

---

# Emerging technologies and their potential impact on the communications industry

Call for inputs

---

**CALL FOR INPUTS:**

Publication date: 23 July 2020

Closing date for responses: 3 September 2020

# Contents

---

## Section

1. Overview	1
2. Introduction	3
3. Objectives of the technology discovery programme of work	4

## Annex

A1. Responding to this call for inputs	8
A2. Ofcom's consultation principles	10
A3. Consultation coversheet	11

# 1. Overview

Advances in technology have changed how people and organisations work, socialise and do business. Developments in the communications sector – including more access to faster broadband and innovative new online services - have brought clear benefits. This includes helping to improve network efficiency, security and pave the way for new services. But advances in technology can also pose risks – whether that’s the need to better protect data, making sure people get value for money or protecting them from online harms.

We have started a technology discovery programme to better understand the technologies being researched and developed which could affect the sectors we regulate, including broadcast, fixed, mobile and satellite communication networks and online communications sectors, including the content they carry and the devices on which they are consumed.

So, we are seeking views from people and organisations – in industry, academia and beyond - to identify these technologies and provide a view on their potential impact.

## Our call for inputs:

We are interested in hearing about any emerging technologies that could change the shape of the communications industry in the coming years. We are particularly keen to hear about technologies that have the potential to achieve the following:

- Enable the delivery of **new services** which are valued highly by people and businesses.
- Broaden and deepen **access to services**.
- Increase the **performance of networks**, improving the experience for people using them.
- **Lower barriers to entry into markets**, giving people a greater choice of providers.
- **Reduce the cost** of delivering services, increasing access and maximising value for customers.
- Change the way we **authorise and regulate** networks and /services.
- **Assure the security and resilience** of service delivery.
- **Reduce the total environmental impact** of delivering communications services and associated activities.

Anyone responding to this call for inputs should include details of:

- a description of the relevant technology;
- a view of the potential impact of the technology on the sectors we regulate, preferably identifying the impact against the criteria listed in section 3.16;
- the current state of development of the technology, including any demonstrations of feasibility;
- any unresolved issues which need to be addressed for the technology to achieve full potential;
- references to key publications and the leading groups working on the technology; and
- whether you would be open to discussing the technology in more detail with Ofcom.

We welcome responses by **3 September 2020**.

## **Emerging technologies and their potential impact on the communications industry – Call for inputs**

We plan to publish a summary of responses to this call for input later this year and outline next steps. We also expect responses to feed into a wider programme of work where we will conduct our own in-depth analysis of the technologies that we consider more likely to emerge.

## 2. Introduction

- 2.1 Ofcom’s principal duty under the Communications Act 2003 (the Act) is to further the interests of UK citizens and consumers, where appropriate by promoting competition.<sup>1</sup> In doing so, we are required to secure several things, including the availability throughout the UK of a wide range of electronic communications services.<sup>2</sup> We must also have regard to the availability and use of high-speed data services throughout the UK, the interests of consumers in respect of choice, price, quality of service and value for money and the desirability of encouraging investment and innovation in relevant markets.<sup>3</sup>
- 2.2 Innovations and technological developments are happening at unprecedented pace across all sectors that we regulate and this is having an impact on people’s lives in various ways.
- 2.3 Keeping well informed of the technological developments, industry trends and their implication on the sectors we regulate is important in helping us fulfil our duties. By understanding and stimulating innovation, we can help to make sure future changes in the market benefit the people using communications services.
- 2.4 We are conducting a technology discovery exercise to uncover emerging technologies that could impact the communications sector. Through this call for input we aim to identify emerging technologies, develop our understanding of them and of how they might shape the sectors we regulate.

### Structure of the document

- 2.5 This document is structured as follows:
- **Section 3** sets out the key areas in which we are seeking information from stakeholders and;
  - **Annexes** explains how to respond to this document.

---

<sup>1</sup> Section 3(1) of the Act.

<sup>2</sup> Section 3(2)(b) of the Act.

<sup>3</sup> Sections 3(4)(d), 3(4)(e), and 3(5) of the Act.

