

AKEP

AUTORITETI I KOMUNIKIMEVE
ELEKTRONIKE DHE POSTARE

TIME FOR ACTION Infrastructure for Sustainable Development

Alban KARAPICI
Member of Council, Electronic and Postal Communications
Authority (AKEP),
Albania

International Regulatory Conference (IRC)
15-16 May 2018, Ohrid, Republic of Macedonia

Introduction (1)

- I would like to mention some issues and moments that are going through the sector developments in recent years and the challenges we have ahead of the prospects that emerge from rapid technological developments in the electronic communications market.
- Today, we have an important quantitative and qualitative development that is approaching us more and more with other countries in the region, and why not and with EU countries
- With the progress of technology, we are convinced that we will soon be in the forefront of market demands: consumer and industry. And this requires a regulatory and policy framework to support and harmonize these requirements.
- Online portals are already a reality that is overwhelming. "Over The Top" services such as WhatsApp, Viber and social networks have a significant increase in their use. All of these are now leading us to some new situations in the market. Today we are talking about OTT, net neutrality and the internet of things.

Introduction (2)

- The digital transformation of the global economy is a process that will substantially impact economies, societies, and governance around the world in the coming decade. Being a global, multidimensional process, no economy or region can effectively isolate itself from this transformation. The challenge for the economies around the world lies in the preparation and the maximization of digital transformation benefits, while anticipating the challenges this process will pose.
- The Western Balkans have to date been laggards in relative terms to some European and global digital frontrunners. In addition to individual efforts and actions, which run into danger of cementing a fragmented digital landscape, the level of regional digital cooperation offers much room for advancement. However, the significance of digital connectivity is only gradually receiving more attention.
- Over recent years, particularly since the launch of the Berlin Process for the Western Balkans in 2014, there has been considerable focus on enhancing the infrastructure in the Western Balkans. This includes mostly road-building projects to close important gaps in the region in order to connect the economies with each other, but also to enhance larger European transit routes and contribute to internal links. Amidst this focus, there has been relatively limited interest until recently on improving the digital infrastructure and thus improving connectivity—with the region, with the economies of the region, and with Europe and the wider world.

Introduction (3)

- Broadband connectivity and access to ICT constitute a necessity for ensuring economic growth and competitiveness; regarding agriculture, tourism, education, etc.
- The development of broadband infrastructure is a crucial element in the provision of healthcare services, education, government, business and trade, with a view to achieving sustainable economic and social growth. A broadband network has been developed, and has been widely extended throughout the territory, combining the fixed and the wireless, and it is a network that provides opportunities and accelerates the pace towards economic development.

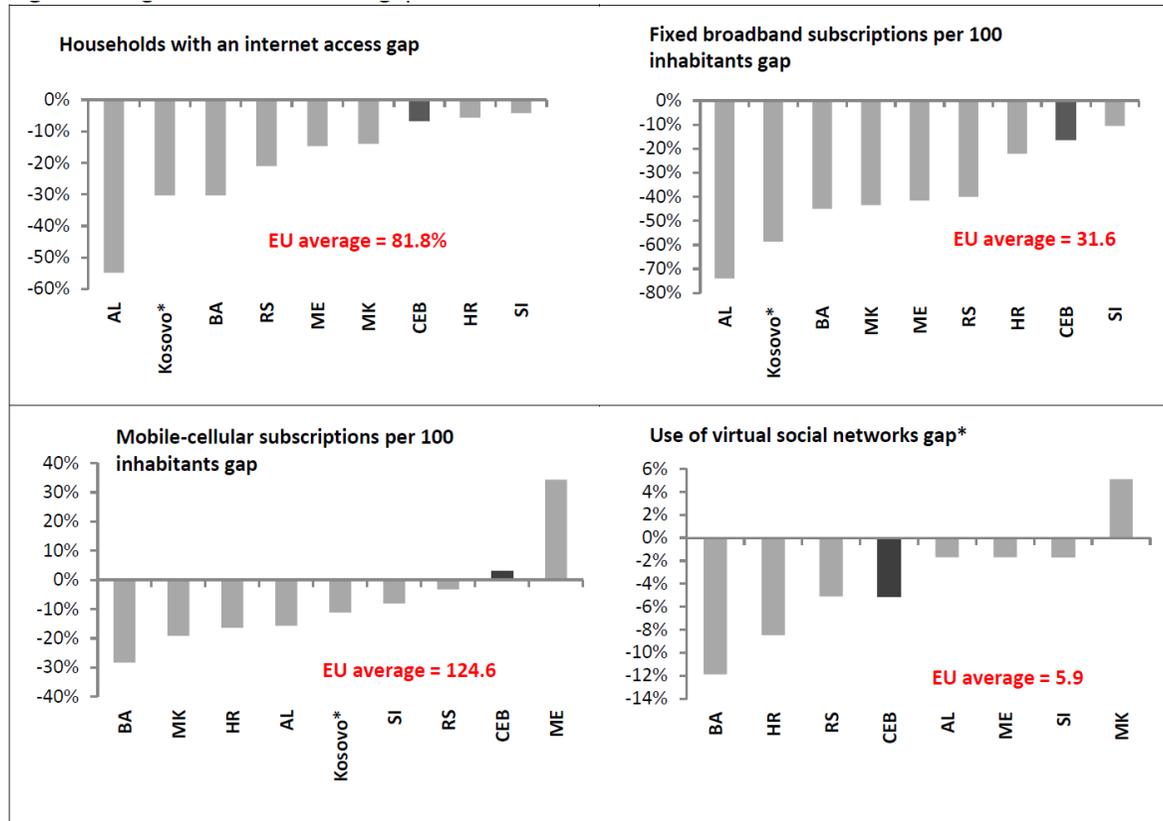
The Western Balkans

- The Western Balkans are facing multiple challenges. Economically, the economies of the region are lagging significantly behind not just the average of the EU, but also behind the economies of Central and Eastern Europe that joined the Union in 2004 and 2007.
- Most importantly, the economic and political integration of the Western Balkans into the EU is advanced, but incomplete.
- Currently, the Western Balkans are lagging behind digital trans-formation in comparison to the EU average and most its member states

Current State of Digital Transformation in the Western Balkans

- In 2015, broadband internet became one of the vehicles of inclusive and sustainable development in the UN's Sustainable Development Goals
- At the same time, the EU has replaced the outdated Digital Agenda Policy with the Digital Single Market for Europe, pushing for the development of digital society.
- In line with the global developments, digital transformation is expected to play a vital role in spurring future sustainable growth in the Western Balkan region and contribute to regional cooperation and good governance.

Digital transformation gaps in the Western Balkans in 2016



Notes: *The indicator derived from the Global Information Technology Report for 2016- source is the World Economic Forum (2016a), Executive Opinion Survey, Scale from 1–7 (in your country, how widely are virtual social networks used [e.g., Facebook, Twitter, LinkedIn])? [1 = not at all used; 7 = used extensively]; CEB stands for Central Europe and the Baltics; MK stands for The Former Yugoslav Republic of Macedonia.

Source: ITU (2017b), Pew Research Center (2015), Agency of Statistics of Kosovo*(2016) and Regulatory Authority of Electronic and Postal Communications for Kosovo* (RAEPC).

Western Balkan economies

- Western Balkan economies significantly lag behind EU averages as far as digital infrastructure is concerned.
- This can be explained to some extent with generally low levels of connectivity, a fragmented telecom infrastructure and recent political uncertainty and instability, which constrained larger capacity and investments in the region.
- We found a negative relationship between the households with internet access and the share of the revenues, which telecom companies invest in the infrastructure

Western Balkan economies (2)

- It is now clear that in many regions of the world, consumers have a strong online presence for many aspects of their lives (working, socialising, communicating, consuming...) and this trend is set to continue. Many of the most popular internet services are free to use (e.g. search and social media) for digital consumers. Digital consumers may not be aware that a completely free service on the internet rarely exists, and that these apparently free services are in fact financed by advertising. Internet is currently the second largest advertising medium after television globally.
- Consumers very often start by searching the Internet. Search is mainly done (90 %) through Google search. Users may have the following concerns when using search engines:
 - how will their search data be used? Will it be sold for commercial purposes, or used for law enforcement?
 - have the search results been manipulated in some way?
 - will they be exposed to illegal or damaging search results? If so, what should they do?

