

Consultation on opportunities for a co-ordinated introduction of 5G networks in Europe

Fields marked with * are mandatory.

Purpose of the questionnaire

This targeted survey is addressed to providers and users of communication products and services to identify opportunities for a co-ordinated introduction of 5G networks in Europe, and for assessing elements of a 5G Action Plan to support the timely deployment of the planned infrastructure as of 2020.

The privacy statement for this survey can be found [here](#)

Respondent details

General information about you

*

I am responding as:

- An individual in my personal capacity
- The representative of an organisation/company

*

Are you a provider or user of communication products and services?

- Yes
- No

*

Is connectivity the means or an important part of your business?

- Yes
- No

Transparency register

*

Is your organisation registered in the Transparency Register of the European Commission?

- Yes
- No

*

If yes, please indicated the identification number

460594519070-95

The Transparency Register of the European Commission is accessible [here](#)

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Publication of responses

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Please indicate your preference for the publication of your response on the Commission's website:

Note that whatever option is chosen, your contribution may still be subject to requests for 'access to documents' under Regulation 1049/2001

Explanations about the Protection of Personal Data are available [here](#)

- My contribution can be published including my personal information / name of my organisation
- My contribution can be published anonymously
- My contribution cannot be published

*

Please tick the box that applies to your organisation and sector

- National authority
- Regional authority
- Representative association at EU level
- Non-governmental organisation
- Representative association at national level
- Small or medium-sized business
- ICT industry
- International organisation
- Other
- Regional
- National
- European
- International

*

My institution/organisation/business operates in:

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- Netherlands
- Poland
- Portugal
- Romania
- Slovak Republic
- Slovenia
- Spain
- Sweden
- United Kingdom
- Other

*

Please enter the name of your institution/organisation/business

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*

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1. Overall agenda for the introduction of 5G in the EU

Global developments around 5G to the extent that the topic has grown, topping the ICT and economic policy agenda in industry and governments. Some operators in Asia and in the USA, and also in Europe have announced plans to release 5G commercially before or around 2020. What are your views regarding the importance and urgency of 5G introduction in Europe?

a - Importance

5G will be a key infrastructure for Europe and a core asset to support competitiveness and digitisation of European industry

- Agree
- Neutral
- Disagree

Do you think 5G will be a strategic infrastructure in Europe

- For the telecom industry only
- For the telecom industry and for the application industries that use connectivity
- For the telecom industry, the industries that use connectivity and society in general
- 5G will not be a strategic infrastructure for any of the above

b - Time frame

The 5G introduction date currently contemplated in 3G PP standardisation roadmaps is 2020. Is this the date that Europe should also contemplate for early 5G deployment?

- Agree
- Neutral
- Disagree

If you disagree please specify what indicative date

c - Need for a consistent European approach

5G introduction in Europe needs to be time co-ordinated across all Member states, to maximise early availability at pan-European scale

- Agree
- Neutral
- Disagree

Market situations are different between Member states and there is no need for a European approach. Member states should have full freedom for deploying 5G, both from the perspective of the timing and the choice of priority services.

- Agree
- Neutral
- Disagree

d - Service/technology roadmap

5G introduction will happen in phases: first services using lower frequency bands (e.g. below 6 GHz) while services using higher frequency bands (e.g. above 6GHz) will be introduced later

- Agree
- Neutral
- Disagree, holistic deployment approach should be targeted from the start

e - Pre-commercial pilots and showcasing

Other regions of the world have announced pre-commercial pilots and showcasing for 5G as early as 2017-2018, European 5G leadership critically depends on our ability to organise pan-European showcasing events

- Agree
- Neutral
- Disagree

In case you agree, what would be the most appropriate time frame for planning such showcasing activities?

