Ofcom submission of evidence

to the House of Commons Science, Innovation and Technology Committee's inquiry into the governance of artificial intelligence

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Contents

Section

1. Introduction....3
2. Communications sectors and AI developments....5
3. How we regulate services that use AI technologies....7
4. An update on our work in relation to AI....9
5. Our capabilities for regulating services that use AI....16
6. Our views on proposals set out by the Government in its AI White Paper....18
7. Our engagement and collaboration on AI....20

1. Introduction

1.1 Across Ofcom's sectors, we have long seen the use of artificial intelligence (AI), from recommender systems to image, audio, code and video creation. But we are now at a tipping point with AI in terms of its power and sophistication, in the practical applicability of certain forms, such as large language models (LLMs) and wider generative AI (GenAI), and in its ability to reach consumers at scale.[1] The communications sector has long been at the centre of these developments. With innovation and investment gathering pace, we are seeing a rapid expansion of new uses and applications of AI across the sectors we regulate. These innovations have the potential to offer substantial benefits, with recent estimates suggesting GenAI's impact on productivity could add trillions of dollars in value to the global economy, delivering an additional $200-$340 billion of value in the banking industry or $400-$660 billion in retail and consumer packaged goods if their use cases were fully implemented.[2] With these new opportunities and innovations, however, also come new risks.

1.2 Ofcom welcomes the opportunity to submit evidence to the House of Commons Science, Innovation and Technology Committee's inquiry into the governance of artificial intelligence (AI).[3] We set out our views on the broad implications of AI in the sectors that we regulate, an explanation of how our powers relate to AI technologies, and an update on our work in relation to AI. We provide an update on the technical capabilities we have to perform our duties effectively, ensuring we are well prepared to respond to the impact of AI across our sectors. For example, early funding for our upcoming online safety responsibilities has allowed us to build on our existing digital and AI skills and technical expertise. We also set out our broad support for the Government's work on developing a principles-based, non-statutory framework for regulating AI in the UK.

1.3 Ofcom is leveraging its national and international partnerships to build knowledge more efficiently and progress our work with an eye on coherence within the UK and internationally. We work with other regulators, particularly through the Digital Regulation Cooperation Forum (DRCF), as well as our international activities in support of these aims.

1.4 Once the Online Safety Bill receives Royal Assent and establishes Ofcom as the online safety regulator, we will be consulting on our first set of Guidance and Codes of Practice for the new regime, and an important task for our regulation will be to adapt as AI in particular creates new risks and opportunities for creating and mitigating harm online.

1.5 This document has the following sections:

- Communications sectors and AI developments
- How we regulate services that use AI technologies
- An update on our work in relation to AI
- Our capabilities for regulating services that use AI
- The Government's AI White Paper

[1] In June 2023, Ofcom published a blog explaining what GenAI means for our sectors: https://www.ofcom.org.uk/news-centre/2023/what-generative-ai-means-for-communications-sector

[2] 'The economic potential of generative AI: The next productivity frontier', McKinsey Digital (June 2023): https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#introduction

[3] 'Governance of artificial intelligence (AI): Inquiry', House of Commons Science, Innovation and Technology Committee (October 2022): https://committees.parliament.uk/work/6986/governance-of-artificial-intelligence-ai/

- Our engagement and collaboration on AI

2. Communications sectors and AI developments

2.1 **Ofcom is the UK's communications regulator, with functions across – but not limited to – broadcast television and radio, telecoms, post, spectrum, and UK-established on-demand programme services and video-sharing platforms.**[4] Ofcom has also been designated as the regulator for online safety and will take on new powers once the Online Safety Bill has received Royal Assent. Ofcom has additional duties, including in media literacy, telecoms security and news media plurality. We have always interpreted our duties to define our mission: to make communications work for everyone.

2.2 **AI is being deployed across the communications sectors that we regulate.** AI lies at the heart of the internet and is already core to most modern businesses. AI already powers search, social media and messaging services. In our more traditional communications sectors, we see network operators using AI to enhance network planning and optimise network build, give early warning of network outages, and detect and prevent fraudulent behaviour. Likewise, broadcasters have used AI for several years, including for content generation such as for weather programmes or to power recommendations on their video on demand platforms. However, as well as presenting myriad opportunities, AI can also exacerbate or create new risks. There are longstanding risks which flow from the potential for AI systems to generate biased and unfair outcomes. An example is the use of AI-powered personalised pricing for consumers – a topic Ofcom has considered in the context of the broadband and mobile markets.[5]

2.3 **Advanced forms of AI, such as GenAI, also present new opportunities and risks in communications sectors.** While GenAI technologies, such as large language and visual models, have been in development for some time, the past year has been a turning point in their potential, driven by an increase in computing power and research breakthroughs. This means that we are seeing a rapid expansion of new uses and applications across our sectors.[6] However, alongside new opportunities, early evidence is emerging that suggests GenAI is leading to new harms or exacerbating existing harms in the sectors that we regulate. For example, in the broadcasting sector, the use of GenAI models in TV production can enhance the ability of producers to create compelling visual effects but GenAI models can also be used by malicious actors to create 'fake' content including news and media, which can increase the risk of mis- and dis- information for consumers.[7] Likewise, in the field of online safety, researchers are examining how GenAI could be used to create new datasets – also known as synthetic training data – to improve the accuracy of safety technologies. However, GenAI chatbots can also enable people to more easily access harmful content,

[4] 'Ofcom's Plan of Work 2023–24: Making communications work for everyone', Ofcom (March 2023): https://www.ofcom.org.uk/__data/assets/pdf_file/0024/256038/statement-plan-of-work-2023-24.pdf

[5] 'Personalised pricing for communications: Discussion paper', Ofcom (August 2020): https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/personalised-pricing-for-communications

[6] We use the term GenAI to mean machine learning models that can create new content in response to a user prompt. These tools - which include the likes of ChatGPT and Midjourney – are typically trained on large volumes of data, and can be used to produce text, images, audio, video and code. Forms of GenAI include large language models (LLMs) and visual models and 'multi-modal' models, which can produce images and video.

