Ofcom Spectrum Advisory Board

Annual Report 2024

Report

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Contents

Section

Annex

Foreword from OSAB Chair

Radio spectrum is a vital resource. It is not only key for many existing products and services, it is also an enabler for innovation and growth. This national asset underpins numerous segments of UK industry and is the foundation upon which many existing and aspiring businesses are built; hence it is an integral component to national prosperity. As such, diligent stewardship of this finite resource is critical to ensure that it is used effectively and efficiently. This role falls to Ofcom. OSAB members can be called upon to assist Ofcom by providing expert insight on a huge range of spectrum related topics.

I would like to thank the OSAB board members for their valuable and considered input throughout 2024. The wide-ranging insights from industry (operator and vendor), academia and government affiliated OSAB members spanned technical, economic and policy perspectives. Use of QoS to improve spectrum utilisation, Direct to device (D2D), neutral hosts and Ofcom's plan of work were among the key topics covered this year. I would also like to acknowledge the fantastic support that the Ofcom spectrum team provides to OSAB, providing timely pre-read material to ensure that we maximise the productivity of OSAB meetings.

OSAB is not a static organisation, its board members are appointed for fixed term periods. I would like to thank our departing OSAB members Peter Pitsch and Raj Sivalingam for their years of committed service.

Recent developments and convergence in space, mobile, telemetry and Wi-Fi technologies together with the growth of connected devices will continue to drive demand for spectrum. Hence, I look forward to working with OSAB and Ofcom on a new range of important topics in the coming year.

Gavin Young

Foreword from the Spectrum Group Director

The Ofcom Spectrum Advisory Board (OSAB) continues to provide valuable independent advice to Ofcom as we navigate an increasingly complex and dynamic spectrum landscape.

Over the past year, OSAB offered perspectives on the technical, regulatory and commercial implications of Quality of Service (QoS) and Quality of Experience (QoE) as potential metrics to improve efficiency of spectrum utilisation. Members also discussed the market development and spectrum management challenges of direct-to-device (D2D) services in the UK; and examined the future role of neutral hosts in supporting mobile coverage and capacity including their potential impact on future network deployment. The Board also provided input on Ofcom's plan of work for the year ahead.

This year, we welcome several new members to the Board with diverse experience that complements that of existing members. Their contributions provided significant value, and I look forward to their continued engagement. I would also like to extend my sincere thanks to the outgoing members for their thoughtful contributions during their tenure.

The collaboration between Ofcom and OSAB is essential to help us deliver our remit effectively. I am grateful for the Board's continued commitment and the depth of expertise it brings to our work. We look forward to building on this partnership as we address the spectrum management challenges and opportunities ahead.

David Willis

1. Overview

Background

1.1 The Ofcom Spectrum Advisory Board (OSAB) was established on 19 May 2004 to provide independent advice to Ofcom on strategic spectrum management issues. OSAB provides Ofcom with:

a) A rapid way to test new ideas across a wide range of experts;

b) A means to identify issues that are beyond Ofcom's regulatory "highlights"; and

c) A demonstration of Ofcom's commitment to consult in an open and collaborative manner.

Organisational updates

1.2 This year Peter Pitsch and Raj Sivalingam stepped down from the board and we wish to thank Peter and Raj for their efforts and contributions to OSAB.

1.3 We welcome Philip Kalmus, Graham Louth and Kirsty McBeath to OSAB. Their biographies can be found in Annex A2. OSAB Membership.

Annual Report

1.4 This document reports on OSAB activity in 2024. It provides highlights of discussions throughout the year and its content is based on minutes taken during the OSAB meetings.

Work programme for 2024

1.5 OSAB is responsible for agreeing its own work programme. During 2024, the discussions were primarily focused on the following topics:

a) Use of QoS to improve efficiency of spectrum utilisation

b) Market developments for D2D mobile services

c) The future role of neutral hosts in supporting mobile coverage and capacity

d) Initial spectrum considerations towards the development of Ofcom's plan of work

1.6 OSAB's membership spans a wide range of sectors and backgrounds (academia, industry, government, regulatory). Members' perspectives form an important part of the session. Round-the-table exchanges about developments in relevant sectors provide useful insights and help inform our work.

Future meetings

1.7 OSAB sets its agenda from meeting to meeting depending on progress made in identified areas of interest, time constraints, and prominence of emerging topics. It deliberately does not plan a year ahead to allow for flexibility and responsiveness to development(s) in the telecommunications sector.