- 2017
- 2018
- 2019

Would you like to specify the type of services and events? Please specify in the box

2. Aspects linked to service introduction and types of new services

The International Telecommunications Union (ITU) published its International Mobile Telecommunications (IMT) Vision Document 'M2083' which specifies three broad classes of services, further detailed in Next Generation Mobile Networks Alliance (NGMN) or in the 3GPP SA1 "Smarter group". These cover very high data rate services (enhanced Mobile Broadband - eMBB), massive IoT types of usage with very low power requirements (massive machine type communication - mMTC), and use cases with very low latency for time critical applications (ultra reliable low latency - URLL). In a number of countries, eMBB is considered the priority service for deployment. The European political goals for the Digital Single Market (DSM) and the Digitising European Industry (DEI) indicate that European priorities should be for mMTC and URLL use cases applicable in sectors such as health, transport, manufacturing.

5G introduction in Europe should target the eMBB use case from the start, to align with priorities in other regions and ensure early availability of these services also in Europe to create global markets

- Agree
- Neutral
- Disagree

5G European deployment should also target as priority from the start the services that enable creation of ecosystems with vertical industries, namely mMTC and URLL classes of use cases

- Agree
- Neutral
- Disagree

According to your market estimates, what would in your view be the largest 5G market globally in 2020 and in 2025, and how would you rate them?

In 2020, largest market:

- eMBB
- mMTC
- URLL

In 2025, largest market:

- eMBB
- mMTC
- URLL

3. Enablers

3.1 Spectrum

Spectrum designation and availability is an enabler of 5G deployment that fosters investments in technology. Several countries e.g. US, Japan, South Korea are moving fast to identify 5G spectrum already this year. In your view:

It is imperative for Europe to already announce in 2016 what spectrum will be considered for 5G introduction

- Yes
- No
- Don't know

It is imperative for Europe to announce, by the end of 2017, what spectrum will be considered for 5G

- Yes
- No
- Don't know

There is no need for Europe to announce what spectrum will be considered for 5G before 2019. We can wait until the next WRC-19 milestone, which has an agenda point to identify such frequencies

- Yes
- No
- Don't know

In Europe, globally harmonised spectrum is favoured for 5G. Some nations have announced they may be taking early decisions with frequency bands for 5G that may be very difficult to harmonise globally. In your view:

Globally harmonised spectrum is a necessity to satisfy requirements of worldwide interoperability and to minimise equipment costs

- Agree
- Neutral
- Disagree

Globally harmonised spectrum is not an absolute necessity, since technology may allow operations across multiple regional bands on a single user device and the impact on equipment cost will be marginal (especially if bands would fall within a tuning range)

- Agree
- Neutral
- Disagree

In case network/user equipment have to operate across several region-specific frequency bands, this should also be economically feasible even on low cost IoT-type of devices

- Agree
- Neutral
- Disagree

In your view what are the bands that Europe should seriously consider as candidate 5G priority bands for EU harmonisation (select 3 maximum)

- Below 700 MHz
- 700 MHz
- 800MHz
- 900MHz
- 1.5 GHz
- 1.8 GHz
- 2 GHz
- 2.6 GHz
- 3.4 - 3.8 GHz
- Selected parts of 3.8 GHz - 4.2 GHz
- 5 GHz
- 24-27 GHz
- 28-29 GHz
- 31-33 GHz
- 40 GHz
- 60 GHz
- 66 GHz
- Other
- Don't know

If other please specify in box below

3.2 Standards

The standardisation of the core 5G communications functions has started in the context of 3G PP. The standardisation roadmap is based on two steps with priority standards to be available in 2018 and complementary standards in 2020. Early availability of standards for showcasing purposes imply a focus on a new Radio Access Terminal (RAT) and the reuse of 4G core network functionalities, taking into account that innovative use cases of verticals may require new approach to core network architecture. In your view:

Priority standards should not be limited to the eMBB use case, but should include vertical sector requirements from the onset (mMTC and URLL)

- Agree
- Neutral
- Disagree

Early availability of standards should also target reassessed core network architecture and standards to account of vertical use case requirements

- Agree
- Neutral
- Disagree

The European Commission should set out a strategy to ensure that appropriate standards can also emerge timely in areas concerning the interface between communications functions and third party service providers (like vertical industries)

- Agree
- Neutral
- Disagree

3.3 Investments

5G will require a step-up in investment in both mobile access facilities (more dense network of base stations) and in 5G-ready fixed backhaul and core infrastructure.