The Growth Trend of the Internet

- According to the State Broadband 2017 Broadband Commission published in September 2017, by the end of 2017, about 3.58 billion people are expected to be online, equivalent to about 48.0% of the world's population, from 3.4 billion people or 45.9% of the world's population estimated to have been online at the end of 2016 (an annual growth of about 180 million people).
- While almost half of the world's population is now connected, attention has now shifted where people are still unrelated.

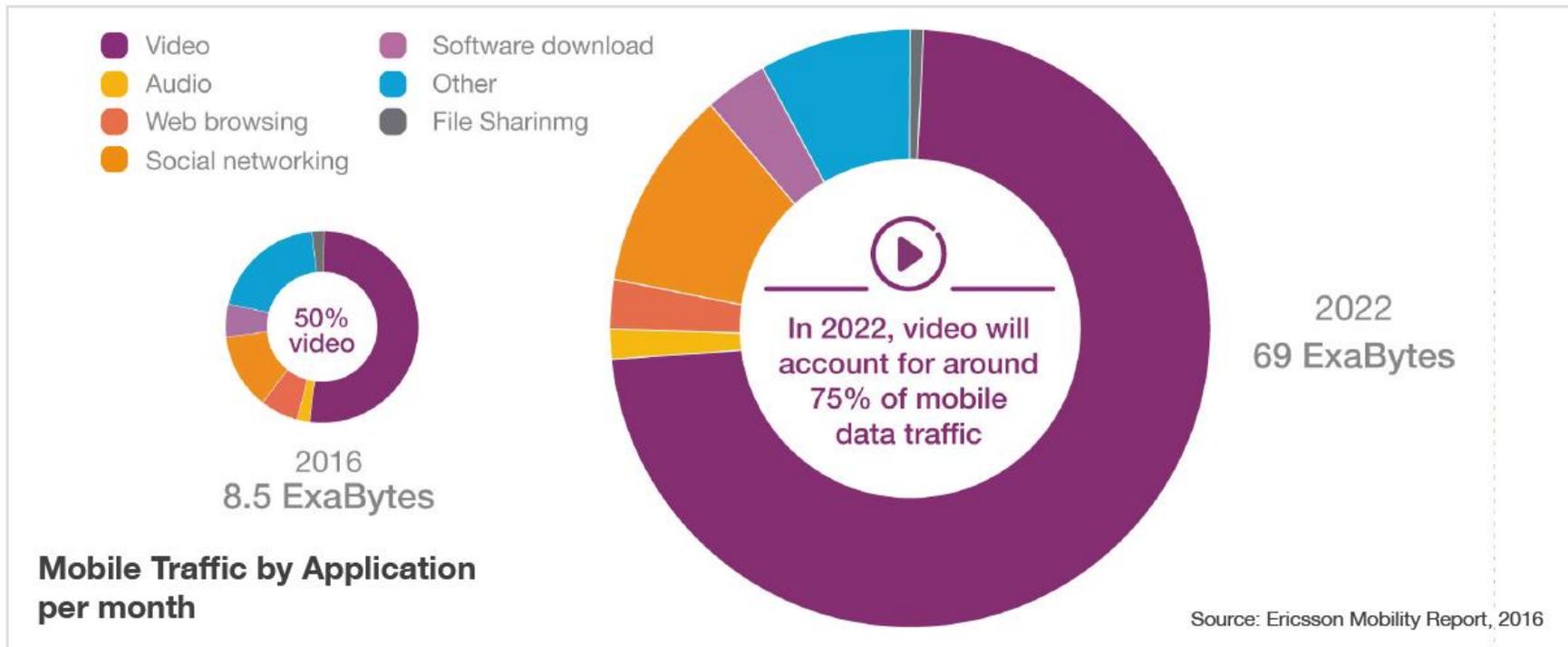
Digitization

- Technology industries have both enabled and benefited from digitization for the better part of the last 50 years. While the idea of digitization is not new, what we are now seeing is a new wave of transformative technologies with the potential to significantly impact the world around us.
- We have identified the following eight transformative technologies to pay attention to in 2018:
 - *Artificial Intelligence*
 - *IoT*
 - *Cloud*
 - *Connectivity*
 - *Blockchain*
 - *Computer Vision*
 - *Ubiquitous Video*
 - *Robots & Drones*

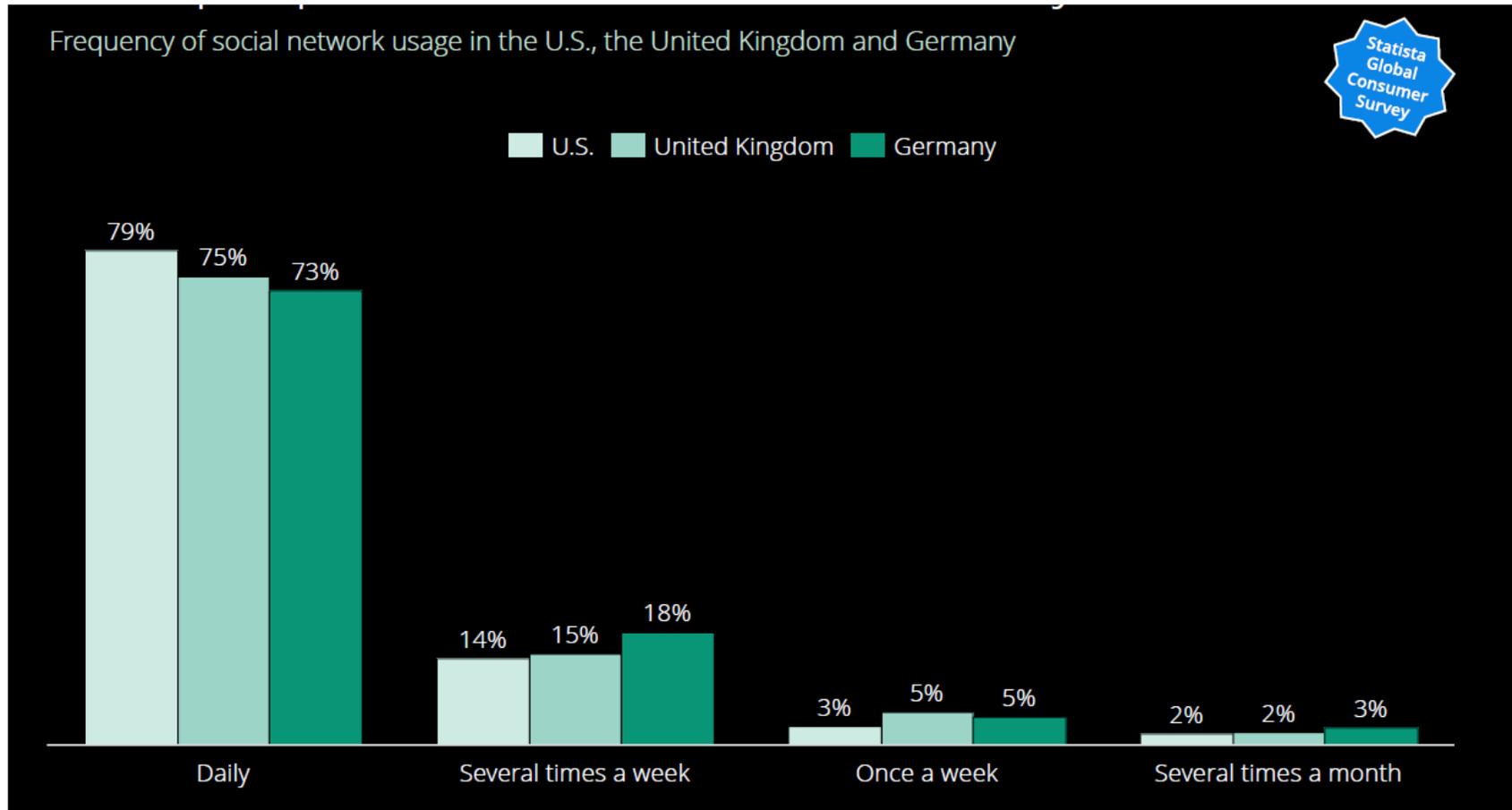
Development of technologies

	2G 2.5G	3G	4G	5G
 Bandwidth	64Kbps	2Mbps	200Mbps	1Gbps
 Use Case	Voice Basic Web Browsing	Voice Web Browsing Multimedia Video Social Networks	Voice Web Browsing Multimedia Video Social Networks File Sharing	Voice Ultra-fast Web Browsing Multimedia HD Video Social Networks Wireless Home broadband File Sharing IoT at scale