1.8 To ensure OSAB members can provide the most valuable input, whilst recognising the workload expected from them should remain manageable, OSAB meetings are now being held three times per year for a 2.5-hour duration with a small amount of pre-reading expected.

2. Highlights of OSAB Discussions

Use of QoS to improve efficiency of spectrum utilisation

1.9 Ericsson's Mischa Dohler and Vodafone's Gavin Young delivered a presentation on how Quality of Service (QoS) can be used to improve the efficiency of spectrum utilisation, noting the distinction between Quality of Service, which focuses on dynamic bandwidth allocation, and Quality of Experience (QoE), which describes the end user's subjective experience of the allocated bandwidth.

1.10 Presenters noted that Ofcom's Net Neutrality guidance has rules to ensure QoS is not used to provide unfair commercial advantages between different services.

1.11 Members discussed how services are classified for QoS prioritisation, particularly in 5G networks which use QoS Identifiers (5Qi), Service Level Agreements (SLA), and network slicing to allocate bandwidth to a given service.

1.12 It was noted that while enterprise data network applications are technically similar to internet applications, they are not subjected to Net Neutrality in the same way. Instead, applications are categorised into "buckets" based on bandwidth and latency. The role of operating systems in defining these buckets was discussed, with members agreeing that traffic type should be the primary determinant due to concerns about the influence of operating systems in shaping classification requirements.

1.13 On the links between QoS and QoE, members explained that QoS to QoE mapping was an active area of research. OSAB emphasised the need for a simple metric or approach to QoS and QoE to guide and assess the effectiveness of policy. While designing such a metric may be complex, it was agreed that a pragmatic approach is necessary to balance innovation and economic benefits.

1.14 Members debated whether QoE should take precedence over technical QoS requirements. While improving user experience was seen as a priority, the difficulty of quantifying and measuring QoE made QoS a more viable focus for policymakers and carriers.

1.15 There was also consensus on encouraging smoother handovers between 3GPP and Wi-Fi, with Eduroam cited as an example of how public Wi-Fi enhances internet access quality rather than diminishing the value of mobile.

Market developments for direct to device mobile services

1.16 Ofcom colleagues introduced direct-to-device (D2D), noting that while OSAB first discussed this in a meeting 18 months prior, the market and regulatory interest have significantly developed since the previous discussion.

1.17 OSAB members discussed the benefits of D2D for the UK, highlighting its potential as a "public good", particularly in providing resilience to the UK's communication infrastructure during emergency events.

1.18 Ofcom colleagues noted that rural coverage in the UK is less of a challenge compared to the US and other countries but stated that market interest is still strong, with key questions around whether the primary value lies in network resilience, universal access to emergency services, or other use cases such as industrial Internet of Things (IoT). Members noted that beyond the high value of initial connectivity, particularly for emergency services, the incremental value of D2D diminishes.

1.19 OSAB members encouraged the development of a flexible regulatory framework to support innovation. They also emphasised the importance of harmonisation, especially with Europe, given that satellites cross national borders and increased harmonisation (with the US for example) would make the service more valuable. OSAB advised Ofcom to monitor the major market movers such as Apple/Globalstar and SpaceX (and possibly Kuiper), noting that they each offer different services.

1.20 Additional considerations included the role of high-altitude platforms (HAPs) in emergency coverage, the potential impact of EU's IRIS programme on UK spectrum allocation, and whether satellite operators could use mobile spectrum without MNO support. While local access licences allow small users to use spectrum in areas where MNO spectrum is underutilised, one member thought that it would be difficult to implement due to handset sizes and omnidirectional antenna beams.

Ofcom Consultation: Enabling satellite direct to device services in Mobile spectrum bands

In March 2025, we set out proposals to authorise the use of spectrum bands used by the UK's Mobile Network Operators (MNOs) for satellite Direct to Device (D2D) services.

We consider that enabling these services in the UK could improve connectivity for consumers and businesses, particularly in remote areas; support investment; and open up new opportunities for MNOs (via satellite communications) to use their licensed spectrum holdings more intensively.

The consultation can be found here.

The future role of neutral hosts in supporting mobile coverage and capacity

1.21 The Wireless Infrastructure Group's (WIG) Alastair Davidson delivered a presentation on neutral host business models. The presentation covered the long-term nature of infrastructure investments which require certainty in planning permission, leasing, and spectrum access; and different deployment models such as active and passive infrastructure sharing.

