



**EUROPEAN COMMISSION**

**MEMO**

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**What 5G can do for you**

By 2020 there will be more than 30 times as much mobile internet traffic as there was in 2010. But this will not be the same type of traffic as now - Internet usage will not only have grown thanks to the number of smartphones & tablets in use, but also because of the massive growth in machines and sensors using the Internet to communicate, and which require more efficient and ubiquitous technology to carry the data traffic.

5G is a new network technology and infrastructure that will bring the capacities needed to cope with this increased growth in the use of communication – especially wireless – technologies by humans and by machines.

5G won't just be faster, it will bring new functionalities and applications with high social and economic value.

People	Generation	Device	Specifications	Generation	Device	Specifications
	<b>1G</b> 		<b>1G</b> Year 1991 Standards: AMPS, TACS Technology: Analog Bandwidth: - Data rates: -	<b>3G</b> 		<b>3G</b> Year 2001 Standards: UMTS / HSPA Technology: digital Bandwidth: Broad Band Data rates: up to 2 Mbit/s 
<b>2G</b> 		<b>2G</b> Year 1991 Standards: GSM, GPRS, EDGE Technology: Digital Bandwidth: Narrow Band Data rates: < 80 - 100 Kbit/s 	<b>4G</b> 		<b>4G</b> Year 2010 Standards: LTE, LTE-Advanced Technology: digital Bandwidth: Mobile Broad Band Data rates: xDSL-like experience 1 hr HD movie in 6 minutes 	

**Here are a few examples:**

**eHealth:** Telesurgery made international news in 2001 when the first transatlantic surgical procedure took place between New York City and Strasbourg. This remote surgery experiment required extremely expensive high capacity leased lines. Commands triggered in the US were controlling surgery devices in France, with some small delay. 5G will make this scenario much easier and also mobile. 5G specificities will make the command-response time close to zero and provide the practitioner with great operation comfort and accuracy. In the near-future, a patient who needs an urgent or specific operation could be operated by a practitioner remotely located.

**Connected homes:** Our future homes will be full of connected devices, not only providing information on their environment, but also communicating with each other. A smart thermostat may "talk" to a smoke detector, so that the combined information can provide more reliable information in the event of a fire at home. In case no one is present, this information can be remotely communicated to mobile devices and bring the fire brigade to the rescue. Homes are expected to become massive sources of information and data will be transferred to mobile devices for remote monitoring, control and eventual decision. The operations rapidly exhaust spectrum and capacity resources of existing networks. 5G can support such connected home scenarios, whilst bringing down the service costs.



**Secure transport:** Vehicles become more secure thanks to ICT integration. They will soon be able to communicate with the outside world. Imagine you are driving on a motorway on a rainy day and behind a truck. Your visibility is extremely limited. If the truck in front of you has a camera, your car could hook into the truck driver's view of the road ahead and give you added information, greatly improving your driving comfort and security. This performance requires instantaneous transmission of images between the truck and your car, which is not possible with our current networks.

**Smart grids:** Utility infrastructures increasingly rely on wireless communication to support their activities. They are often located in rural or remote areas, and thus wireless connectivity to ensure low cost monitoring. Capacity is critical to support applications such as video surveillance and broadband mobile data. And the latency – the time interval between stimulation and response – should be very low to react quickly in case of problem. Once again 5G can bring solutions where existing systems cannot.

**Entertainment:** With 5G, you will be able to use great new apps, even in crowded places. Imagine you are watching a football match in a stadium with 50,000 people around you. If 5G connectivity is installed, you can play and replay interesting phases of the game from different viewing angles and with high definition on your mobile phone or tablet. This is made possible thanks to the use of higher frequency bands currently unexploited for broadband communications. Whoever tried to connect to the Internet in a conference room with more than 200 persons has experienced loss of connectivity due to the instability of WiFi access networks. Thanks to 5G, such problems will soon be part of the past.

## The EU leading the way to 5G

The European telecom industry – representing more than 1.7 million direct and indirect jobs in Europe – has been historically in the forefront of the global competition since the early days of the GSM technology. The European Commission is willing to secure this leadership and has given a strategic importance to 5G development.

A year ago, €50 million were invested in research projects such as [METIS](#), [5GNOW](#), [iJOIN](#), [TROPIC](#), [Mobile Cloud Networking](#), [COMBO](#), [MOTO](#) and [PHYLAWS](#) ([IP/13/159](#)). They are currently working on the architecture and functionality needs for 5G. A key step was taken last December when the Commission launched a Public-Private Partnership on 5G ([IP/13/1261](#) - [Factsheet](#)). EU investment amounts to €700 million while private contribution is expected to reach at least €3.5 billion by 2020. This bold initiative complements the recent Telecommunications Single Market (TSM) regulatory package aimed at fostering the EU telecom market and industry of tomorrow.

## Useful Links

[SPEECH/14/155](#) – Vice President Neelie Kroes speech on 5G for the Connected Continent at Mobile World Congress in Barcelona

[Digital Agenda for Europe](#)

Hashtag: [#5G](#), [#connectedcontinent](#)

[Neelie Kroes' website](#)

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