[7] 'Disinformation Researchers Raise Alarms About A.I. Chatbots', The New York Times (February 2023): https://www.nytimes.com/2023/02/08/technology/ai-chatbots-disinformation.html

such as instructions for self-harm.[8] Finally, in the telecommunications sector, GenAI can be used by mobile providers to filter spam text messages but it can also be used by fraudsters to create more convincing and tailored messages and content. We are already seeing increasingly targeted and effective scam and fraud attacks, such as voice clones created by GenAI tools which could be used to scam people over the phone by impersonating loved ones.[9]

[8] ''He Would Still Be Here': Man Dies by Suicide After Talking with AI Chatbot, Widow Says', Vice (March 2023): https://www.vice.com/en/article/pkadgm/man-dies-by-suicide-after-talking-with-ai-chatbot-widow-says

[9] 'That panicky call from a relative? It could be a thief using a voice clone, FTC warns', NPR (March 2023): https://www.npr.org/2023/03/22/1165448073/voice-clones-ai-scams-ftc

3. How we regulate services that use AI technologies

3.1 **As a technology neutral regulator, we regulate services and companies, regardless of what technology they use, which may include their use of AI.** We pay close attention to particular technologies used in some of our regulated regimes, for instance when a technology's use can support regulatory compliance, but we do not regulate the technology itself.

3.2 **Telecoms security:** Ofcom has a duty to seek to ensure that providers of public electronic communications networks and services comply with statutory requirements to take appropriate measures to identify, reduce and prepare for security risks. We have an interest in making sure that any use of AI technology to mitigate these risks (for example, the use of machine learning to scan networks for unusual activity) is effective. Where we suspect that this is not the case, we have relevant information-gathering, inspection and enforcement powers, and would work with telecoms providers, the National Cyber Security Centre and industry more generally to address any such risk. [10]

3.3 **News media plurality:** Ofcom has a statutory duty to review the UK's media ownership rules. One of the objectives of these rules is to prevent undue influence over the news we see by any one media owner. After our latest review of media ownership rules in 2021, we launched an ongoing programme of work to explore the role of online intermediaries in the news media ecosystem and their impacts on the distribution, curation, discovery and prioritisation of news. [11] [12] Algorithms and AI-driven recommender systems play a key role in determining the prominence and visibility of news content online and in doing so they can nudge users' choices and shape how news is accessed and consumed. Our ongoing work in this space will inform our regulatory approach to media plurality and any recommendations we may make to the Government for new remedies, for example to provide greater transparency over the design choices intermediaries make.

3.4 **Competition and consumer law**: Ofcom has powers which could apply to digital services. In particular the competition and consumer powers we hold concurrently with the Competition and Markets Authority. This means that we may have powers to investigate how the use of AI systems affect competition and consumer fairness outcomes in the communications sector.

3.5 **Misuse of telephone numbers and scams:** Our regulatory regime for communications providers allows us to set 'general conditions', which can include rules on the allocation and use of telephone numbers and making provisions to protect the interests of end-users of public electronic communications services.[13] For example, under our general conditions, where telephone numbers or services have been misused, including to facilitate scams, we can request that providers block access to those numbers or services.[14]

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[10] Sections 105M to 105V, Communications Act 2003

[11] 'The future of media plurality in the UK: Ofcom's report to the Secretary of State on the Media Ownership Rules and our next steps on media plurality', Ofcom (November 2021): https://www.ofcom.org.uk/__data/assets/pdf_file/0019/228124/statement-future-of-media-plurality.pdf

[12] 'Media plurality and online news', Ofcom (November 2022): https://www.ofcom.org.uk/research-and-data/multi-sector-research/media-plurality

[13] Sections 45, 51 and 58, Communications Act 2003

[14] General condition B4.4

3.6 **Online safety (forthcoming):** When the Online Safety Bill receives Royal Assent, in-scope services (for example, online user-to-user services, search engines and services including provider pornographic content) will need to consider if and how their use of algorithms could increase the risk of users encountering illegal and harmful content. This includes their use of AI-driven recommender systems. In-scope services will also need to take proportionate measures to mitigate the risk of users encountering illegal content and children encountering content that is harmful to them as part of their safety duties. Some of these measures may involve the use of AI, for example age estimation technology and content moderation systems that can be based on AI.

3.7 **Media literacy:** In addition to regulatory powers, Ofcom has the duty to promote media literacy, which we define as the ability to use, understand and create media and communications in a variety of contexts including online. When the Online Safety Bill receives Royal Assent, Ofcom will have expanded duties to heighten the public's awareness and understanding of ways in which they can protect themselves and others when using regulated services and encourage the development and use of technologies and systems for supporting users of regulated services to protect themselves and others. Ofcom can undertake these expanded duties by (a) pursuing media literacy activities and initiatives, (b) commissioning others to pursue activities and initiatives, (c) taking steps designed to encourage others to pursue activities and initiatives, and (d) making arrangements for research to be carried out. Ofcom is currently developing its understanding of the media literacy implications of future technologies, including GenAI, to prepare for future opportunities and risks that may arise.

4.An update on our work in relation to AI

4.1 Across our functions, we are considering the implications of AI for our work. This includes in relation to online safety, broadcasting, communications services and networks, cross-cutting futures research and media literacy. Below we provide an update on our work in these areas.

Online Safety

4.2 **As the forthcoming online safety regulator, Ofcom will be regulating services that are at the forefront of AI adoption.** Online services use AI in myriad ways, powering everything from recommender systems that rank content on user feeds, to content moderation systems that identify and remove harmful content, through to age estimation technology that seeks to prevent underage users from accessing adult material. Some online services are also beginning to deploy GenAI, such as chatbots that can engage in life-like conversations with their users (for example Snap's MyAI). These AI-based functionalities can help to improve the experience of users, as well as their safety.