1.22 The board discussed the usefulness of sharing in certain circumstances or locations where the deployment of mobile networks is not viable, whether for economic or competition

reasons. It was noted that neutral host small cell networks in urban areas have yet to gain significant traction.

1.23 Open access and permitted development rights were flagged as crucial for improving neutral host deployment, noting that there are regulations in place to prevent excessive infrastructure duplication and promote wholesale access. Members said that liberalising spectrum further, particularly loosening Shared Access restrictions, could encourage investment.

1.24 OSAB discussed the role of competition among neutral hosts in preventing monopolistic tendencies. While private networks are an emerging market, they should not be conflated with neutral hosts.

1.25 Regarding technological developments, OSAB members said that common standards and interoperability requirements would facilitate progress, citing a trend in the integration of 3GPP and Wi-Fi standards to achieve seamless indoor handover.

1.26 OSAB discussed the impact of the Telecoms Security Act (TSA) on neutral hosts. The board agreed that whilst this was still an area of debate, it was not yet seen as a significant challenge. However, over time, MNOs may impose more requirements onto neutral hosts which may raise hurdles for new entrants.

Initial spectrum considerations towards the development of Ofcom's plan of work

1.27 Ofcom colleagues delivered a presentation on initial considerations regarding the plan of work for the year to come with broad agreement from OSAB on the policy priorities described.

International engagement

1.28 OSAB discussed the role of the UK globally, emphasising the need to engage with emerging nations outside of big conferences to understand their perspective and needs, especially those with sizeable markets. On innovative spectrum policies like sharing in the upper 6 GHz band, members said that demonstrating the feasibility of spectrum sharing was key to getting international backing.

Spectrum sharing and management

1.29 Ofcom colleagues highlighted key challenges in spectrum management including the need to provide regulatory certainty, as well as securing international consensus to create economies of scale. It was emphasised that the future of spectrum management revolved around sharing rather than the traditional approach of clearing spectrum and holding big auctions.

1.30 OSAB members noted that additional studies and a possible sandbox approach would be useful to explore the feasibility of sharing in the 4-5 GHz, 7 GHz and 15 GHz bands. Some members also flagged the necessity to consider mobile network interference to military and emergency services in adjacent bands.

1.31 Members debated on the timing of making spectrum available in the upper 6 GHz band, highlighting that the demand for this spectrum was uncertain. However, it was noted that

delaying spectrum decisions could hinder market diversity by prioritising industry considerations over business needs, particularly in smaller communities that cannot rely on MNOs.

1.32 Further discussions took place on neutral host solutions for coverage in venues, licensing for large-scale drone operations, and railway coverage.

1.33 OSAB members discussed the importance and challenges of seamless spectrum usage and network handover, emphasising the importance of multi-technology access in the development of 6G standards.

1.34 Members suggested that regulatory tools could improve indoor connectivity by requiring a portion of Wi-Fi capacity to remain open. However, they also noted legal concerns may arise from network administrators regarding liability for potential misuse.

Metrics and data

1.35 OSAB discussed the importance of having clear metrics to measure QoE noting the shift towards measuring signal quality and actual data throughout rather than just signal strength.

1.36 Some members noted that empirical spectrum measurement data should be considered for multi-technology access to spectrum to determine the optimum type of network depending on setting.

AI and data-driven platforms

1.37 OSAB discussed the potential of AI and data driven platforms in spectrum management noting that AI had significant potential, but there remain challenges regarding its use to enable increasingly agile spectrum management. Additionally, AI's growing role in helping sectors optimise their spectrum use was acknowledged as a key area of development.

Future of TV distribution

1.38 OSAB agreed that the options identified in Ofcom's report on Future of Digital Terrestrial Television were appropriate and that the spectrum currently used for TV broadcasting was highly suited for high power applications as well as other use cases.

Energy efficiency and environmental impact

1.39 Members discussed the energy parameters used by different technologies, noting a lack of comprehensive metrics. Members noted the tradeoffs of smaller cells which use less power individually but are more costly to deploy. s.

A1. OSAB Terms of Reference

Roles and Responsibilities

A1.1 Section 3 of the Communications Act, 2003 requires Ofcom to secure optimal use of the radio spectrum taking account of the different needs and interests of all users.