In your view, what particular investment challenges arise, given the alignment required between operators and vertical industries?

Infrastructure costs are the key challenge for first generation roll-out. While the chicken-and-egg issue between operators and verticals is briefly touched upon, one must also consider that many of the strategic applications and envisioned societal benefits of the EU's 5G strategy rely on all actors of the value chain being present even before concrete market validation and viability assessment can be carried out. A solution that places a premium on throughput over latency for example will have very different value propositions for verticals, while a lack of interoperability or harmonization may mean that the benefits for potential early adopters (e.g. connected car, transport & logistics, etc.) will not be realized, which may in turn discourage other verticals from investing. The use of EU funds to facilitate pilot initiatives between the operators and verticals may be appropriate here, but this should be limited to verticals that can provide the highest degree of disruptive innovation or societal benefit to showcase the unique value of 5G compared to previous generations. Verticals that are already significant 4G users would be expected to adopt 5G as an incremental innovation, and as such should be exempt from EU subsidies, freeing up funding for new applications where the EU can obtain a competitive edge. As the EU will already lag behind other countries on deployment, the focus on opening up new markets will be key to sustainable innovation and increased adoption rates.

In your view, what is, in euros, the total amount of investment needed to fully deploy 5G networks across Europe (i.e. 90% population coverage)?

What are the particular investment challenges you can identify that require alignment between operators and vertical industries?

In particular, do you think there is a chicken-and-egg problem: industrial users will not want to use 5G before 5G networks are deployed on a large basis and telecom operators will not want to invest before a clear market demand is identified

- Agree
- Neutral
- Disagree

Which vertical industries are the most likely to drive investments in the first generation of 5G services
(early adoption)

	Very	Probable	Unlikely	Unpredictable
Automotive/Connected vehicles/Traffic management	x			
Transport for logistics (other than automotive, i.e. trains, planes, maritime)		x		
Broadcasting	x			
Other media and entertainment	x			
Manufacturing 4.0 & value chain management			x	
Health and Well being			x	
Energy network management			x	
Public safety & disaster recovery			x	
Other public uses (e.g. smart cities, education)			x	
Futuristic uses: drones, robots		x		

Do you think that telecom operators on their own can finance the investments required to fully deploy 5G networks across Europe?

- Agree
- Neutral
- Disagree

Do you consider that co-investment jointly by the telecommunications sector and specific vertical sectors in 5G infrastructure is a realistic scenario in certain cases (as opposed to investment exclusively by the telecommunications operators)?

- Agree
- Neutral
- Disagree

Access to funding for investment in 5G infrastructures is not a particular issue in the current context of low interest rates. The challenge for investors is rather to improve the prospect of new revenue streams and profitable new services

- Agree
- Neutral
- Disagree

Do you consider that public funding is necessary for full deployment of 5G networks across the EU, notably through the European Fund for Strategic Investment, the European Investment Bank, national or regional funds

- Agree
- Neutral
- Disagree

Infrastructure funding should be focused on backbone fibre networks, and facilitate competition in the development of 5G

- Agree
- Neutral
- Disagree

3.4 Regulation

NB: The questions below do not include sector specific regulations e.g. health, connected cars, etc. but focus on regulation applicable to network systems in the context of electronic communication services (ECS) provision and regulation.

The regulatory framework applicable to ECS and network systems is currently subject of a review which has been opened to stakeholders through a public consultation in [2015](#). In your view:

The use of radically new spectrum (mmwave) with very different operation characteristics calls for a new regulatory approach for what concerns sharing, co-primary usages and licensing

- Agree
- Neutral
- Disagree

Would 5G deployment be facilitated through specific measures reducing the cost of deployment of access facilities

- Agree
- Neutral
- Disagree

If you agree, in your view which of the following areas would be relevant for such measures?

