to" speeds and what is actually delivered.

When someone tells you "nobody will need 100 Mbps in the next 10 years", consider this: a century ago, governments claimed there was no evidence that more cars would ever be sold, and therefore no need for more roads. In 1958, IBM CEO Tom Watson reputedly stated "there is a world market for about 5 computers".

Just ten years ago, consumers did not know about HDTV on demand, big-screen LCD-TVs, tablets, smartphones, online business, digital cameras or more recently 4K and 5K resolutions. European consumers will soon be demanding services widely available in many other parts of the world, but operators won't be able to deliver.

Impossible financing?

The FTTH Council Europe has heard the argument many times: "there isn't enough money to finance the roll-out of fibre to the home (FTTH) networks". Citing the seemingly insurmountable obstacles of shareholder demands, increasing competitive pressure and the economic downturn, operators and politicians claim that they simply cannot afford FTTH networks. But like the emperor's new clothes, their arguments do not stand up to closer scrutiny.

Let's start with some facts and figures. The European Telecommunications Network Operators' Association (ETNO), which represents incumbent operators across Europe, said its members invested €28 billion annually, on average, over the last six years, of which approximately €17 billion was for fixed networks⁴. In addition, alternative operators invested nearly €16 billion annually, and we assume a similar proportion of their investment was directed towards fixed networks. If the level of operator investment remains stable, then up to €210 billion would be available for investment between now and 2020. If we take into consideration additional spending to increase fibre backhaul capacity for 4G/LTE mobile base stations, the investment potential would be even greater. We see that money is out there; that is one myth dispelled.

A significant – albeit solvable – challenge is the investment size and lack of infrastructure project financing. We have conducted several studies on this topic and set up a special "financing of fibre networks" project to support making funds available. Many studies look at the European or national level and come up with terrifying figures - but without publishing the underlying model, making verification impossible. Therefore, FTTH Council Europe started its own "cost project". Instead of extrapolating rough cost estimations, our model is based on bottom up cost calculations of existing fibre projects and real geographical information data. The surprising result: delivering fibre to nearly all European households will cost (less than) half of many other cost estimations, at just over 200 billion euro⁵! (Germany alone spent over 80 billion euro on telecommunications infrastructure over the last 10 years...).

The other good news is that investors have already expressed an interest in investing in FTTH networks; however, this will require changes in the market structure. Long-term investors tend to

¹ FTTH market panorama prepared by IDATE for the FTTH Council Europe: www.ftthcouncil.eu/documents/Reports/2015/Market_Data_December_2014.pdf

² European FTTH Forecast, 2014-2019 by Heavy Reading for the FTTH Council Europe: www.ftthcouncil.eu/documents/Reports/2015/Market_Forecast_December_2014.pdf

³ Based on their position in the FTTH ranking. The United Arab Emirates, South Korea, Honk Kong, Japan, Singapore, Taiwan, Lithuania, Sweden and Latvia

prefer projects with low risk and strong contractual commitments that ensure a steady income. The vertically integrated network structure that is favoured by incumbents pollutes the low-risk network investment with high-risk technology choices. In some cases, the separation of the network and technology – as done in New Zealand – can be an alternative option, since it leads to a de-risking of those primary FTTH investments. If network separation could be combined with operator commitments to purchase a minimum number of connections, it would open up new sources of finance for the sector.

More urgent matters than ICT?

Decision-makers in several countries question even the smallest budget reservations for broadband, preferring to invest in streets, railways or airports. However, European decision-makers and economic studies on broadband often fail to mention there is a global competition going on, and the winners will need sufficient broadband access. Today, most key brands in ICT and broadband applications and services are based outside Europe.

. The FTTH Council Europe strongly supports the DAE objectives as there is clear evidence that only fibre to the home can provide the necessary upload and download speeds and quality of service, now and in the future. FTTH-enabled applications and services in healthcare, teleworking and home entertainment will ensure Europe remains a global economic leader, but weakening DAE targets will lower its global competitive power.

According to Arthur D. Little, every 10 % increase in broadband penetration generates 1% GDP increase. For every 1,000 new end customers, 80 new job opportunities are created. Even though they only look at direct effects of broadband availability, studies from OECD, European Investment Bank and others show future-proof fibre networks have a positive impact on productivity and economic growth. They can help prepare Europe for the post-2020 world.

The way out

The conclusion is simple: Europe simply must roll out future-proof fibre broadband networks as soon as possible. This will ensure successful developments for our economy, society and environment. But getting there requires significant changes in Europe's telecommunications market, which might not immediately find support with the markets and the public, but do serve the longterm success of Europe. Some big players may even disappear – but protecting them can endanger the entire European Union.

The EU needs strong leadership and decisionmakers that understand the long-term impact of broadband and ICT. Governments across Europe need to acknowledge that they have responsibility to develop national financing frameworks for FTTH. Institutional investors need to be educated to understand that passive fibre networks are a long-term infrastructure investment. If they make the right decisions today, they will ensure Europe gets the broadband it needs to succeed on the global market by 2020 and beyond.