A1.2 The Ofcom Spectrum Advisory Board was established by Ofcom on 19 May 2004 and is a continuation of a group originally established by the Government in the 1990s to advise on wireless and which transferred to Ofcom with the Radiocommunications Agency.

A1.3 The role of OSAB is to provide independent, strategic advice to Ofcom on matters that directly, or indirectly, have a bearing on policy issues to do with future communications architectures; access methods; physical layer technologies; and spectrum services and applications. The provision of independent strategic advice will help Ofcom to carry out its remit.

A1.4 In formulating its advice, OSAB is to consider the future communications landscape from technological, economic, and societal perspectives, consonant with Ofcom's statutory duty to further the interests of citizens in relation to communications matters.

A1.5 In particular, OSAB is to advise on:

a) Ofcom's spectrum strategy, major UK national allocation decisions, spectrum management, and the application of spectrum pricing and trading

b) Issues that are currently "beyond Ofcom's headlights", to which Ofcom should start to give attention

c) New communications technologies

d) New means of managing the radio spectrum and their implications for Ofcom

e) Whether Ofcom's current and developing policy stance is appropriate and where new policy might be needed

A1.6 The OSAB may also be asked to advise on:

a) The extent to which future wireless and fixed communications infrastructure and services may be complementary or compete with one another

b) New and novel technologies

c) Emerging uses of spectrum in various sectors, for example, transport, healthcare, and scientific research

d) Ways to measure and assess the effectiveness of spectrum management policies

e) The development of market-led initiatives

f) The balance between licence and licence exempt spectrum

g) The stimulation of innovation through spectrum policy

h) Trends in international relations

i) Ways that spectrum policy could be used to further the interests of the citizen and consumer.

Membership

A1.7 Members of OSAB should be drawn from a mix of commercial, academic, and consulting backgrounds, in order to address topics in a multidisciplinary manner, and to advise Ofcom on matters of strategic significance in such areas as future communications architectures, access methods, physical layer technologies, spectrum, services and applications.

A1.8 Membership of OSAB will include ex-officio members from His Majesty's Government and relevant experts who work for Ofcom; such ex-officio members participate fully in discussions but reserve the right to abstain from agreement on substantive matters. All members shall be appointed by Ofcom, following the advice of the Group Director of Spectrum. The Group Director of Spectrum also seeks the approval of the Ofcom Chief Executive for the appointments.

A1.9 OSAB shall have a quorum of 6 members, one of whom must be the Group Director, Spectrum Group or their designated Alternate and excluding ex-officio members. Members attendance through telephone or video link is acceptable for the purposes of determining a quorum.

Conduct of Meetings

A1.10 An independent member (not an employee of Ofcom) will be appointed by Ofcom to chair OSAB meetings.

A1.11 OSAB shall meet four times per annum. Ad-hoc meetings of OSAB can be arranged, if necessary, with the agreement of the Chair.

A1.12 Where the Chair of OSAB considers it appropriate, matters may be considered in between meetings by email.

A1.13 Papers shall be circulated at least 3 working days before each OSAB meeting. Extensions to this will be on an exceptional basis and must be agreed by the Chair.

A1.14 To avoid any conflict of interest, members of OSAB will not have access to confidential information pertaining to Ofcom decisions affecting specific companies. This does not however preclude the discussion by members of potential Ofcom policies.

A1.15 Persons other than Members are permitted to attend meetings for particular items if the Chair of OSAB agrees.

A1.16 OSAB meetings will be supported by a Meeting Secretary and minutes and an action log will be prepared after each meeting.

A1.17 The Terms of Reference shall be reviewed periodically, as, and when required by Ofcom. Any amendments shall be approved by the Ofcom Chief Executive, usually via the Ofcom Policy Management Board (PMB).

A2. OSAB Membership

External Members

Gavin Young (Chair)

Gavin's current role is as Head of the Fixed Access Centre of Excellence within Vodafone. He is responsible within Vodafone Group for the fixed broadband access strategy, architecture, and deployment practices across the 17 countries where Vodafone currently has fixed access assets.

Gavin was previously Head of Strategy and Planning at Cable & Wireless Worldwide, leading a team of architects responsible for the technology architecture and strategy. He had previously worked at Bulldog Communications (later acquired by C&W Worldwide) where he held a variety of responsibilities from product development through to network operations and CTO. Prior to that Gavin led the Access Architecture & Design team at BT.