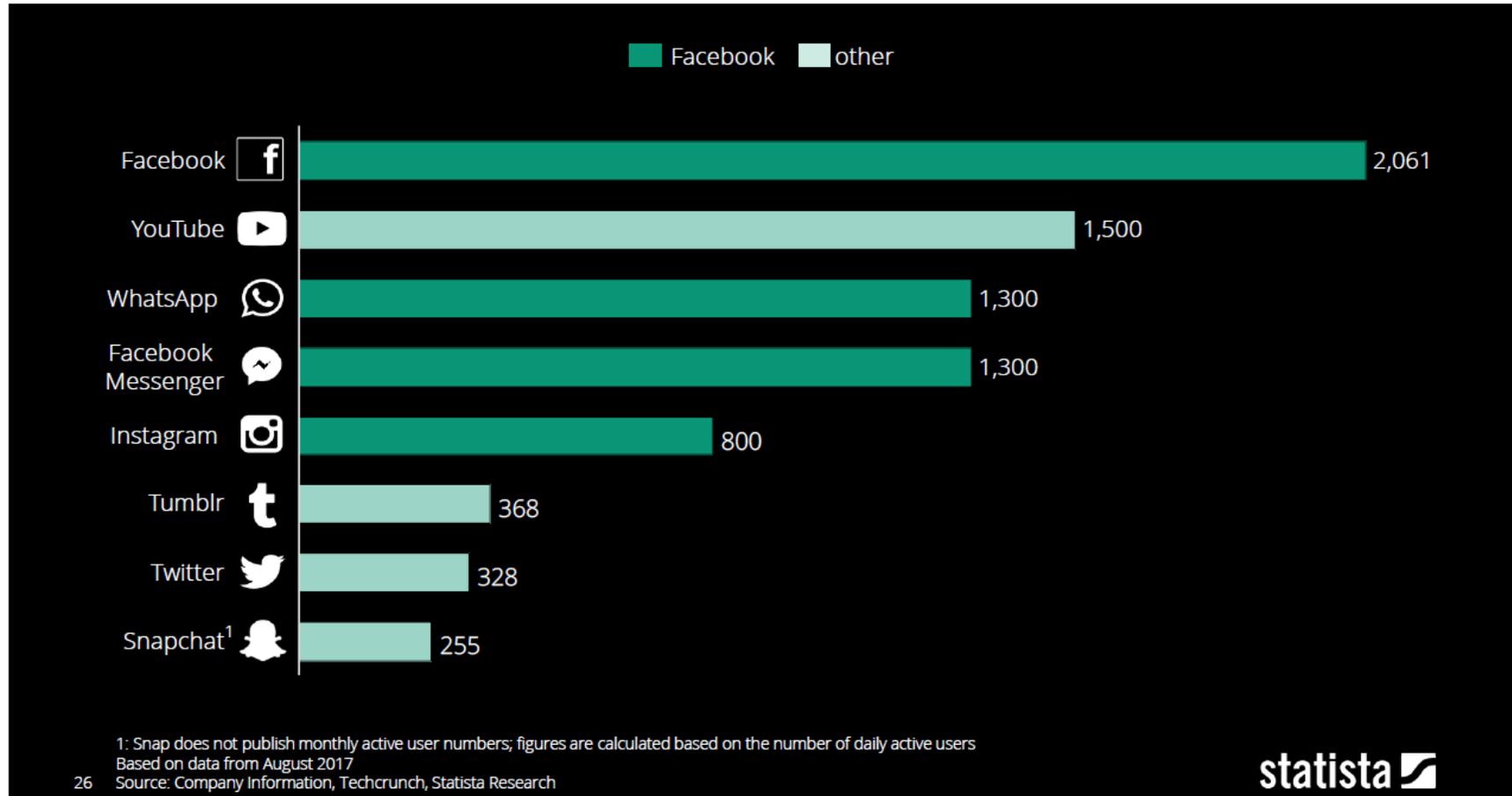
Mobile Traffic



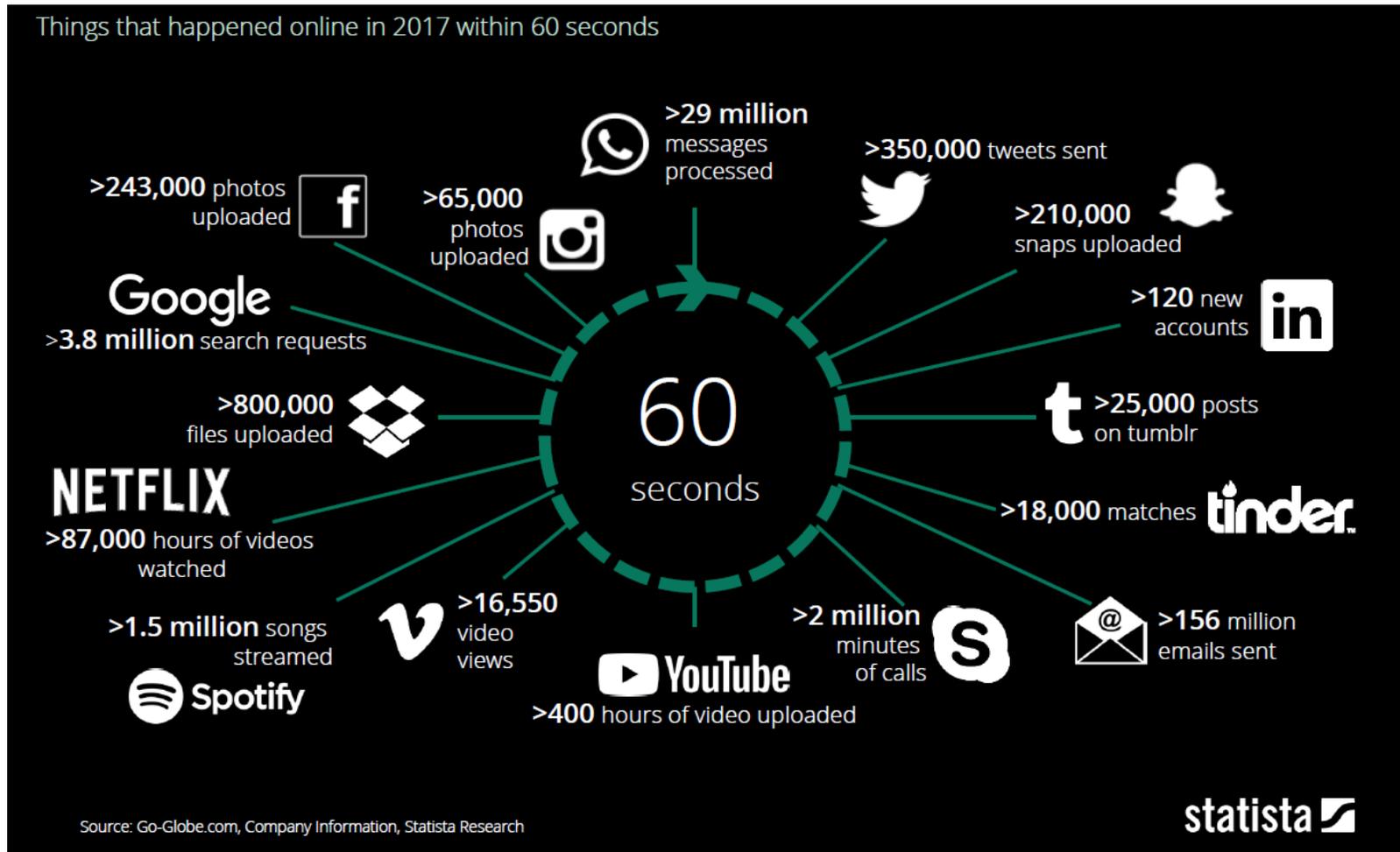
Most people use social media on a daily basis