4.3 **The adoption of AI by online services could also pose risks for users**. For example, depending on how they are designed, AI-driven recommender systems can amplify illegal and harmful content, in some cases creating 'rabbit hole' effects where users are shown increasingly extreme material over time.[15] Likewise, when deployed without sufficient safeguards, GenAI tools have the potential to serve up harmful content to their users, with known cases of GenAI providing instructions for self-harm and advice on smuggling illegal substances. [16] [17]

4.4 **The Online Safety Bill will introduce obligations for services to identify and mitigate risks such as these**. Services will have an obligation to undertake regular risk assessments. As part of these assessments, services will need to identify the risks associated with their use of algorithms. Services will also have a duty to use proportionate measures to mitigate the risks they have identified. Ofcom will support services to do so by issuing Guidance and Codes of Practice. Because it is technology neutral, the Online Safety Bill will capture many of the risks associated with new and emerging forms of AI, including GenAI applications and the content produced by those applications. For example, if a user creates content using a GenAI tool and uploads it to a regulated user-to-user service, that content will be regulated under the new regime, and services will have a duty to reduce the likelihood of users encountering it where it is illegal or harmful to children.

4.5 **The Online Safety Bill will also enable Ofcom to recommend that services use certain forms of AI to protect their users and comply with their safety duties.** However, there will

[15] 'Evaluating recommender systems in relation to illegal and harmful content', Ofcom (July 2023): https://www.ofcom.org.uk/research-and-data/online-research/evaluating-recommender-systems-in-relation-to-the-dissemination-of-illegal-and-harmful-content-in-the-uk
[16] ''He Would Still Be Here': Man Dies by Suicide After Talking with AI Chatbot, Widow Says', Vice (March 2023): https://www.vice.com/en/article/pkadgm/man-dies-by-suicide-after-talking-with-ai-chatbot-widow-says
[17] 'ChatGPT Gave Me Advice on How To Join a Cartel and Smuggle Cocaine Into Europe', Vice (February 2023): https://www.vice.com/en/article/v7vww9/chatgpt-drugs

be restrictions on Ofcom's ability to require the use of 'proactive technology', defined as technologies for content identification, behavioural identification and user profiling. The use of these technologies can have wide-ranging impacts and impose substantial costs on stakeholders. In light of this, Ofcom can only require the use of proactive technologies for compliance with certain duties. Before imposing such a requirement, in some cases Ofcom must give particular consideration to certain matters, including the degree of accuracy, effectiveness and lack of bias achieved by the technology in question.

4.6 **Ofcom will receive new information gathering powers that will enable us to request information from services about their use of AI,** shortly after the Online Safety Bill receives Royal Assent. This could include the performance of AI technologies as well as how they have been deployed and are governed. These powers can be used to support Ofcom in exercising its functions, including to assess a service's compliance with its safety duties. In preparing to take on and exercise these powers, Ofcom's tech teams have been developing their understanding of how to assess AI systems, including content moderation and recommender systems. We are carrying out several internal pilots to road test assessment techniques, which most recently has included trialling a method for assessing age estimation models that use facial images. Our work on AI assessments is strengthened by our close collaboration with DRCF partners, including a multi-year programme of work on these topics (for further details see Section 7 below).

4.7 **Ofcom has undertaken a significant amount of work to understand the risks and opportunities presented by AI in the context of online safety.** We have undertaken research to improve our understanding of the merits and limitations of different types of automated content moderation systems, and have investigated best practice in the use of hashing technology for the detection of known illegal and harmful visual media.[18] [19] [20] We have also undertaken research to understand the risks associated with recommender systems, as well as how those might be addressed. In the summer of 2023, Ofcom published a report that examined the different methods services could use to evaluate their recommender systems, including through the use of A/B tests, user surveys and so-called system 'debugging' exercises.[21] [22]

4.8 **More recently, Ofcom has begun to examine how services can address the harms associated with their use of GenAI.** Among the mitigations we are exploring are model audits, 'red team exercises', 'system cards' to enhance transparency for users, and 'machine unlearning' techniques, which involve amending GenAI models to mitigate the influence of certain data points that were included in their original training datasets. [23] [24] [25] We are also

[18] 'Automated Content Classification (ACC) Systems', Ofcom (January 2023): https://www.ofcom.org.uk/research-and-data/online-research/automated-content-classification-systems

[19] Hashing is an umbrella term for techniques to create a short identifier for files on a computer system. Such files can be images, videos, music, Word documents, executables, or any other file on a computer system. The identifiers are called hashes, or hash in singular.

[20] 'Overview of Perceptual Hashing Technology', Ofcom (November 2022): https://www.ofcom.org.uk/research-and-data/online-research/overview-of-perceptual-hashing-technology

[21] A/B testing refers to an experimentation process wherein two or more variables, in this case aspects of a recommender system, are tested against each other to determine which version performs better.

[22] 'Evaluating recommender systems in relation to illegal and harmful content', Ofcom (July 2023): https://www.ofcom.org.uk/research-and-data/online-research/evaluating-recommender-systems-in-relation-to-the-dissemination-of-illegal-and-harmful-content-in-the-uk

[23] Red-teaming refers to a simulated adversarial attempt to test/compromise a system/process to assess its effectiveness or resilience. Both OpenAI and Anthropic have conducted red-teaming exercises on their LLMs to help identify, measure and then reduce harms. See: https://www.anthropic.com/index/red-teaming-language-models-to-reduce-harms-methods-scaling-behaviors-and-lessons-learned

[24] System cards typically explain how AI systems operate and why they produce the outputs they do. They can also flag how systems should be used and maintained, as well as identify any risks associated with their use. An example is the system card produced by OpenAI for its GPT-4 system. See: https://cdn.openai.com/papers/gpt-4-system-card.pdf

[25] In June 2023 Google announced a Machine Unlearning Challenge to identify effective methods in this field. See: https://ai.googleblog.com/2023/06/announcing-first-machine-unlearning.html

researching methods to identify deepfakes and are engaging with standards organisations to understand how global standards are being developed on issues such as watermarking and provenance. The outcomes of this research will directly inform the development of our Guidance and Codes of Practice.