Gavin was a founding director of the Broadband Forum where he was overall Technical Chair for twelve years. In addition, he has been co-chair of the UK21CN consultation's Broadband Group, chair of the UK NICC's DSL Task Group and vice-chair of the NICC Ethernet Access Task Group. Gavin also serves on the IET (Institution of Engineering and Technology) Communications Policy Panel, the Ofcom Spectrum Advisory Board (OSAB) and the Broadband Forum's executive advisory board. Gavin is a member of the IEEE, Fellow of the IET and Distinguished Fellow of the Broadband Forum.

Professor Mischa Dohler

Mischa Dohler is vice president of emerging technologies at Ericsson in the Silicon Valley. He is a Fellow of the IEE, the Royal Academy of Engineering, the Royal Society of Arts (RSA), the Institution of Engineering and Technology (IET); and a Distinguished Member of Harvard Square Leaders Excellence. He is a serial entrepreneur; composer and pianist with five albums on Spotify/iTunes; and fluent in six languages. He acts as policy advisor on issues related to digital, skills and education. He has had coverage by national and international press and media.

He is a frequent keynote, panel, and tutorial speaker, and has received numerous awards. He has pioneered several research fields, contributed to numerous wireless broadbands, IoT/M2M and cyber security standards, holds a dozen patents, organised and chaired numerous conferences, was the Editor-in-Chief of two journals, has more than 200 highly cited publications, and authored several books.

He was the Director of the Centre for Telecommunications Research at King's from 2014-2018. He is the co-founder of the Smart Cities pioneering company Worldsensing, where he was CTO from 2008-2014. He also worked as a Senior Researcher at Orange/France Telecom from 2005-2008.

Wassim Chourbaji

Wassim Chourbaji is Qualcomm's Senior Vice President and Head of Government Affairs for Europe, the Middle East, and Africa. He oversees Qualcomm's public policy, regulatory affairs, and senior government relations in the region. Mr Chourbaji leads a senior team dealing with innovation, 5G,

intellectual property, digital economy, spectrum, standardisation, data protection and anti-trust policy. Mr Chourbaji studied engineering and mathematics.

Rosalind Singleton

Rosalind Singleton is a CEO, board chair, NED, advisor, and investor with over 30 years of experience in the technology sector. She is the CEO of Spring Fibre, an FTTH start up and the Chair of the Telecoms Supply Chain Diversification Advisory Council. The Council represents an opportunity to provide independent challenges and advice to the government in policy development and act as a voice for the industry on the topic of 5G supply chain diversification.

For the last five years Rosalind has been an active angel investor and mentor and has led several deals, focussing on tech businesses with a female founder. She is a member of the Angel Academe Advisory Board.

Rosalind joined UK Broadband in 2013 and was Managing Director from 2017 until it integrated into its parent company in 2019 following its delivery of the ThreeBroadband 5G launch network. She has previously held senior roles at BT Openreach, Cable and Wireless, Vodafone, various VNOs, and other international operators from start-ups to incumbents.

Rosalind is a member of the UK Government's Telecoms Supply Chain Diversification Advisory Council and Ofcom's Spectrum Advisory Board. She is an Independent NED on the board of Alphawave IP (Internet Protocol) Group PLC, a silicon IP business providing high speed connectivity solutions for global large an hyperscale customers.

Peter Hadinger

Peter Hadinger is the Chief Technology Officer at Inmarsat. Peter and his high calibre engineering team are developing next generation technologies and satellite infrastructure that will enable innovative connectivity services and solutions across land, sea and in the air. These services and solutions sustain operational, safety and mission critical applications for businesses and governments across the world.

After joining Inmarsat in 2011 to help develop the market-leading Global Xpress programme, Peter became President of the business unit responsible for US Government sales and programmes at Inmarsat and subsequently became CTO in late 2017. Prior to joining Inmarsat, Peter spent 30 years as a leader in technology development, engineering, and government spacecraft programmes at Northrop Grumman. He holds multiple patents in advanced communications technology and systems.

He also has a diverse regulatory and policy background, having successfully led industry efforts in the World Trade Organisation (WTO) Telecom Services Agreement, the Federal Communications Commission (FCC) World Radio Conference Advisory Committee, the President's National Security Telecommunications Advisory Committee, plus a one-year fellowship in the United States Senate.