Facebook dominates the social media landscape



So much happened in our digitalized world in 2017



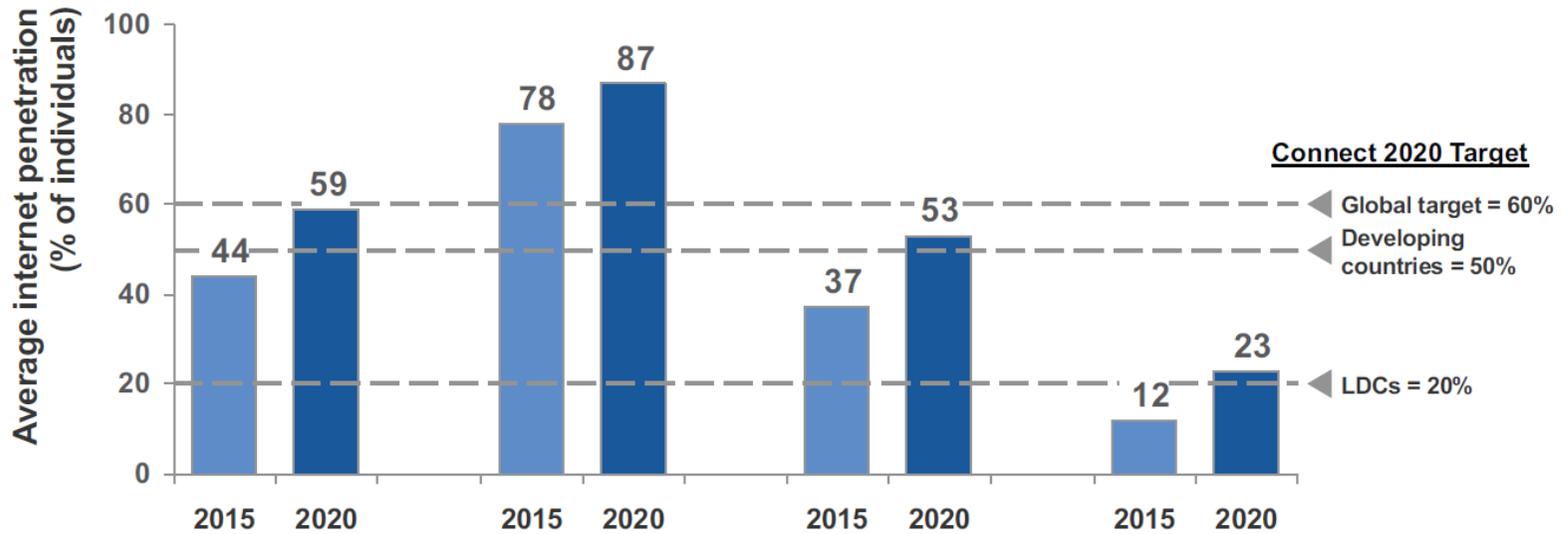
Sustainable Development Goals

- Governments, businesses and civil society together with the United Nations have started to mobilize efforts to achieve the Sustainable Development Agenda by 2030. Universal, inclusive and indivisible, the Agenda calls for action by all countries to improve the lives of people everywhere.
- In 2015, countries adopted the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. In 2016, the Paris Agreement on climate change entered into force, addressing the need to limit the rise of global temperatures. Explore this site to find out more about the efforts of the UN and its partners to build a better world with no one left behind.

Sustainable Development Goals (2)

- With the rapid development of information and communication technologies, the globally connected world has become a reality faster than expected, where the IoT and ultra-high speed broadband technologies play a fundamental role in the fields of energy, transportation, health, agriculture, banking, disaster management, public safety and home network.
- Ubiquitous high speed connectivity plays a vital role in transforming economies and societies as it empowers families, people, societies and businesses, in developing countries, economies in transition as well as developed countries, when deployed bearing in mind the need for inbuilt resilience and promoting confident usage.

Targets set by the Broadband Commission for “Sustainable Development” of UN and ITU



	Global (all countries)		Developed countries		Developing countries ¹		Least developed countries (LDCs)	
No. of internet users (millions)	3,148	4,458	965	1,080	2,182	3,378	107	228
No. of unconnected (millions)	4,056	3,154	265	168	3,792	2,986	792	781

Source: ITU, World Bank, EIU, World Economic Forum; BCG analysis

Broadband impact on economy and innovations

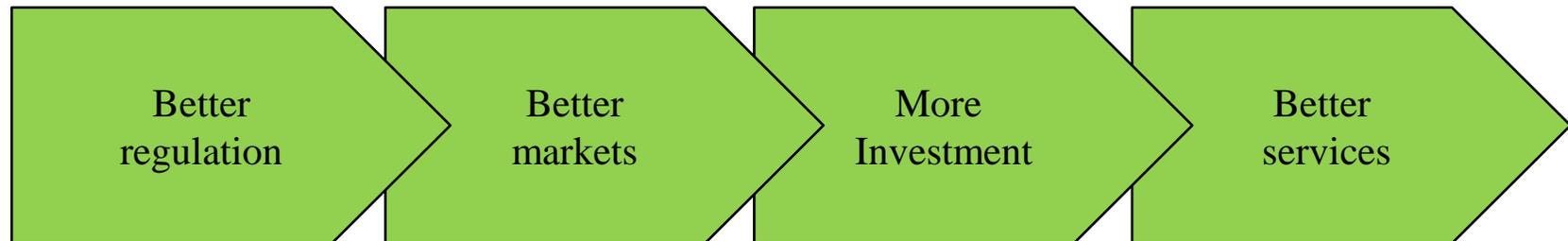
- First and foremost, the evidence is fairly conclusive about the contribution of broadband to GDP growth.
- Secondly, broadband has been found to have an impact on the productivity at the firm level.
- Thirdly, broadband does contribute to employment growth, both as a result of network construction programmes and following spill-over impacts on the rest of the economy.
 - While the deployment programmes are, as expected concentrated in the construction and telecommunications sectors, the impact of externalities are greater in sectors with high transaction costs (financial services, education, and health care).
- Finally, beyond economic growth and job creation, broadband has a positive effect in consumer surplus
 - These include efficient access to information, savings in transportation and benefits in health and entertainment, and can be measured in terms of the difference between consumers' willingness to pay for the broadband service and actual prices.