4.9 **We have also sought to understand internet users' adoption and attitudes towards GenAI**. We recently published a survey, undertaken by YouGov, to understand how UK internet users are interacting with popular GenAI models, as well as their views on how the technology could impact society.[26] The survey found that 58% of people agreed with the statement, "I am worried about the future impact of GenAI on society", versus 9% who disagreed. The survey also found that the most popular uses of GenAI are for chatting, finding information or content, and seeking advice, and that 63% of those aged under 25 had used a GenAI tool, as opposed to only 9% of those aged over 55.

Broadcasting

4.10 Ofcom's broadcast standards and content policy work seeks to ensure that audiences across TV, radio and on-demand services are protected from potentially harmful content and are well-served by the UK broadcasting sector. This includes ensuring audiences can enjoy a broad range of broadcast and online content across a range of providers.

4.11 **We are building our understanding of the potential impact of GenAI for UK broadcasters.** There have been widely publicised concerns around the potential impact of GenAI in the production sector globally.[27] We are engaging with public service broadcasters and other major broadcasters to understand how they, production companies, and platform partners are using GenAI, and the opportunities and challenges that GenAI developments might pose for the broadcasting sector. As part of this, we are listening to views about how Ofcom can respond to support the sector. One area of concern for broadcasters is in relation to intellectual property and copyright, and Ofcom is engaging with the Intellectual Property Office as it develops its code of practice on GenAI.

4.12 **AI-driven recommender systems can enhance or hinder the discoverability of UK content**. Personalised content recommendations can increase audience engagement, suggesting content that is more likely to be of interest to them and can help users to discover new UK content they might not have otherwise found. Depending on the optimisation metrics used by recommender systems, this enhanced audience experience can help to increase or decrease the diversity of content that users watch, therefore presenting potential challenges. Recommender systems can decrease the visibility of UK and public service content, leading people to filter bubbles of poor quality or increasingly inappropriate content. The draft Media Bill includes plans to introduce a new prominence regime for on-demand television so that public service content would be available and easy to find on designated TV platforms such as on smart TVs, set-top boxes and streaming sticks. We will continue to engage with Government as this legislation develops.

4.13 **Online intermediaries' recommender systems' lack of transparency is a particular concern for news plurality.** Although audiences value the range of news content that they have access to online, intermediaries increasingly play the role of gatekeepers, curating or

[26] 'Generative artificial intelligence poll: data tables', Generative artificial intelligence, Online safety open data, Ofcom (July 2023): https://www.ofcom.org.uk/research-and-data/data/opendata
[27] 'Hollywood writers fear losing work to AI', BBC (July 2023): https://www.bbc.co.uk/news/business-66289583

recommending news content to online audiences. People are often unaware of the choices being made on their behalf, for example, why certain stories are served to them or the degree of personalisation over news content that is possible. In November 2022, we published our view on the role online intermediaries play in the consumption of news content and how this affects people's news consumption.[28] Over the coming year, we will build on this work by consulting on proposals to safeguard media plurality ahead of bringing forward any recommendations to the Government by 2024.

4.14 **Synthetic media raises questions around maintaining standards compliance.** Ofcom published a 'Note to Broadcasters' that provided information for our licensees on how the use of synthetic media generated by GenAI is subject to the existing Rules set out in the Broadcasting Code.[29] We also advised our licensees to consider carefully whether their compliance processes need to be adapted or developed to account for the potential risks involved in the use of synthetic media to create broadcast content.

Communications Services and Networks

4.15 Ofcom's role in the regulation of networks and communications regime requires us to protect consumers from harm, to promote and protect competition, and to ensure that communications networks are secure and resilient. AI is particularly relevant to our work on cloud markets, scam calls and texts, and network security and resilience.

4.16 **The development of AI products is closely linked commercially to cloud services and cloud compute markets.** AI products generally rely on cloud infrastructure services, particularly for data storage and compute, meaning cloud providers may become the main channels through which businesses can access AI products. Ofcom is already undertaking a market study into cloud infrastructure services to explore whether competition in these markets is working well and whether any regulatory action is required. AI developments only serve to underscore the importance of cloud to many sectors of the economy today and likely to future innovations. While Ofcom's market study is not directly considering links to the AI market, Ofcom has been engaging with the Competition and Markets Authority as it conducts a separate initial review into foundation models, due to be published in September 2023.[30] Our cloud market study will be completed by 5 October 2023 and will include our decision on whether to refer the market for a Market Investigation which the CMA would take forward, and which could, for example, impose remedies. In our interim report in April 2023, we consulted on a proposal to refer the market for an Investigation and have been working closely with the CMA in the intervening months to ensure they are well placed to take any action as required.

4.17 **The use of GenAI in scam calls and texts is a recent development,** and these technologies have the potential to increase the sophistication of criminal activities, for example by increasing the ease with which personalised smishing messages can be created and shared, and by allowing for voice cloning to mimic the voices of people known to victims. [31] However, AI could also offer opportunities for scam messages and calls to be more

[28] Discussion Document: Media Plurality and Online News, (November 2022): https://www.ofcom.org.uk/__data/assets/pdf_file/0030/247548/discussion-media-plurality.pdf
[29] 'Note to Broadcasters: Synthetic media (including deepfakes) in broadcast programming', Ofcom (April 2023): https://www.ofcom.org.uk/__data/assets/pdf_file/0028/256339/Note-to-Broadcasters-Synthetic-media-including-deepfakes-.pdf
[30] 'AI Foundation Models: initial review', CMA (May 2023): https://www.gov.uk/cma-cases/ai-foundation-models-initial-review
[31] Smishing is a social engineering attack that uses fake text messages to trick the recipient into downloading malware, sharing sensitive information or transferring money.