Peter received his Bachelor of Science in Electrical and Electronic Engineering from California State Polytechnic University, an MBA with emphasis in finance strategic planning from George Mason University and serves on engineering advisory boards at Virginia Tech. He was inducted into the Cal Poly Pomona Engineering Hall of Fame in 2014.

Dr Robert Pepper

Robert Pepper is Head of Global Connectivity Policy and Planning at Meta focusing on global, regional, and national infrastructure and connectivity including new technology development, deployment, adoption, and policy/regulation. Robert was previously Cisco's Vice President for Global Technology Policy, helping governments develop national digital strategies, address wireless and spectrum policy, security, privacy, and internet governance.

Pepper was Chief of the Office of Plans and Policy and Chief of Policy Development at the United States FCC for fifteen years, where he led teams designing and implementing the first U.S. spectrum auctions, developing policies promoting the development of the Internet, implementing telecommunications legislation, and planning for the transition to digital television. He also led the Office of Policy and Development at United States' National Telecommunications and Information Administration.

His academic appointments included faculty positions at the Universities of Iowa, Indiana, and Pennsylvania, and as a research affiliate at Harvard University. He is a member of the Board of Trustees of the Internet Society and the board of the US Telecommunications Training Institute and is a member of advisory boards at Columbia University and Michigan State University. He has chaired the US Department of State's Advisory Committee on International Communications and Information Policy and served on the US Department of Commerce's Spectrum Management Advisory.

Pepper received his BA and PhD from the University of Wisconsin-Madison.

Alastair Davidson

Alastair has spent over 20 years in the communications industry working in the mobile infrastructure, public safety, cable tv and fibre sectors, and is Chair of the Digital Infrastructure Working Group of the Digital Connectivity Forum (DCF), Board member of the European Wireless Infrastructure Association (EWIA), and Director of Strategy at Wireless Infrastructure Group (WIG).

At WIG, Alastair is responsible for strategy, regulation and public affairs, and until recently led the roll-out of 5G fibre connected small cells at WIG - an independent wireless infrastructure operator that has pioneered the neutral host model in the UK. The company builds and operates communication towers (masts) in rural and suburban areas together with indoor networks to improve mobile coverage inside buildings, stadiums and on city streets. The company is fully independent of any network operator and invests in higher capacity 'neutral-host' infrastructure that is made available to all mobile and wireless networks to use on an open and shared basis.

Alastair gained a first class degree in Engineering & Economics from Oxford University, and qualified as a Chartered Accountant, with an early career in management consultancy at Deloitte / Coopers & Lybrand.

Dr. Abhaya Sumanasena

Dr. Abhaya Sumanasena is a results-driven and influential leader with over 20 years of hands-on experience developing and delivering forward-spectrum strategies and policies. Abhaya is the Head of Policy and Regulation at Real Wireless (an independent wireless advisory firm) and the Chairman of the UK Spectrum Policy Forum (UK SPF), a cross-industry 'sounding board' to Government and Ofcom on future policy and approaches to spectrum.

Previously Abhaya led and delivered multimillion-pound strategic network capacity programmes at Three UK. At Ericsson, Abhaya provided technical leadership to deploy the UK's first HSDPA network. He has also played an influential role in maintaining UK propositions and developing spectrum policies at Ofcom. As a consulting leader, Abhaya provides leadership to multi-disciplinary teams to deliver projects and provide independent advice to global clients in the technology, spectrum, policy and regulatory areas.

Abhaya holds a PhD in Mobile Communications from the University of Surrey and an MSc from King's College London. He is a University Lecturer, a Chartered Engineer, a member of the IET and, as a volunteer, Chaired several IET local networks.

Dimitra Simeonidou

Dimitra Simeonidou is a Full Professor at the University of Bristol, the Co-Director of the Bristol Digital Futures Institute and the Director of Smart Internet Lab. Her research is focusing on the fields of high-performance networks, programmable networks, Future Internet, wireless-optical convergence, 5G/6G and smart city infrastructures. In the past few years, she is increasingly working with Social Sciences and Humanities on topics of climate change and responsible innovation. Dimitra has been the Technical Architect and the CTO of the smart city project Bristol Is Open. She is currently leading the Bristol City/Region 5G and Open RAN pilots.

Dimitra is a member of the DSIT Supply Chain Diversification Advisory Council, a founding member of UKTIN and has led major research projects funded by UKRI and the EC. She is currently coordinating the DSIT project REASON developing blueprint architectures and technologies for 6G.

