techUK

10 St Bride Street
London EC4A 4AD

techUK.org | @techUK

Media Contact
Margherita Certo
T: (+44) 07462107214
E: margherita.certo@techUK.org

Press release

FOR RELEASE: 27 FEBRUARY 2025, 00:01 AM

AI-powered spectrum management: new UK Spectrum Forum study recommends AI adoption to enhance Ofcom's spectrum operations

LONDON, 27 February: As the UK faces ever-increasing demand for wireless connectivity, a new study carried out by Smith Institute and Spectrivity and commissioned by the UK Spectrum Policy Forum highlights the transformative role artificial intelligence (AI) could play in managing the nation's finite radio spectrum more efficiently.

With mobile networks, smart devices, and emerging technologies like 6G pushing current spectrum management strategies to their limits, innovative approaches are needed to prevent congestion and maximise efficiency. Traditional spectrum management methods often struggle to adapt to the dynamic needs of modern wireless networks, leading to inefficient use of valuable spectrum resources.

AI has the potential to revolutionise spectrum management by optimising resource usage, reducing interference, and enhancing network performance. By leveraging data-driven decision-making, AI could help regulators and operators dynamically assign spectrum based on real-time demand, ensuring optimal and fair distribution across industries and users.

The study explores key areas where AI could be integrated into Ofcom's operations, offering insights into AI's potential benefits and how it can solve strategic challenges. Among the key recommendations are:

- **AI for licensing applications**: Large Language Models (LLMs) and predictive machine learning could be employed to streamline application reviews and assess potential interference risks, reducing manual workload and improving decision-making efficiency.
- **AI for monitoring and compliance**: AI-driven sensor placement and proactive monitoring could enable a shift from reactive to predictive compliance enforcement, ensuring better adherence to licensing terms.
- **AI for spectrum sharing and interference management**: Advanced machine learning models, including deep reinforcement learning, could enhance spectrum sharing strategies, minimising interference and optimising resource allocation.
- **Synthetic data and international insights**: AI could generate synthetic datasets based on international proxy data, addressing gaps in UK-specific information and improving predictive accuracy.
- **Simulations and digital twin development**: The study advocates for the creation of realistic RF environment simulations and, in the long term, a comprehensive digital twin to test and refine new policies and technologies before real-world implementation.

10 St Bride Street
London EC4A 4AD

techUK.org | **@techUK**

Media Contact
Margherita Certo
T: (+44) 07462107214
E: margherita.certo@techUK.org

As AI continues to gain traction across industries, its role in spectrum management could prove instrumental in addressing the telecommunications sector's most pressing challenges.

This report serves as a call to action for Ofcom and industry stakeholders to explore AI-driven solutions that could enhance spectrum management and regulatory oversight in the UK. By leveraging AI, Ofcom could drive efficiency, improve compliance, and foster innovation in the communications sector.

Matthew Evans, Director of Markets and Chief Operating Officer, techUK said:
"The UK has the opportunity to drive a new wave of spectrum management. By embracing AI, regulators can improve flexibility, ensure efficient spectrum utilisation, and support the continued expansion of wireless technologies that power our digital economy.

"This report gives clear guidelines to regulators and industry on how they can use AI-driven solutions to drive efficiency for the telecommunications sector."

Dr Francis Woodhouse, Chief Technology Architect, Smith Institute said:

"AI can transform spectrum from a rigid, pre-allocated asset into an intelligent and adaptive resource - anticipating demand, minimising interference and optimising efficiency in real time. With AI-powered spectrum management, regulators and industry leaders have an exciting opportunity to modernise policies, enhance infrastructure, and collaborate to build a more resilient and agile wireless future."

Dr Andy Hudson, CEO, Spectrivity said:

"Collecting and analysing better data to improve policy decisions around spectrum use is always a good thing. The question we asked here is rather to understand, from a regulators' perspective, which specific tasks AI can usefully be applied to and how any complexities/risks can be managed. It has been a pleasure to work with such knowledgeable experts within Smith Institute and the techUK community to do this."

-ENDS-

Notes to Editors

The full report can be downloaded here.

UK Spectrum Policy Forum website

About UK Spectrum Forum
Set up at the request of government and Ofcom the Spectrum Policy Forum (SPF) act as a pro-active industry-led 'sounding board' to UK Government and Ofcom on future policy and approaches on spectrum and a cross-industry 'agent' for promoting the role of spectrum in society and the maximisation of its economic and social value to the UK. We do this by

techUK

10 St Bride Street
London EC4A 4AD

techUK.org | **@techUK**

Media Contact
Margherita Certo
T: (+44) 07462107214
E: margherita.certo@techUK.org

exchanging news and views on developments in using spectrum, drawing on our industry expertise from around the world.

About Smith Institute

Smith Institute combines advanced mathematics, data science and AI to solve complex challenges and transform how organisations operate. For more than 27 years, our PhD-level experts have delivered breakthrough solutions across Spectrum Management, Energy, Government, Transport and Consumer Goods. From pioneering spectrum auction assurance for global regulators to optimising satellite bandwidth, we turn mathematical innovation into measurable business impact. To find out more visit smithinst.co.uk

About Spectrivity

Spectrivity, established in 2019 in Oxford, helps organisations maximise the opportunities provided by spectrum, and in particular spectrum auctions, valuation and strategy. We love to work with smart people to solve interesting and important problems and have recently supported major clients in the US, Canada, Europe and Africa. For more information visit https://spectrivity.com