accurately identified and blocked. For example, mobile provider EE uses AI firewall technology to review international calls and blocks those pretending to be based in the UK, halting up to one million international scam calls each day.[32]

4.18 **Ofcom has been working for several years to reduce unwanted calls**. However, this is very challenging work; the nature of the problem is changing, and new responses are constantly required. There has been a shift away from nuisance calls, with scam calls and scam texts being more prevalent now. In February 2022, we set out our approach which involves: disrupting scams through technical interventions; collaborating and sharing information more widely; and helping consumers avoid scams by raising awareness.[33] We are currently considering how Calling Line Identification authentication might be used to detect and block spoofed numbers more comprehensively than is currently the case, following our consultation on the subject in April 2023.[34]

4.19 **GenAI tools have the capacity to serve as cross-cutting enablers for online fraud**, resulting in harms likely to fall within the remit of the incoming online safety regime**.** GenAI offers online scammers the facility to create a broad range of seemingly authentic and credible content at lower cost and on a previously unprecedented scale.[35] This content could be delivered as scam messages, internet voice calls, video calls, user-generated content posts, boosted user-generated content posts (where the poster pays to algorithmically promote the visibility of their content) and paid-for adverts. Furthermore, at a time when companies, including mobile providers, increasingly use AI for customer service, GenAI can enable scammers to create networks of human-like chatbots, which after being trained on extensive datasets of human conversations, can effectively imitate real individuals and trusted entities like customer service representatives or bank employees.[36] [37] [38] There is also scope for scammers to use LLMs to create highly targeted and tailored content (for example, a professionally worded and detailed message from a financial adviser citing your personal circumstances and suggesting a bespoke investment offer) using publicly available information ingested from social media profiles.[39] Fraudsters could also use Generative Adversarial Network/machine learning techniques to produce impersonation scams by appropriating the identity and likeness of high profile individuals, for example a deepfake Martin Lewis investment video ad that was identified on Facebook in July 2023.[40] [41]

4.20 **AI can be used across the network security space but could also present security risks.** AI could have beneficial applications across network security, from improving energy efficiency

[32] 'EE takes a stand against scammers with latest international call-blocking technology", EE (August 2022): https://newsroom.ee.co.uk/ee-takes-a-stand-against-scammers-with-latest-international-call-blocking-technology/
[33] 'Tackling scam calls and texts: Ofcom's role and approach', Ofcom (February 2023): https://www.ofcom.org.uk/__data/assets/pdf_file/0018/232074/statement-tackling-scam-calls-and-texts.pdf
[34] 'Consultation: Calling Line Identification (CLI) authentication – a potential approach to detecting and blocking spoofed numbers', Ofcom (April 2023): https://www.ofcom.org.uk/consultations-and-statements/category-2/cli-authentication
[35] 'On high alert: The darker side of generative AI', Deloitte (summer 2023): https://www2.deloitte.com/xe/en/pages/about-deloitte/articles/swift-moves/on-high-alert-the-darker-side-of-generative-ai.html
[36] 'BT to slash workforce by up to 55,000 before 2030, with AI replacing 10,000 jobs', Sky news (May 2023): https://news.sky.com/story/bt-aims-to-slash-workforce-by-up-to-55-000-before-2030-12883383
[37] 'The Double-Sided Arrow of Generative AI in Digital Frauds', ASLIRI (July 2023): https://asliri.id/blog/the-double-sided-arrow-of-generative-ai-in-digital-frauds/
[38] 'Fighting fraud in the age of AI and automation', Q2 2023 Digital Trust & Safety Index, Sift (July 2023): Q2 2023 Digital Trust & Safety Index: Fighting fraud in the age of AI (sift.com)
[39] 'Apple Co-Founder says AI may make scams harder to spot', BBC (May 2023): https://www.bbc.co.uk/news/technology-65496150
[40] GANs are a form of deep learning that works by pitting two neural networks against one another: the first to generate an image, and the second to judge whether that output is realistic: https://www.gov.uk/government/publications/cdei-publishes-its-first-series-of-three-snapshot-papers-ethical-issues-in-ai/snapshot-paper-deepfakes-and-audiovisual-disinformation
[41] 'Martin Lewis felt 'sick' seeing deepfake scam ad on Facebook', BBC (July 2023): https://www.bbc.co.uk/news/uk-66130785

by managing power supplies to networks, to helping to detect malware attacks.[42] [43] However, there are also concerns that more advanced forms of AI, like GenAI, could be used to develop better malware or provide instructions on how to breach network security. Poorly developed GenAI models could also contribute to the risk of system outages, for example where source code for a GenAI model is inefficient in its use of energy or bandwidth, and widespread use of the code by applications leads to an overall resource shortage. Similarly, where GenAI is used to write code by copying available examples of code, any failures or inaccuracies could be reproduced into other systems and models.

4.21 We are tracking developments in how GenAI could be used to develop malicious tools and are exploring the implications for software. To support our understanding, we are engaging with regulated companies on how they are integrating GenAI into their systems. We are also involved in relevant standards bodies like the European Telecommunications Standards Institute (ETSI) and the International Organisation for Standardisation (ISO) who are developing standards on GenAI that might have relevance across Ofcom's remit.

4.22 **We have published a discussion paper on how personalised pricing might evolve in the communications sector and the potential implications for customers**.[44] Personalised pricing is the practice of charging customers different prices based on what the seller thinks they are prepared to pay. It is a sophisticated form of price discrimination. In the paper we explained how data and algorithms are giving firms the ability to personalise prices in more sophisticated ways. While we recognised the potential benefits of personalised pricing, we also explored a range of issues that personalised pricing could create relating to customer fairness. We expected that giving people the ability to compare prices effectively and some transparency of the process would be particularly important. Greater personalisation could also have implications for pricing outcomes and ensuring trust in the market overall.