## 3. Objectives of the technology discovery programme of work

### Our approach

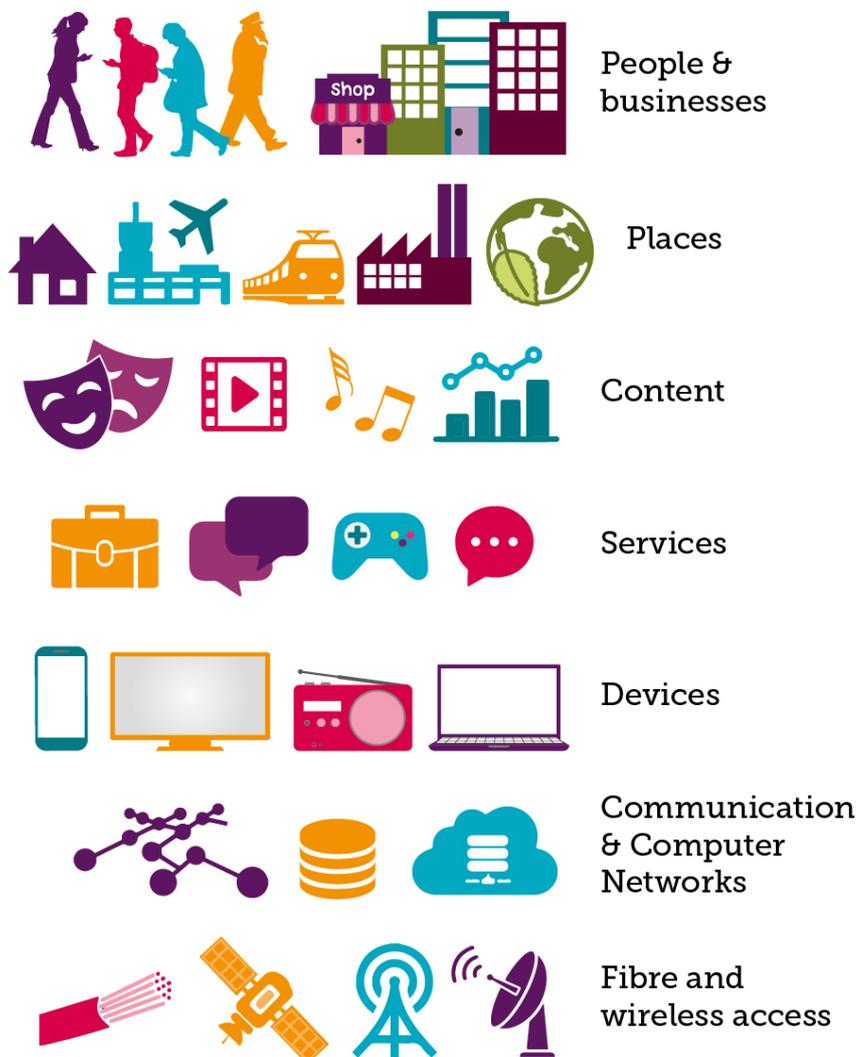
- 3.1 Identifying and evaluating relevant technologies is an ongoing activity for Ofcom. However, we are focusing this call for inputs on identifying emerging medium-/long-term and potentially more disruptive technologies.
- 3.2 As well as this call for inputs, we will be identifying these technologies by working with leading research and development organisations in academia and industry internationally.
- 3.3 For new technologies we discover, we seek to identify the state of development of the technology, the potential impact on the sectors we regulate, the leading groups working on the technology and the potential path and timescale for the technology to enter the UK market.
- 3.4 We invite stakeholders to take into account the criteria identified in section 3.16 in responding to this call for input. We plan to publish a summary of responses to this call for input later this year and outline next steps.
- 3.5 We also expect responses to feed into a wider programme of work where we will conduct our own in-depth analysis of the technologies that we consider more likely to emerge.

### Scope of emerging technologies

- 3.6 Our scope of work as the UK regulator for communications services is wide ranging. We regulate broadband and mobile telecoms, TV, radio, video-on-demand services, post, and the airwaves used by wireless devices. We ensure fairness for customers and protection from sharp practices and we actively support competition where appropriate to deliver good outcomes. The UK Government has confirmed Ofcom as the regulator for UK-based video-sharing platforms and has announced that it is minded to appoint Ofcom as the new regulator for online harms. The UK Government also announced new legislation to implement recommendations from its Telecoms Supply Chain Review, including enhanced enforcement powers for Ofcom in relation to network security.

3.7 The range of technologies of potential interest to us therefore spans a very broad range, as illustrated below.

Figure 1: Technologies covering a broad range of areas are of interest to us



Source: Ofcom

3.8 A key policy area for Ofcom is to ensure access to connectivity via fixed and wireless networks in broadcast, mobile and satellite domains. We expect to explore technologies which will profoundly impact the availability, performance and efficiency of those networks.