	Agree	Not relevant	Disagree
Addressing issues related to building permits and rights of way (in line with other major infrastructure projects, such as electricity pylons, and their low rents/legal protection)	x		
Planning restrictions on small cells	x		
Harmonizing radiation limitations at a European level as to avoid some countries and regions to have significantly more severe rules than the harmonised norm	x		
Taxes on sites and administrative fees		x	
Educating relevant authorities about the benefits of inward investment in wireless versus financial gains from site rentals		x	
Other (please specify)			

4. Co-ordination, possible instruments, and Public Sector role

The introduction of GSM in Europe has been a big success because proactive measures were taken at European level to specify the conditions of GSM deployment. For 3G and 4G, such a proactive approach was lacking, giving more freedom to telecom actors. Today, certain stakeholders support the view that Europe should use the GSM approach to introduce 5G. Which of the following three models is relevant for 5G deployment in Europe (if any):

i - The GSM introduction methodology based on a comprehensive package specifying the overall GSM deployment framework at European level - [Council Directive 87/372/EEC](#) , complemented by [Council Recommendation of 25 June 1987](#) on the coordinated introduction of public pan-European cellular digital land-based mobile communications in the Community and by [Council Resolution of 14 December 1990](#) on the final stage of the coordinated introduction of pan-European land-based public digital mobile cellular communications in the Community (GSM)

- Agree
- Neutral
- Disagree

ii - The model based on 3G- UMTS methodology to deploy 3G in Europe, specifying a target date to Member States for setting up a regulatory process for 3G introduction, complemented with a requirement of interoperability across Europe - [UMTS Decision No 128/1999/EC](#) on the coordinated introduction of a third-generation mobile and wireless communications system (UMTS) in the Community

- Agree
- Neutral
- Disagree

iii - The model based on the 4G methodology of deployment, giving full freedom to Member States to make 4G spectrum available in the respective MS, once harmonised, on the date of their choice

- Agree
- Neutral
- Disagree

Other method (e.g. sunset date, as in the case of DTT switch over)

- Agree
- Neutral
- Disagree

If 'Agree" please specify

The European Commission should have no role in 5G deployment

- Agree
- Neutral
- Disagree

Useful links

[5G vision paper \(https://5g-ppp.eu/roadmaps/\)](https://5g-ppp.eu/roadmaps/)

[5GPPP white papers \(https://5g-ppp.eu/white-papers/\)](https://5g-ppp.eu/white-papers/)

[ITU vision \(http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2020/Pages/default.aspx\)](http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2020/Pages/default.aspx)

[NGMN Alliance white paper](http://www.ngmn.org/fileadmin/ngmn/content/images/news/ngmn_news/NGMN_5G_White_Paper_V1_0.pdf)

[\(http://www.ngmn.org/fileadmin/ngmn/content/images/news/ngmn_news/NGMN_5G_White_Paper_V1_0.pdf\)](http://www.ngmn.org/fileadmin/ngmn/content/images/news/ngmn_news/NGMN_5G_White_Paper_V1_0.pdf)

[GSMA white paper \(https://www.gsmainelligence.com/research/?file=141208-5g.pdf&download\)](https://www.gsmainelligence.com/research/?file=141208-5g.pdf&download)

[5G Americas white paper](http://www.5gamericas.org/files/2414/4431/9312/4G_Americas_5G_Technology_Evolution_Recommendations)

[\(http://www.5gamericas.org/files/2414/4431/9312/4G_Americas_5G_Technology_Evolution_Recommendations](http://www.5gamericas.org/files/2414/4431/9312/4G_Americas_5G_Technology_Evolution_Recommendations)

[Results of consultation 1](https://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-evaluation-and-review-re)

[\(https://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-evaluation-and-review-re](https://ec.europa.eu/digital-single-market/en/news/summary-report-public-consultation-evaluation-and-review-re)

[Results of consultation 2](https://ec.europa.eu/digital-single-market/en/news/full-synopsis-report-public-consultation-needs-internet-speed-)

[\(https://ec.europa.eu/digital-single-market/en/news/full-synopsis-report-public-consultation-needs-internet-speed-](https://ec.europa.eu/digital-single-market/en/news/full-synopsis-report-public-consultation-needs-internet-speed-)

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