Cross-cutting futures research

4.23 **As part of Ofcom's cross cutting strategic work, we are exploring the potential unexpected disruptions and developments that will fundamentally transform communications in the next ten years**. Within this work, we are exploring how technologies like AI (including rules-based systems, machine learning, GenAI and potential autonomous agents) could have an impact on and disrupt business models, consumers and Ofcom's sectors. The outcomes of this work will shape and inform the organisation's medium to long term planning, including our corporate strategy, sector specific priorities and horizon scanning agenda. We are also undertaking joint horizon scanning work with other regulators through the DRCF's 'Horizon Scanning and Emerging Tech' workstream, which remains an important part of the DRCF's programme of work.[45]

4.24 **We are exploring how we might use GenAI to support how we work.** We could make use of GenAI capabilities to help enhance our productivity. Deployed responsibly, GenAI tools could, for example, be used for the analysis and summarisation of large sets of documents, for signposting members of the public or regulated firms to the right guidance, or for

[42] 'Controlling energy use: the role of AI-based solutions', Analysys Mason (March 2023): https://www.analysysmason.com/research/content/perspectives/energy-saving-ai-rdns0/
[43] 'UB-SMART: UNIBERG's solution for Mobile Cell Energy Management', UNIBERG: Flyer_UB-SMART_UNIBERG_FINAL-2023.pdf
[44] 'Personalised pricing for communications: Making data work for consumers', Ofcom (August 2020): https://www.ofcom.org.uk/__data/assets/pdf_file/0033/199248/personalised-pricing-discussion.pdf
[45] 'DRCF 2023/24 Workplan', DRCF (April 2023): https://www.drcf.org.uk/__data/assets/pdf_file/0018/260712/DRCF-Workplan-2023-24.pdf

answering specific public queries more promptly. Each of these options requires careful consideration, however it is important that regulators such as Ofcom are alive to the possibilities of innovating with GenAI. As we explore these possibilities, we will continue to work closely through the DRCF to exchange learnings and build best practice.

Media literacy

4.25 Ofcom's media literacy work aims to equip the media literacy sector to be more effective in supporting users to use, understand and create media and communications in a variety of online contexts. It also seeks to encourage online platforms to do more to support media literacy on-platform and we will be publishing our draft principles for media literacy by design later this year. We also look to encourage the funding of more 'off-platform interventions' such as Ofcom's commissioned media literacy initiatives that are delivered in person.[46]

4.26 As part of that media literacy work, we are developing our understanding of the media literacy implications of future technology, enabling those working on media literacy and in industry to prepare for future opportunities and risks that may arise. The first in our discussion series has been published.[47] The next piece will focus on the media literacy implications of GenAI, exploring the skills users will need to critically engage with content created through GenAI. A discussion paper documenting our findings will be published in late 2023.

[46] Initiating pilot trials and campaigns: https://www.ofcom.org.uk/research-and-data/media-literacy-research/approach/initiate
[47] Media literacy discussion papers: https://www.ofcom.org.uk/research-and-data/media-literacy-research/discussion-papers

5. Our capabilities for regulating services that use AI

5.1 Ofcom has grown in recent years in preparation for our new duties as the Online Safety Regulator. This broadening of our resources and our remit has enabled us to invest in new skills and capabilities including in-house technical and data science expertise. This means we are well-placed to address the challenges posed by novel technologies, including AI, across all our sectors. It is one example of how we believe that our converged remit – across all the communications industries – gives us the critical mass and flexibility to adapt to new developments and stay on top of our duties. Our broad remit also means that we have the relationships and commercial understanding across the industry, from established UK players to the global tech platforms which increasingly dominate the value chain.

5.2 **We have established dedicated technical teams** made up of data science and engineering experts to inform our policymaking. Our experts specialise in technology issues associated with our regulatory regimes, including cyber security, satellite technology, telecoms infrastructure, TV and broadcast innovations, and online safety technology, such as content moderation and age verification systems. We have also recently recruited experts with direct experience of developing AI tools and wide-ranging experience relevant to AI drawn from previous roles in academia and industry. This includes individuals with experience of:

- Creating and using generative models to produce age-progressed images of missing individuals to aid re-identification
- Developing AI technologies including facial age estimation and fraud detection
- Evaluating and auditing machine learning solutions, including assessing performance, bias, explainability and robustness
- Developing generative models for expressive speech synthesis and to understand voice cloning

5.3 **We have always needed technical expertise to exercise our functions and perform our duties effectively**, including in spectrum technologies, security and telecoms infrastructure. We are now augmenting our existing technical expertise with additional expertise that will be required to support our new security duties, our forthcoming online safety duties, and more generally advise across Ofcom's policy areas as our sectors increasingly become digital and converged.

5.4 **We currently employ approximately 50 data science and machine learning experts in our data and technology teams**, including experts with previous experience in a range of technology firms and sectors. Our overall headcount of technology experts exceeds 100, and we are in the process of further recruitment to continue to strengthen our technology expertise, including in relation to AI.

5.5 **Our technical teams conduct technical research to support our knowledge and expertise.** Our Trust and Safety Technology team (which focuses on online safety issues) has published technical reports on several subjects, including hashing and automated content classifiers

for live streaming. [48] [49] This team has also developed prototypes of watermarking tools to demonstrate the different ways that synthetic media could be detected. Ofcom also recently commissioned Pattrn.AI to investigate best practice methods for evaluating the impact of recommender systems.[50] They have also built machine learning models that help us to understand and interrogate the inner workings of different technologies. This work means that our in-house expertise is robust and remains relevant to external developments.

5.6 **We are also building strategic partnerships with academic institutions.** We proactively reach out to academic research groups and projects to engage in discussions on topics relevant to our regulatory functions, including on AI and machine learning. These engagements help academics better understand and address specific challenges identified by our in-house experts. We also partner with relevant academic research projects, such as the National Research Centre on Privacy, Harm Reduction and Adversarial Influence Online (REPHRAIN).[51] We benefit from these activities through the immediate knowledge exchange with world-leading scholars and in influencing their future research activities.