Trends: Communication Sector

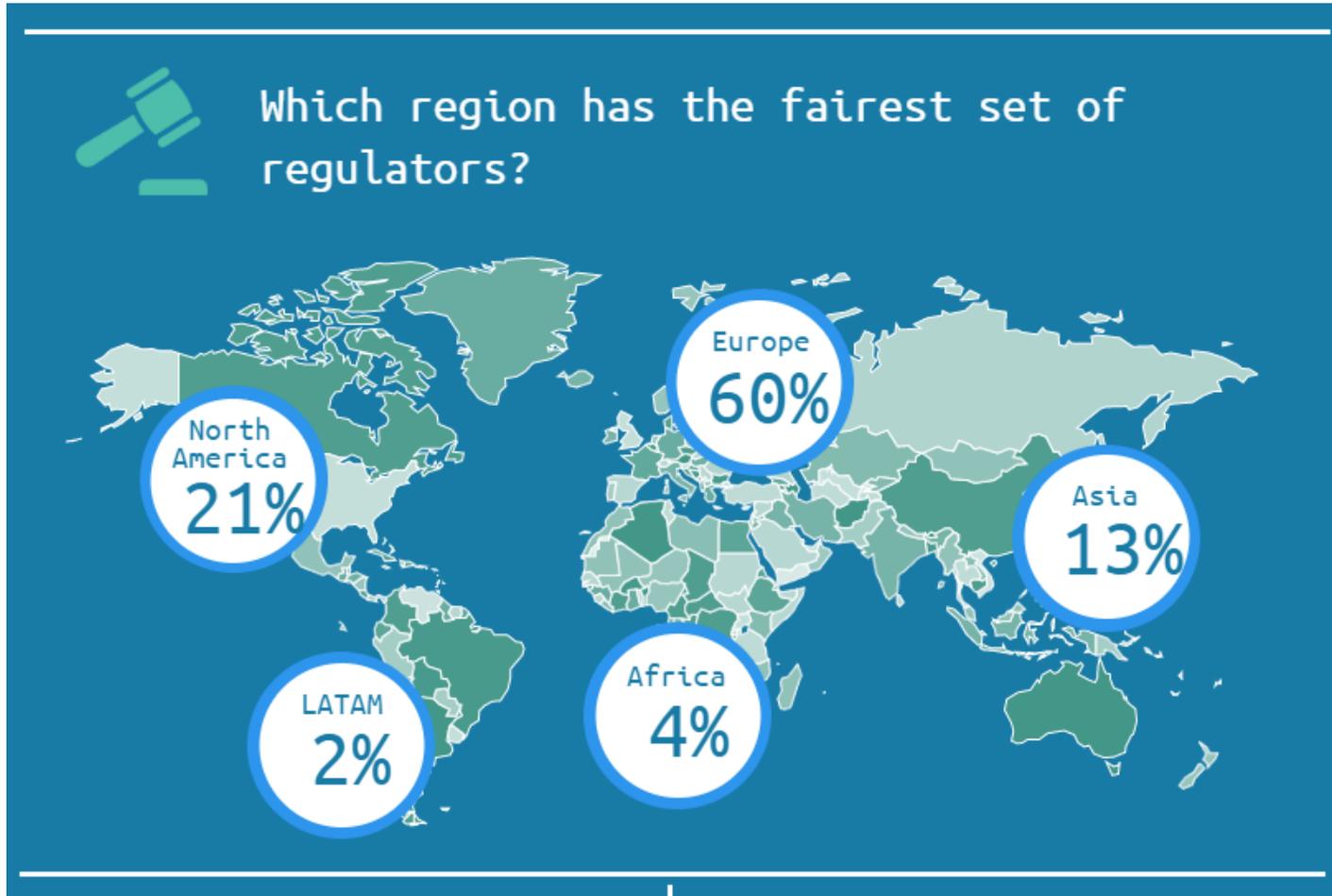
- Regulatory reform
- Liberalization
- Privatization
- Pro-competitive policy
- Emerging competition
- Infrastructure development
- Modernization: Automatization digitalization co-existence with IP networks transition to IP-based NGNs Next Generation Access Networks

Role of the regulator

- Liberalisation and competitive safeguards
- Creation of better conditions for investors and service providers
- Creation of more consumer choice and protection