3.9 These technologies include, but are not limited to:

- optical technologies for providing better services over fibre networks and methods for deploying those networks more rapidly and cost effectively;
- approaches for delivering broadcast content more effectively to more viewers and listeners; and

- technologies to allow wireless systems to make more efficient use of the radio spectrum and support innovative business models and services.
- 3.10 By way of examples, technologies already identified to us in this area include quantum communications technologies and graphene-based metamaterial devices for use in terahertz communications. These are examples of technologies which are still in the early development phase but could impact communications services in the future.
- 3.11 Beyond access networks, we are interested in the transport and operational systems that sit behind them and which are increasingly implemented using online technologies, including virtualised and cloud computing techniques. We are working across various sectors that were formerly quite distinct and convergence has been talked about for many years. With the evolution in distributed computing networks combined with distributed communications networks, that distinction between sectors is increasingly blurring in the way those systems are delivered. We are interested in technologies which might impact on this convergence.
- 3.12 In September 2019, 81% of measured time spent online was on a mobile or tablet device. Meanwhile, the number of internet users who use only their computers or laptops to go online continues to decline steadily, from 12% in 2017 to 4% in 2019<sup>4</sup>. We want to anticipate changes in the devices that people use to access content, from developments in existing TVs, radios and phones to new categories of devices including mixed reality (AR/VR/XR) and multisensory experiences. Currently only 6% of the UK consumers use virtual reality headsets<sup>5</sup>.
- 3.13 Changes to methods of creating content for these devices and networks are equally of relevance to us. For example, developments in artificial intelligence-enhanced video compression models could help deliver better quality video at lower data rates/bit rates.

## Timescales

- 3.14 We recognise that various innovation and technologies will be at different stages of their development cycles. Understanding the timescales over which technologies will be mature for market implementation would help us effectively tap into them to address relevant strategy and policy questions.
- 3.15 For this call for input, while a wide range of emerging technologies is of interest, we are especially keen to identify technologies with impacts over the medium and long term of which we may not already be aware or deeply engaged with. However, we recognise that for some sectors (e.g. internet platforms) the full development cycle can be much more rapid than in other sectors.

---

<sup>4</sup> Comscore MMX Multi-Platform, Total Internet, Adults 18+, Sep 2019, UK. Throughout our report, September 2019 is used as a base sample month, as it is one of the most stable months in terms of internet use (for instance, it is largely outside school and national holidays).

<sup>5</sup> [Ofcom Technology Tracker 2020](#)

## The likely impact of new technology

- 3.16 In responding to this call for input, we invite stakeholders to take into account the extent to which any new technology is likely to:
- Enable the delivery of **new services** which are valued highly by people and businesses.
  - Broaden and deepen **access to services**.
  - Increase the **performance of networks**, improving the experience for people.
  - **Lower barriers to entry** for providers, enabling choice for people.
  - **Reduce the cost** of delivering services, increasing access and maximising value for customers.
  - Change the way we **authorise and regulate** networks and /services.
  - **Reduces the total environmental impact** of delivery of communication services and associated activities.
  - **Assure the security and resilience** of service delivery.
  - **Reduce the total environmental impact** of delivery of communication services and associated activities.

## Format of responses

Responses should include:

- a description of the technology which you believe we should be evaluating;
- a view of the potential impact of the technology on the sectors we regulate, preferably identifying the impact against the criteria listed in section 3.16;
- the current state of development of the technology, including any demonstrations of feasibility;
- any unresolved issues which need to be addressed for the technology to achieve full potential;
- references to key publications and the leading groups working on the technology; and
- whether you would be prepared to join a call with Ofcom's technology team to discuss the technology in more detail.