5.7 **We are developing analytical tools to help us fulfil our statutory functions.** We use technology for many things like transcribing broadcast content or analysing complaints and we are developing tools for parsing consultation documents. We also use AI and data science to support research projects, for example helping us to identify the critical factors that affect broadband speeds. We are exploring ways that we might use AI to help us regulate internet services under our expected online safety functions.

5.8 **Our Data Strategy will develop data skills across Ofcom.** By developing a Data Culture and a Data Literacy programme, we will increase knowledge and understanding of AI across Ofcom, including both the opportunities and risks that AI technology present. For members of our Data Profession, which includes data scientists, machine learning experts and AI developers, our career development programme looks to support colleagues throughout every step of their Ofcom career journey with targeted learning and development that links to their specialism. Ofcom's Data Profession also has a regular communications and engagement programme to enable our data specialists to share best practice, develop skills through hackathons and arrange secondments and cross-team placements to assist knowledge sharing.

[48] 'Overview of perceptual hashing technology', Ofcom (November 2022): https://www.ofcom.org.uk/research-and-data/online-research/overview-of-perceptual-hashing-technology
[49] 'Automated content classification systems', Ofcom (January 2023): https://www.ofcom.org.uk/research-and-data/online-research/automated-content-classification-systems
[50] 'Evaluating recommender systems in relation to illegal and harmful content', Ofcom (July 2023): https://www.ofcom.org.uk/research-and-data/online-research/evaluating-recommender-systems-in-relation-to-the-dissemination-of-illegal-and-harmful-content-in-the-uk
[51] National Research Centre on Privacy, Harm Reduction and Adversarial Influence Online: https://www.rephrain.ac.uk/

6.Our views on proposals set out by the Government in its AI White Paper

6.1 **We support the Government's principles-based approach to regulating AI,** as set out in its AI White Paper in March 2023.[52] A non-statutory framework will allow scope for innovation and iteration, something that is clearly essential given the speed of change and huge opportunities that AI can bring to UK consumers and to innovation and investment. Rather than regulating the technology itself, we agree that the focus should be on considering specific use cases and desired outcomes and risks, where necessary on a sector-specific basis.

6.2 **Ofcom is already at the cutting edge of these challenges as we prepare to regulate one of the main sets of use cases of AI – namely social media, search, gaming and porn services.** Once the Online Safety Bill achieves Royal Assent, we will start to consult on our first Codes within weeks. An important task for our regulation will be to adapt as AI, in particular, creates new risks and opportunities for mitigating harm online. The online safety regime is among the first in the world and gives the UK the opportunity to help set the agenda in how services are regulated in a way that continues to foster innovation.

6.3 **The Government's proposed non-statutory approach also provides flexibility, and should therefore help avoid risk of overlap, duplication, and conflict with existing statutory regulatory regimes**, which could lead to confusion among our regulated services over which rules take precedence. The emergence of advanced forms of AI underscores the importance of the Government's proposals. Once fully established, the non-statutory framework and its associated central functions of risk monitoring and horizon scanning would enable regulators and the Government to work together in responding to other innovations of similar significance.

6.4 **In addition to our work on online safety, we have begun to develop a blueprint for the implementation of the proposed principles within Ofcom.** Our plan is still in development but, among other activities, we expect it to encompass: upskilling colleagues in the AI principles; establishing a standardised procedure for monitoring AI risks and opportunities in our sectors; and conducting standalone research and policy activity on AI applications that have implications across Ofcom's regimes . Ensuring we have access to robust data and information will be key to building our understanding of the risks and opportunities of AI, and we hope to work with services and the Government to enable this. We look forward to developing these plans further once the Government has provided a response to its White Paper consultation.

6.5 **In such a fast-moving field we believe that a Government-led central function is necessary to support the continued development and adaptation of AI policy,** as well as to monitor cross-sectoral risks, undertake horizon scanning, and to maintain and manage global political and security partnerships. Some of the most pressing societal concerns need new policy

[52] 'AI regulation: a pro-innovation approach', Office for AI (March 2023): https://www.gov.uk/government/publications/ai-regulation-a-pro-innovation-approach

responses that are beyond existing regulatory remits – for example new international agreements, security or defence cooperation, public expenditure or new legislation. We also welcome the Government's commitment not to duplicate regulators' existing work, and we look forward to working closely with the Government as it develops its approach, including for example, sharing research on risks.

6.6 **Implementing the framework will require strong cooperation between regulators and the Government, and also amongst regulators,** including through the DRCF, across the wider UK regulatory landscape and internationally. Such cooperation can also ensure we respond quickly to emerging issues (for further details see Section 7 below). The DRCF has a key role to play in continuing to drive cross-cutting regulatory work and solutions. Some examples include developing best practice in auditing and procuring AI systems, joining up and sharing horizon scanning research, and exploring how to deploy AI to make regulators more efficient.

6.7 **The DRCF member regulators have an important role to play in supporting AI innovation,** including by exploring cross-regulatory advisory services to help innovators develop safe and trustworthy new AI products and services. There are a range of different approaches to advice services already in existence across UK regulators, such as sandboxes. Through the DRCF's 'Enabling Innovation' workstream, the DRCF is carrying out research into how a multi-agency advice service, which would enable interaction with multiple regulators on a single issue, could best be designed to suit the needs of digital innovators. This project, made possible by a grant from the Regulators' Pioneer Fund launched by the former Department for Business, Energy and Industrial Strategy, concluded at the end of August 2023.[53] The DRCF is currently working closely with the Government to consider next steps, in light of the recommendations in the Vallance Review and the Government's AI White Paper on proposals for a cross-regulatory AI sandbox.