Regulation in the world

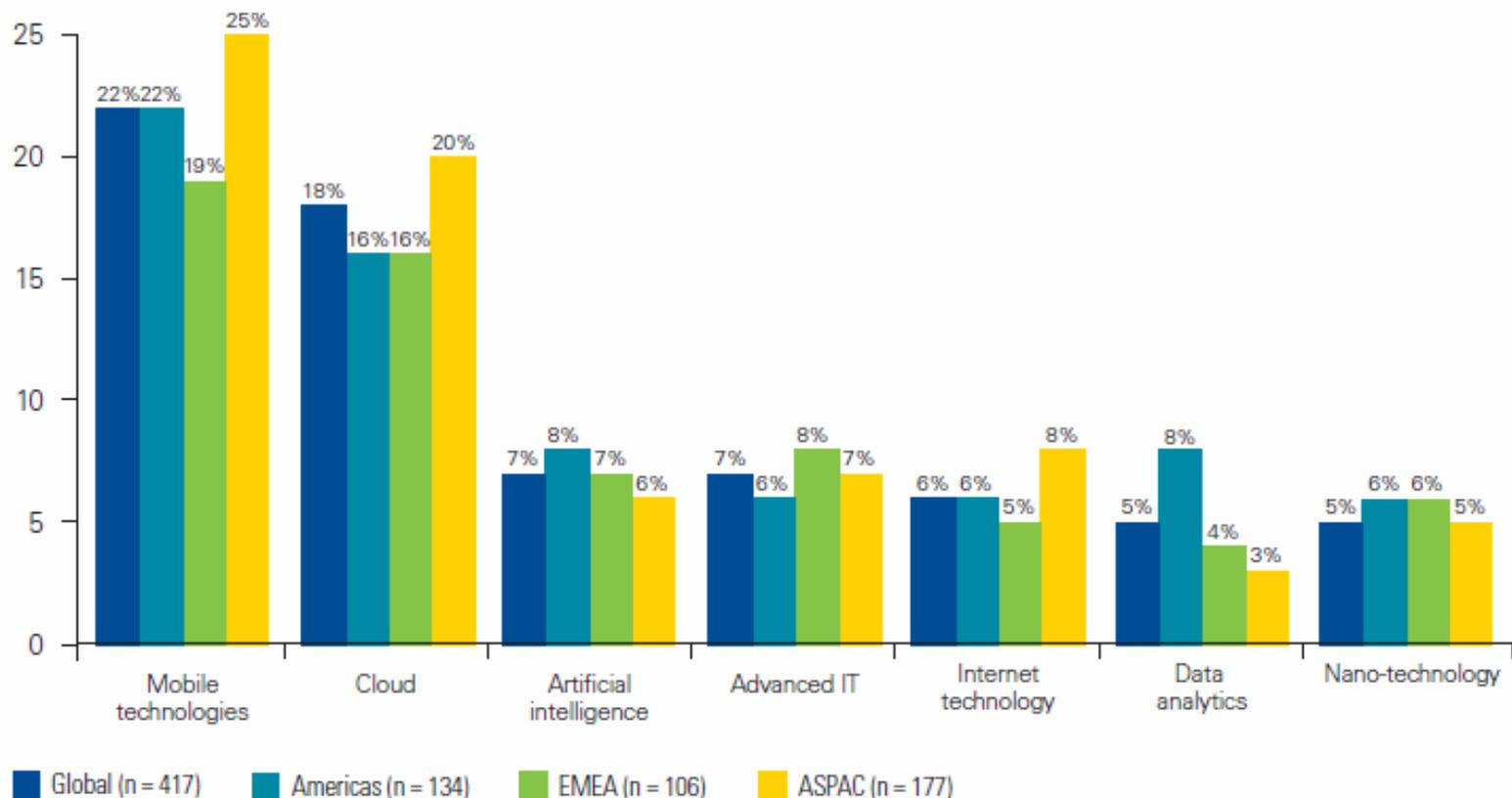


Regulatory Issues

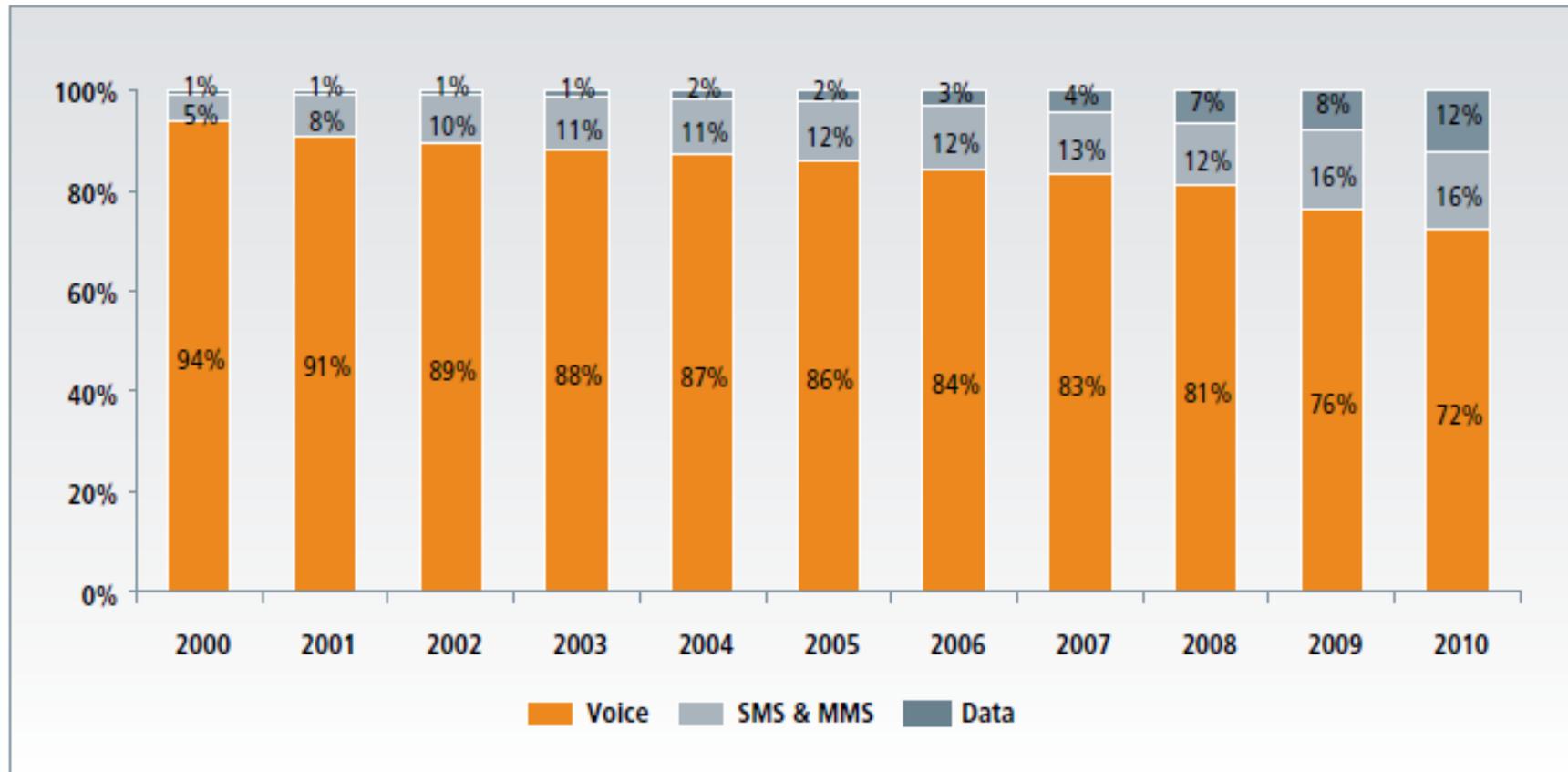
- Licensing and spectrum management
- Switching and roaming
- Addressing and numbering
- Competition
- Security and privacy

Next technology breakthrough in near future?

- Mobile technologies and clouds are the leading ones



Service Revenues for European Mobile Operators 2000-2010



Source: Quantifica; IDC; A.T. Kearney analysis

Traffic forecast 2012-2020 key forecasts

- Traffic will increase by a factor of 23x



- Internet access will be the driver

- **Voice will stay a key service:**

- *In 2012, voice (simple and rich) is still the first service category in terms of daily traffic volumes. Simple voice duration will remain flat in both consumer and business segments. However, total call duration will be higher in 2020 than in 2012 thanks to the increase of rich voice and VoIP calls*

- Relations between people will expand
- More personalised services... from entertainment to life coaching
- A world under individuals' own control via sensors and location based services
- **Mobile Internet/Extranet access will generate highest traffic, but voice will remain a key service.**

Skype, Viber and WhatsApp are OTT services that influence fixed and mobile telephony



- Skype is a cross platform communications service specialising in video and voice calls over IP
 - 280 million monthly users
 - 200 billion daily minutes
 - 120 million downloads on iPhones and iPads and over 100 million downloads from the Google Play Store

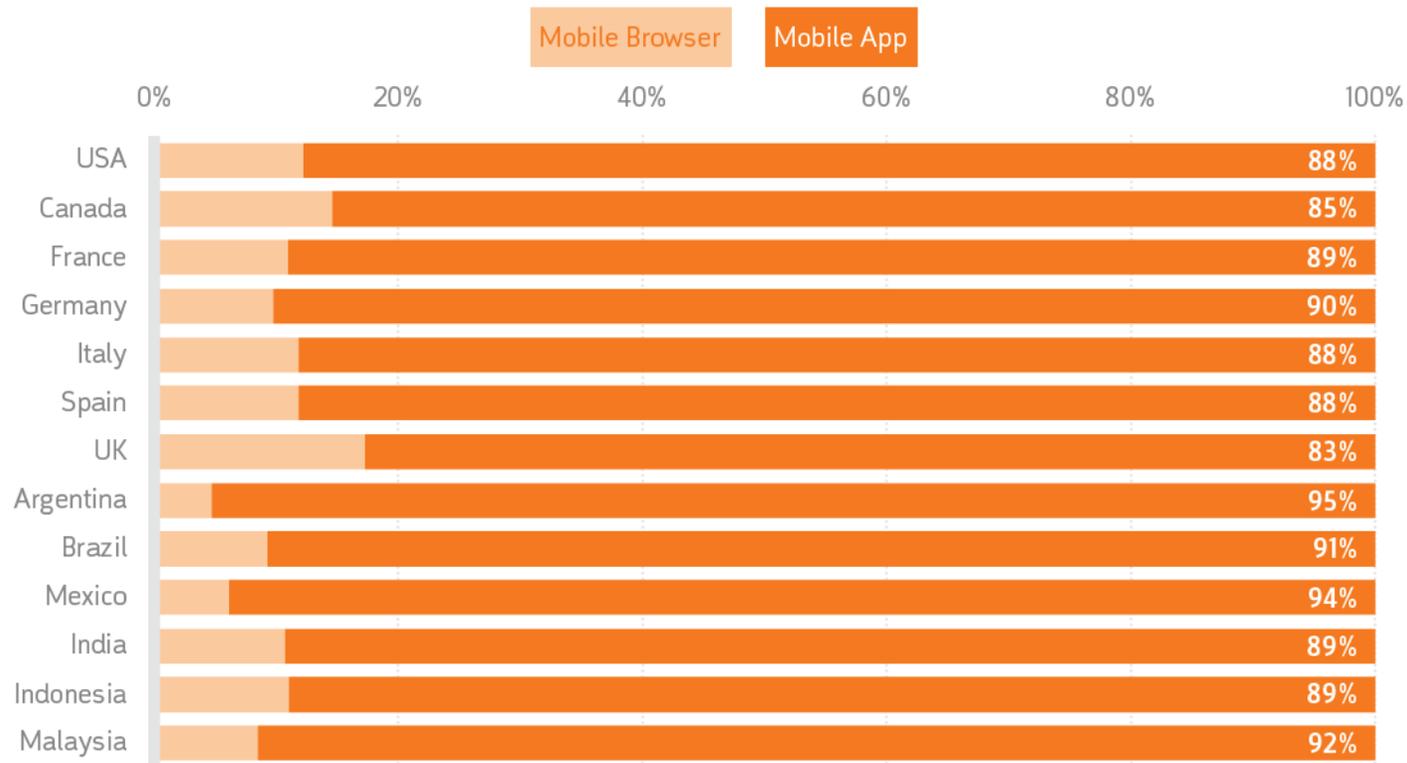


- Viber is a cross platform communications service specialising in voice calls to mobile devices over IP
- Viber is available on iOS and Android and has recently been launched for web browsers
- Viber reported 200 million registered users in May 2013, up from 140 million in December 2012