# A1. Responding to this call for inputs

## How to respond

- A1.1 Ofcom would like to receive views and comments on the issues raised in this document, by 5pm on Thursday 3 September 2020.
- A1.2 You can download a response form from <https://www.ofcom.org.uk/consultations-and-statements/category-2/emerging-technologies>. You can return this by email to [emerging.technology@ofcom.org.uk](mailto:emerging.technology@ofcom.org.uk).
- A1.3 If your response is a large file, or has supporting charts, tables or other data, please email it to [emerging.technology@ofcom.org.uk](mailto:emerging.technology@ofcom.org.uk), as an attachment in Microsoft Word format, together with the [cover sheet](#).
- A1.4 We welcome responses in formats other than print, for example an audio recording or a British Sign Language video. To respond in BSL:
- Send us a recording of you signing your response. This should be no longer than 5 minutes. Suitable file formats are DVDs, wmv or QuickTime files. Or
  - Upload a video of you signing your response directly to YouTube (or another hosting site) and send us the link.
- A1.5 We will publish a transcript of any audio or video responses we receive (unless your response is confidential)
- A1.6 We do not need a paper copy of your response as well as an electronic version. We will acknowledge receipt if your response is submitted via the online web form, but not otherwise.
- A1.7 You do not have to respond to all the topics in the call for inputs if you do not have a view; a short response on just one point is fine. We also welcome joint responses.
- A1.8 If you want to discuss the issues and questions raised in this call for inputs, please contact Jose Kurian on 020 7981 3902, or by email to [emerging.technology@ofcom.org.uk](mailto:emerging.technology@ofcom.org.uk).

## Confidentiality

- A1.9 Call for inputs are more effective if we publish the responses before the response period closes. In particular, this can help people and organisations with limited resources or familiarity with the issues to respond in a more informed way. So, in the interests of transparency and good regulatory practice, and because we believe it is important that everyone who is interested in an issue can see other respondents' views, we usually publish all responses on [the Ofcom website](#) as soon as we receive them.
- A1.10 If you think your response should be kept confidential, please specify which part(s) this applies to, and explain why. Please send any confidential sections as a separate annex. If you want your name, address, other contact details or job title to remain confidential, please provide them only in the cover sheet, so that we don't have to edit your response.

- A1.11 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and try to respect it. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.12 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's intellectual property rights are explained further in our [Terms of Use](#).

## Next steps

- A1.13 Following this call for inputs period, Ofcom plans to publish a statement in Autumn 2020.
- A1.14 If you wish, you can [register to receive mail updates](#) alerting you to new Ofcom publications.

## Ofcom's consultation processes

- A1.15 Ofcom aims to make responding to a call for inputs as easy as possible. For more information, please see our consultation principles in Annex 2.
- A1.16 If you have any comments or suggestions on how we manage our consultations, please email us at [consult@ofcom.org.uk](mailto:consult@ofcom.org.uk). We particularly welcome ideas on how Ofcom could more effectively seek the views of groups or individuals, such as small businesses and residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.17 If you would like to discuss these issues, or Ofcom's consultation processes more generally, please contact the corporation secretary:

Corporation Secretary

Email: [corporationsecretary@ofcom.org.uk](mailto:corporationsecretary@ofcom.org.uk)

## A2. Ofcom's consultation principles

### Ofcom has seven principles that it follows for every public written consultation:

#### Before the consultation

- A2.1 Wherever possible, we will hold informal talks with people and organisations before announcing a big consultation, to find out whether we are thinking along the right lines. If we do not have enough time to do this, we will hold an open meeting to explain our proposals, shortly after announcing the consultation.

#### During the consultation

- A2.2 We will be clear about whom we are consulting, why, on what questions and for how long.
- A2.3 We will make the consultation document as short and simple as possible, with a summary of no more than two pages. We will try to make it as easy as possible for people to give us a written response. If the consultation is complicated, we may provide a short Plain English / Cymraeg Clir guide, to help smaller organisations or individuals who would not otherwise be able to spare the time to share their views.
- A2.4 We will consult for up to ten weeks, depending on the potential impact of our proposals.
- A2.5 A person within Ofcom will be in charge of making sure we follow our own guidelines and aim to reach the largest possible number of people and organisations who may be interested in the outcome of our decisions. Ofcom's Consultation Champion is the main person to contact if you have views on the way we run our consultations.
- A2.6 If we are not able to follow any of these seven principles, we will explain why.

#### After the consultation

- A2.7 We think it is important that everyone who is interested in an issue can see other people's views, so we usually publish all the responses on our website as soon as we receive them. After the consultation we will make our decisions and publish a statement explaining what we are going to do, and why, showing how respondents' views helped to shape these decisions.

## A3. Consultation coversheet

### BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

### CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing

Name/contact details/job title

Whole response

Organisation

Part of the response

If there is no separate annex, which parts? \_\_\_\_\_

---

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

### DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.

Name

Signed (if hard copy)