6.8 **The DRCF members jointly support the Government's AI White Paper.** In a public response to the Government's consultation on its AI white paper, the DRCF member regulators set out their joint support for the AI White Paper, and in particular agreed with the Government regarding the need for close coordination between regulators as the member regulators consider the AI principles, build capabilities and technical knowledge, and identify cross-cutting issues across the AI framework.[54]

[53] 'Enabling innovation – piloting a multi-agency advice service for digital innovators', Projects selected for the Regulators' Pioneer Fund (2022). Department for Business, Energy & Industrial Strategy (November 2022): https://www.gov.uk/government/publications/projects-selected-for-the-regulators-pioneer-fund/projects-selected-for-the-regulators-pioneer-fund-2022

[54] 'Digital Regulation Cooperation Forum (DRCF) - Response to the Government's White Paper - 'A Pro-Innovation Approach to AI Regulation', DRCF (July 2023): https://www.drcf.org.uk/__data/assets/pdf_file/0023/263534/Digital-Regulation-Cooperation-Forum-AI-White-Paper-Submission-.pdf

7. Our engagement and collaboration on AI

7.1 **Ofcom's strong partnerships and engagement, both nationally and internationally, are helping us build expertise and enable effective, coherent approaches to regulating AI**. Ofcom is a member of the DRCF. First established in June 2020, the DRCF brings together four UK regulators tasked with regulating digital services to collectively drive greater regulatory cooperation and deliver coherent approaches to digital regulation. Its members are Ofcom, the Competition and Markets Authority (CMA), the Information Commissioner's Office (ICO) and the Financial Conduct Authority (FCA). As previously highlighted, the DRCF has multi-year programmes of work on algorithmic processing, audits and AI governance, as well as a more recent focus on GenAI. We also provide an update on our work on AI through international engagement and partnerships.

7.2 **The DRCF has worked on algorithmic processing, audits and AI governance since 2021.** Understanding how to support the use of algorithmic processing in a way that promotes their benefits and mitigates their risks is a common aim for all DRCF members. Since 2021, the DRCF has joined up thinking on algorithms and AI across its members. Highlights include: papers published during 2022 on the benefits and harms posed by algorithmic systems and on the merits and limitations of algorithmic auditing techniques; and a report looking at best practice in the procurement of algorithmic systems, which was published in 2023. [55] [56] [57]

7.3 **This year, the DRCF has committed to continuing this work.** Among other activities, the DRCF members will examine the key tenets of fairness in algorithmic decision-making; examine the nature and make-up of the market of third-party auditing firms; and collaborate in the implementation of the Government's AI framework, ensuring coherence in how we apply the new principles. The DRCF has also committed to continuing research and work examining the implications of GenAI specifically for our sectors and regulatory regimes.[58]

7.4 **The DRCF is engaging with the Government on its AI White Paper** and submitted a response to its consultation, as set out in Section 6 above.

7.5 **As well as working with other regulators via the DRCF, Ofcom is closely monitoring international developments in AI,** with particular attention being paid to burgeoning AI governance frameworks and international AI collaboration. Through our monitoring and engagement, we gain a greater understanding of how the UK's approach to AI regulation may be influenced by other nascent regulatory regimes and how any global AI rules that emerge through international consensus will inform the scale and nature of the risks that AI technologies might pose to the sectors Ofcom regulates .

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[55] 'The benefits and harms of algorithms: a shared perspective from the four digital regulators', DRCF (April 2022): https://www.drcf.org.uk/__data/assets/pdf_file/0022/260644/The-benefits-and-harms-of-algorithms-a-shared-perspective-from-the-four-digital-regulators.pdf

[56] 'Auditing algorithms: the existing landscape, role of regulators and future outlook', DRCF (April 2022): https://www.drcf.org.uk/__data/assets/pdf_file/0022/260680/Auditing-algorithms-the-existing-landscape,-role-of-regulators-and-future-outlook.pdf

[57] Details in Box B, p.12 of the 'DRCF 2022/23 Annual Report', DRCF (April 2023): https://www.drcf.org.uk/__data/assets/pdf_file/0017/260702/DRCF-Annual-Report-2022-23.pdf

[58] 'Maximising the benefits of Generative AI for the digital economy', DRCF (July 2023): https://www.drcf.org.uk/publications/blogs/maximising-the-benefits-of-generative-ai-for-the-digital-economy

7.6 Our International Team represents Ofcom at a number of international fora, regulator networks, and expert groups where discussions are increasingly centring on AI and its impact on the sectors that Ofcom regulates. We set out below an overview of our international engagement on AI to date:

- Ofcom is a founding member of the Global Online Safety Regulators Network (GOSRN), launched in November 2022. This Network currently brings together regulators from Australia, Ireland, Fiji, South Africa and South Korea, as well as observers from Canada, New Zealand and Germany, to share insights and experience on online safety issues. We plan to engage with GOSRN on AI over the coming year, collaborating to understand the shared risks and opportunities that AI technologies pose to our work as online safety regulators and to leverage technical expertise across the GOSRN members.
- We are a member of the European Platform of Regulatory Authorities (EPRA) AI Roundtable, where we regularly engage with audio-visual regulators from the wider European region on the use of AI tools in broadcasting regulation, as well as the impact that AI technologies are having on the broadcasting sector.
- We have representation on a Council of Europe expert committee that is currently developing best practice guidelines for the use of AI in journalism, where a particular focus is being paid to GenAI.
- We engage in frequent dialogue with our counterparts in the Government, including the Office for AI, the Department for Science, Innovation and Technology (DSIT) and the Foreign, Commonwealth and Development Office (FCDO), sharing information on the latest international AI governance developments and how they might affect the sectors that Ofcom regulates.
- We hold frequent engagement with international stakeholders and regulatory counterparts within the context of online safety focused on GenAI. This has included bilateral engagements with regulators, civil society and policymakers from Australia, New Zealand, the US, Canada, Europe and Singapore. We have also engaged in multilateral spaces like the Organisation for Economic Co-operation and Development (OECD) and the United Nations (UN). Both our bilateral and multilateral engagements on GenAI have demonstrated the critical need for Ofcom to be cooperating and collaborating where possible with international stakeholders on issues of policy, technology and possibilities for alignment.