- WhatsApp is a cross platform instant messaging application
- WhatsApp is available on iOS, Android, Blackberry, Windows phone and Symbian
- WhatsApp reported more than 200 million monthly active users in April 2013
- WhatsApp reportedly handles 8 billion inbound and 12 billion outbound messages per day

Apps Account for Over 80% of Mobile Time



In Albania

- With the rapid development of information and communication technologies, the globally connected world has become a reality faster than expected, where the IoT and ultra-high speed broadband technologies play a fundamental role in the fields of energy, transportation, health, agriculture, banking, disaster management, public safety and home network.
- Thus, the periodic measurements carried out, show that the download speed average is:
 - By the seaside: UMTS/3G ranges from 4 to 7 Mbps, in LTE/4G ranges from 8 Mbps to 20 Mbps
 - In the main cities: UMTS/3G ranges from 6 Mbps to 10 Mbps and LTE/4G ranges from 8.5 to 20 Mbps
 - In the main roads: the average speed in UMTS/3G is 3.6 Mbps

which are in line with other European countries.

ICT reforms for the state modernization

- Some of most important results of modernization and reforms in each sector include the field such as:
 - Energy sector reform,
 - Police, modernization of State Police in the function of transparency for the police we want - body cameras,
 - Control over the territory was supported by the modern systems that were established for the first time,
 - Modernization in healthcare across the country, which allows us to serve as many citizens as possible.
 - Public service reform includes a significant number of online services on the E-Albania portal,
 - Reform in education,
 - Reform of economic assistance,
 - The fight against informality for state building was supported by the development of electronic commerce and electronic payments and the new entirely online tax filing system.

AKEP activities

- We have the law "On the development of electronic communications networks and high speed to ensure the right of way", which aims to facilitate and encourage the provision/construction of electronic communications networks for high speed, by promoting the joint use of existing infrastructure as well as a more efficient development of new infrastructure by reducing construction costs of high-speed network and removing the bureaucratic procedures.
- In order to promote the shared use of passive networks infrastructure in 2016, the document "Rules for the use of common facilities" was approved. Some of the regulatory measures for the shared use of infrastructure assets (bitstream, leased lines) and passive (pipes) to fixed networks have begun to produce their effect in 2016 and 2017, during which there was an increased use of shared infrastructure by the main operators.

Market overview 33

- During 2017, the electronic communications market has increased regarding the use of mobile networks services and broadband Internet access.
- The broadband access has grown in both its segments:
 - Fixed networks,
 - Mobile networks.

Broadband access from fixed network

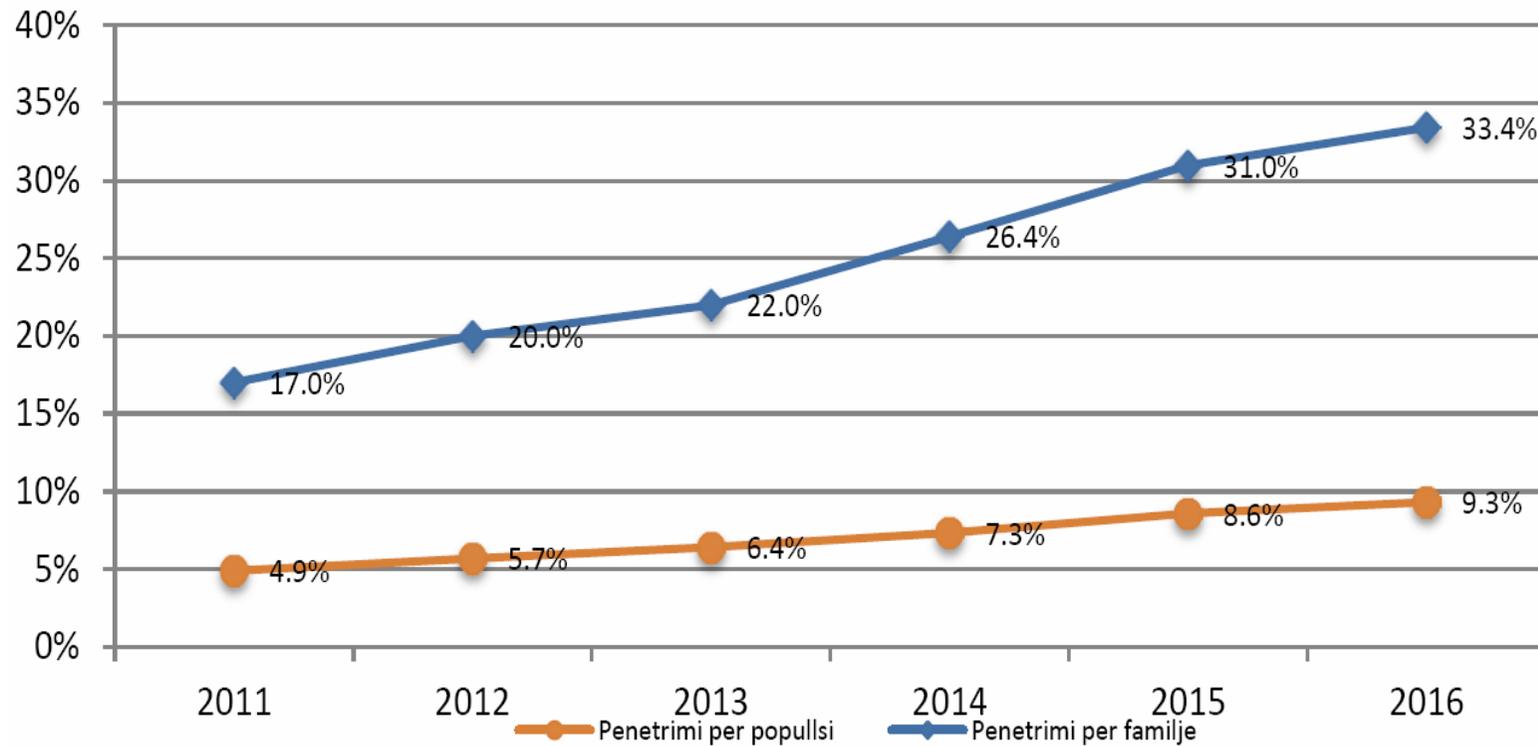
- Broadband access services from fixed networks have continued to grow steadily in the last 5 years. The number of subscribers with broadband access from fixed networks at the end of 2016 reached about 264 thousand. The penetration rate for population and households of subscribers with fixed broadband access at the end of 2016 was 9.3% and 33.4% respectively.
- It is noticed that the fastest speed is 4-10 Mbps with 58% in 2016. Data shows that the proportion of broadband subscribers with a speed of less than 4 Mbps has been declining, and at speeds above 4Mbps has been increasing. In 2016, the largest share of subscribers with broadband connections was 10-30Mbps: from 12,000 in 2015 to 40,000 in 2016.
- Data shows that about 93% of subscribers with broadband access from fixed networks have access to 2Mbps or higher.