As the saying goes, "Everyone said it was impossible because nobody tried; then one day someone came along who didn't know that it was supposed to be impossible, and he did it." The FTTH Council Europe calls on forward-looking leaders in Europe who are willing to believe that widespread and inclusive deployment of FTTH networks IS possible – and simply do it. Let's work towards making futureproof fibre-based networks available to as many European households as possible. And by doing this, let's create a bright, successful future for Europe.

⁴ ETNO Annual Economic report 2014: www.fthcouncil.eu/documents/Reports/2012/Cost_Model_Report_Full_Version.pdf
⁵ FTTH Council Europe The Cost of Meeting Europe's Network Needs, July 2012: http://www.fthcouncil.eu/documents/Reports/2012/Cost_Model_Report_Full_Version.pdf



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10-11.02

IOT TECH EXPO EUROPE

OLYMPIA, LONDON, UK

IoTTech Expo will be bringing together over 5,000 attendees, 100+ exhibitors and 200+ speakers to London's Olympia, February 2016, for two days of top level content and discussion, introducing and exploring the latest innovations in the Internet of Things arena. This year's IoTTech Expo will be highlighting the most innovative advancements in technologies effecting Developers in a variety of IoT use cases with dedicated tracks covering the entire Internet of Things ecosystem including; Developing for the Internet of Things, Smart Cities, Connected Living, Connected Industry as well as Data & Security.

For more information, visit: www.iotttechexpo.com/europe



FTTH CONFERENCE 2016

LUXEMBOURG

Organised by the FTTH Council Europe, with each annual edition held in a different European city, the three-day event is all-inclusive with conference, workshops, exhibition, hands-on demos and first-class catering. Join Workshops and Conference sessions about the following topics:

- The Billion-Euro promise: where is the money for FTTH?
- FTTH in Europe progressing or lagging behind?
- Good FTTH planning is half the battle! Why do business users want FTTH?
- What is the story behind the Gigabit Community?

For more information, visit: www.ftthconference.eu

8.03

GIGABIT COPPER 2016

BRUSSELS, BELGIUM



Gigabit Copper is the place where we can explore a variety of DSL technologies, provide a platform to understand the most appropriate places for roll out and discuss the future business model once G.fast has been deployed. Come and join us to create the copper business model of the future. Speakers include:

- Neil McRae, Chief Network Architect, BT
- Marcus Grausam, CTO, A1 Telekom Austria
 - Carsten Bryder, CTO, TDC
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- Robin Mersh, CEO, Broadband Forum
- Arne Quist Christensen, Head of Modernization, Telenor Norway AS
- Daniel Burri, Senior Project Manager, Swisscom
- Trevor Linney, Head of Access Network Research, BT
- Oliver Johnson, CEO, Point Topic

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27.04

E-COMMERCE BERLIN EXPO

POSTBAHNHOF, BERLIN, GERMANY



The entire e-commerce in one place. This event is part of a network of events hosted in capital cities around the CEE market. The exhibition is dedicated to circuit E-commerce, Online Marketing, Hosting & Cloud Computing, Social Media and Mobile services for e-commerce industry. Main goal of the event is to create an opportunity for individuals from Europe who are involved in modern e-businesses to meet each other. We invite the e-commerce industry for a day packed with knowledge, networking and business opportunities. In addition to the events on the main floor, the attendees will be able to join in for exciting workshops and presentations, where top industry professionals will share their experience. More than 20 speakers from prestigious companies like e.g. Polish Post, Optivo GMBH, SALESmanago, Remintrex.com, InPost, GetResponse, PayPal, Microsoft and others. Visiting the trade fair is free of charge, but it requires prior online registration on the website.

For more information, visit: www.ecommerceberlin.com

27-28.04

Applications

EUROPE

Internet of Things

INTERNET OF THINGS APPLICATIONS EUROPE 2016

BERLIN, GERMANY

Our mission: • Assess the business cases for IoT/ Industry 4.0

- Identify added value profitable opportunities across the supply chain
- Cover the full scope of IoT systems from the market leaders
- Learn about the new disruptive technologies enabling IoT

This IDTechEx event addresses the opportunity for the Internet of Things. It does not cover hype and unrealistic dreams but addresses the business models, case studies, actions, profitability and missing gaps. We delve into specific market verticals and appraise new enabling technologies coming onstream. The event is designed to help you assess your business strategy and timing, the technical, consumer and governmental challenges, new business models and opportunities. Hosted by IDTechEx, a 15 year old technology scouting and market research firm on the topic, this event offers a platform to gain insight, informed analysis and to meet new partners through the conference, exhibition, masterclasses and networking sessions.

For more information, visit: www.idtechex.com/internet-of-things-europe/home.asp

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TNC16

PRAGUE, CZECH REPUBLIC

The TNC16 conference theme is "Building the Internet of People" and this theme will be supported through keynotes speeches by renowned specialists, varying parallel sessions, demonstrations and presentations, and about 30 exhibitors from the community and industry. They will present the conference participants with a unique overview of the latest developments in research networking, both in the technical field and in the area of application and management. TNC16, its 32nd edition, will be hosted by the Czech National Research and Education Network (CESNET) and held in the picturesque, UNESCO World Heritage listed city of Prague in Czech Republic between 12-16 June 2016.

For more information, visit: http://tnc15.geant.org, and find us on social media using #TNC16!