She is the author and co-author of over 700 publications, numerous patents and several contributions to standards. She has been co-founder of three spin-out companies developing solutions for connected smart infrastructures.

Dimitra is a Fellow of the Royal Academy of Engineering (FREng), a Fellow of the IEEE (FIEEE), Fellow of WWRF, a Royal Society Wolfson Scholar and member of UKCRC.

Kirsty McBeath

Kirsty joined the Met Office in 2009, having completed a degree in Physics at the University of Strathclyde. She started her Met Office career as a scientist in the Cloud Physics Research Team, working with a range of remote sensing and in situ instruments to improve our understanding of cloud processes. She then went on to work as Private Secretary to the Chief Scientist where she provided support across the breadth of science undertaken in the Met Office. Kirsty has also worked in the Government Services Team: leading on Met Office engagement with Parliament on a wide range of topics.

Since 2021, Kirsty has worked as Spectrum Policy Manager where she works to ensure that the Met Office has access to the frequencies required to make observations of the Earth system – vital for both weather forecasting and climate monitoring – and exchange data with partners around the world.

Dr. Philip Kalmus

Dr Philip Kalmus works as an economic consultant for Charles River Associates. He assisted in many of the 3G, 4G and 5G spectrum auctions in the pre-auction regulatory process, as well as in the design of auctions for governments and in bidding support for participants, including in the UK, Austria, Switzerland, France, Spain, Italy, Latvia, Germany, Canada, United States, Singapore and Taiwan. Philip also has advised in several merger control proceedings in the mobile industry in Europe, such as the joint venture of Virgin Media and O2, and has been involved in other regulatory matters in the telecommunications industry.

More recently Philip has turned his attention to empirical economics, statistics and machine learning. He holds a BA Economics from Cambridge University, MSc Economics from Universitat Pompeu Fabra, Barcelona, and a PhD Economics from the London School of Economics.

Graham Louth

Graham Louth has over 30 years' experience in the telecommunications industry, originally as a leading advisor to operators and regulators on regulatory issues such as universal service, interconnect pricing, retail price control, margin squeeze analysis and market reviews; then as Director of Spectrum Policy at Ofcom, in which role he was responsible for the introduction of spectrum trading and liberalisation, refinement of spectrum pricing, auctioning of key spectrum bands, including the UK's 4G auction of the 800 MHz and 2.6 GHz bands, and regulatory reviews of various mobile network sharing and merger agreements. Graham joined Aetha Consulting as a Partner in September 2014 and has subsequently been providing expert advice and support to operators and regulators around the world on a range of spectrum and regulatory topics. He is a regular presenter at telecoms and spectrum conferences worldwide.

Ex-Officio Members

Cristina Data

Cristina is the Director of Spectrum policy and analysis, Spectrum Group at Ofcom and is also an NED of the Energy System Catapult and sits on the Digital Twin Strategic Advisory board hosted by the Connected Places Catapult. Cristina is leading work to understand the long- term impact of technology, market, and international changes on our spectrum management activities. Prior to joining Ofcom Cristina held various market and business intelligence roles within strategy at Telefonica O2 setting up a framework to benchmark data growth across different countries, financial planning, and analysis at Orange UK, looking at the profitability of different marketing initiatives and market research and intelligence at Red Bee Media where Cristina had the responsibility to set up the entire unit. Cristina holds a master's degree in Industrial Engineering from the Politecnico di Torino university in Italy.

Board Members Stepping Down

Peter Pitsch

Peter Pitsch currently consults for the C-Band Alliance. Peter Pitsch was Associate General Counsel at Intel Corporation, specialising in communications policy matters. Peter was Chief of Staff to the Chair

of the FCC from 1987 to 1989 and Chief of Office of Plans and Policy from 1981 to 1987. From 1980-1981, Peter was a staff member of the Reagan Administration Transition Team.

Peter received a B.A. in Economics from the University of Chicago in 1973 and his J.D. from Georgetown University Law Centre in 1976.

Raj Sivalingam

Raj Sivalingam is Head of Spectrum Policy at the Department for Science, Innovation and Technology. His career spans senior roles in industry, regulation and central Government. In industry, he worked in the space, defence and communications sectors. While at the former Radiocommunications Agency, he was responsible for regulatory policy for a number of spectrum using sectors. His previous roles in Government includes responsibility for civil space policy. He holds a Bachelor of Electronic Engineering Degree (Sheffield University) and an MBA (Imperial College).