Fixed broadband

Numri i pajtimtarëve me akses broadband nga rrjete fikse	Totali	Albtelecom	Abcom	Abissnet	ASC	Nisatel	OA te tjere	Pjese tregu Albtelecom
2014	207,931	82,747	47,480	23,259	28,489	9,882	16,074	40%
2015	242,870	97,597	51,093	24,497	31,357	6,309	32,017	40%
2016 T3	261,747	105,112	49,136	28,847	37,799	7,095	33,758	40.2%
2016 T4	266,379	109,851	52,442	29,497	37,650	7,421	29,518	41.2%
2017 T1	266,184	110,279	52,890	29,761	39,451	7,278	26,525	41.4%
2017 T2	279,424	113,205	52,195	29,197	41,818	7,500	35,509	40.5%
2017 T3	287,620	116,181	53,173	30,893	43,488	7,910	35,975	40.4%
Ndryshimi tremujor	2.9%	2.6%	1.9%	5.8%	4.0%	5.5%	1.3%	-0.1 pp
Ndryshim v-m-v	9.9%	10.5%	8.2%	7.1%	15.1%	11.5%	6.6%	0.2 pp

Broadband penetration from fixed networks

Access Broadband penetration from fixed networks as per population and families (2011-2016).



Broadband access from mobile networks

- The number of active users (using the last 3 months) of broadband access services from mobile networks (3G / 4G by mobile devices and USB / modem cards) in 2016 was about 1.7 million, which represents an increase by 30% compared to 2015.
- Broadband access services from wireless networks are relatively new services in Albania. Services in the 4G standard began to be offered in Q3 2015 after lifting the frequency use restrictions for mobile operators.
- Increasing the use of broadband access by 3G / 4G mobile networks in recent years is also noted in the increase in the volume of data transmitted to mobile networks

Mobile Broadband

	Numri i pajtimtarëve shërbime celulare	Përdorues aktivë shërbime celulare	Përdorues aktivë Telefoni Celulare	Përqindja e përdoruesve aktivë me parapagim	Përdorues aktivë me akses broadband celular	Përdorues me akses broadband celular dhe telefoni celulare	Përdorues me akses broadband me karta të dedikuara
2014	5,049,109	3,527,097	3,406,772	90.4%	907,975	787,650	120,325
2015	4,899,825	3,564,605	3,442,665	92.0%	1,297,281	1,175,341	121,940
2016 T3	5,416,320	4,050,305	3,925,819	93.7%	1,833,231	1,708,745	124,486
2016 T4	5,280,990	3,490,686	3,369,756	91.8%	1,686,354	1,565,424	120,930
2017 T1	5,265,017	3,464,521	3,338,481	92.3%	1,762,055	1,636,015	126,040
2017 T2	5,351,133	3,473,868	3,350,196	91.9%	1,823,656	1,699,984	123,672
2017 T3	5,612,142	3,417,602	3,288,211	91.7%	2,158,739	2,029,348	129,391
Ndryshimi tremujor	4.9%	-1.6%	-1.9%	-0.2pp	18.4%	19.4%	4.6%
Ndryshim v-m-v	3.6%	-15.6%	-16.2%	-2.1pp	17.8%	18.8%	3.9%

Bundles of Telephony+Broadband access

Numri i pajtimtareve që kanë akses në shërbime të integruara (Telefoni, Internet dhe TV)	Totali	Telefoni fikse dhe Internet	Telefoni fikse, Internet dhe TV	Internet dhe TV
2014	119,230	78,419	24,330	16,481
2015	149,833	69,755	71,681	8,397
2016 T3	177,248	83,432	80,642	13,174
2016 T4	186,983	76,045	92,932	18,006
2017 T1	188,969	71,438	97,676	19,855
2017 T2	194,285	77,911	95,328	21,046
2017 T3	198,774	77,541	98,817	22,416
Ndryshimi tremujor	2.3%	-0.5%	3.7%	6.5%
Ndryshim v-m-v	12.1%	-7.1%	22.5%	70.2%

Cybersecurity: Safer Internet

- We will work towards minimizing the negative impact of undesired collaterals, such as cybersecurity threats, including potential harm to the most vulnerable parts of society, in particular children, and negative effects on the environment, including e-waste.
- The rigorous implementation by electronic communication providers, of all the obligations related to data protection and measures to prevent and minimize the impact of security incidents on users of electronic services and networks, is a binding legal requirement, which AKEP considers a priority for the protection of end users interests.
- Within this legal framework and, taking account of the increased importance of security and data protection, the Authority on Electronic and Postal communications has approved a regulation on ‘technical and organizational measures to guarantee the security and integrity of the networks and or electronic communications’.

NGN network

- Altelecom is the incumbent operator in Albania providing fix/mobile and broadband services.
- The recent investments for modernizing the network aim to expand the presence of Altelecom, to increase the quality of service and the variety of range of products and services.
- Currently are implemented 850 MSAN-s all over the country. The number of MSANs is increased based on users requests.
- Full implementation of NGN was finalized in beginning of year 2013.
- All traffic (voice, data, video) is transported over IP core network.

NGN network implementation

- Access network is based on MSANs (though which it can be provided POTS, ISDN, PRI, ADSL, SHDSL, VDSL).
- Local network consist of copper lines terminating to MSAN and providing the services.
- Internet service and all transportation in IP level for broadband and voice service are being offered through two main systems of access: MSANs and DSLAMs.
- Full deployment of MSAN aims to shortens the distance to the subscriber and improves bandwidth performance. The target for subscriber line is to be less than 1Km.
- Deployment of transmission network with optical fiber will ensure increasing of speed and capacity provided and quality of service for the subscribers.

REGIONAL INITIATIVE HIGH SPEED BROADBAND INFRASTRUCTURE AND SERVICES

- With the rapid development of information and communication technologies, the globally connected world has become a reality faster than expected, where the IoT and ultra high speed broadband technologies play a fundamental role in the fields of energy, transportation, health, agriculture, banking, disaster management, public safety and home network.
- High speed connectivity plays a vital role in transforming economies and societies as it empowers families, people, societies and businesses, in developing countries, transition economics as well as developed countries, when deployed bearing in mind the need for inbuilt resilience and promoting confident usage.

REGIONAL INITIATIVE HIGH SPEED BROADBAND INFRASTRUCTURE AND SERVICES (2)

- Due to differences in European countries, there is a need for a regional initiative, through which administrations in need may be assisted in embracing ultra high speed broadband connectivity, including emerging 5G, to ensure accelerated sustainable development in middle and long term.
- **Objectives:** Accelerate and facilitate the deployment of ultraspeed new broadband services through the deployment of resilient and modern infrastructure which includes 5G technology and cross sectorial infrastructure sharing synergies (such as with the energy networks and other networks) equipped with effective mechanisms for Quality of Service monitoring for efficient and impactful ICT development.

AKEP's Strategy and Action plan for 2018

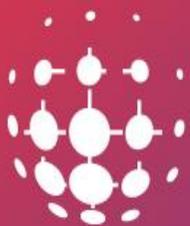
- AKEP plans its future program of activities in accordance with the market needs, taking into account the main strategy priorities and the regulatory objectives.
- The purpose of “**AKEP's Strategy and Action plan for 2018**”, is to identify the key areas and strategic priorities for 2018, in order to meet the regulatory objectives set out in the legislation, as well as in the sectorial policies and strategies laid down by the Government.

KEY AREAS, STRATEGIC PRIORITIES AND SPECIFIC ACTIONS

- Based on the progress of the each sector part of the AKEP's structure, the problems identified in these sectors and with the aim to meet the regulatory objectives, set out in the organic laws on electronic communications and postal services, as well as in the sectorial policies and strategies laid down by the government, **AKEP has identified four key areas, where it should focus its work during 2018:**
 - **I. Favorable Conditions for Investors;**
 - **II. Promotion of fair competition between network operators and service providers;**
 - **III. Increase benefits for consumers;**
 - **IV. AKEP's internal efficiency and partnership with other institutions in the country;**

Challenges

- Regional roaming,
- 790-862 MHz frequency bands for mobile communications,
- Disponibility of 694 - 790 MHz frequency bands for mobile communications until 2020.



AKEP

AUTORITETI I KOMUNIKIMEVE
ELEKTRONIKE DHE POSTARE

Thank You