Invitation to Tender (ITT)

Independent study on the AI for spectrum management

01 August 2024

Background

In 2023, DSIT issued a statement outlining the relevance of AI and ML techniques to mitigate interference and optimize the use of spectrum. With governmental support to AI adoption, commercial interest around this trend supports the provision of smart solutions for spectrum management.

The increasing demand for spectrum poses challenges to traditional spectrum management methods. Innovative approaches already seek to increase efficient spectrum allocation and utilization in certain conditions, such as dynamic spectrum access (DSA). Within that context, AI has the potential to further improve frequency coordination, propagation estimation, and ultimately deliver more efficient spectrum utilisation.

AI adoption by national regulatory agencies still merits deeper studies. The potential efficiency gains for spectrum management should be measured against considerations around costs and risks. Without adding further general definitions on artificial intelligence and re-stating on the overarching benefits of implementing machine learning to existing processes, the current project aims to outline specific developments to spectrum management from the introduction of AI/ML.

Scope

The research project will seek to understand how AI could add efficiency to spectrum management in the UK landscape and allow for improved sharing of frequency bands. The UK SPF aims to understand the impacts of the introduction of these solutions to existing licensing processes, anticipating the wider adoption of AI by 6G networks. The latter could have regulatory and policy implications on future authorisation of 6G networks.

The study needs to comprehend the perspective of the relevant parties. It should also consider the different technologies and related processes that will be required for the deployment of AI for spectrum management. Particularly relevant is to identify the elements to conduct a cost-benefit analysis around the trade-offs for implementation by Ofcom. The study should consider the potential costs to stakeholders and the model for risk allocation associated with the deployment of this technology as well as the responsibilities arising from implementing such technology in the licencing and spectrum management processes.

Another aspect is the collaboration required to achieve implementation. On the commercial side, there are several questions regarding the business case to launch these solutions. There are data and intellectual property considerations that need to be weighed against the potential adoption of processes for spectrum management that are based on AI/ML approaches. It also needs to consider the costs it would add to relevant parties to guarantee resilience and security.

The appointed consultant is expected to map trials and objectives outlined by other countries. At the same time, the study should explore the capabilities that are unique to the UK. This perspective will shed light on the ability of the UK regulator to understand the solutions available, as well as the risk and responsibility structure associated with its

implementation. It will also outline eventual returns in capital through efficient and interference-free use of spectrum to society, which will help determine the type of the AI algorithms applicable to spectrum management.

Expected deliverables

1. A report detailing the findings including:
    a. Map international trials and objectives devised by other countries for the use of AI technologies in spectrum management.
    b. Identify the potential AI technologies that fit to the UK context along with a roadmap to the introduction of these technologies to existing licensing processes, anticipating for example the large adoption of AI by 6G networks. Elaborate on the requirements of those technologies in terms of what operational or other data needs to be captured, collected and kept by the algorithms to provide improvements to the spectrum management process.
    c. Analysis of the consequences from the different technology solutions, commercial viability, related policies, associated risks and responsibilities as well as the extent of potential collaboration needed among the involved parties (from an End-to-End perspective).
    d. Pros and cons of the adoption of AI algorithms to spectrum management by the regulator in relation to the efficiency gains, costs to stakeholders/regulators and related risks.

2. Additional evidence to perform a cost-benefit analysis of adopting AI to spectrum management outlining the potential collaboration between relevant parties within the current regulatory framework.

Cost:

- Total budget is of the order of £25,000 (+VAT)

Timetable:

- ITT issued: 01 August 2024
- Deadline for clarification of questions[1]: 22 August 2024
- Deadline to submit your tender: 04 September 2024

Duration:

- Expected duration of the study: approximatively three months, including delivering the report.
- To enable transparency and more efficient delivery management, it is suggested, at the time of commencement of the report, to establish monthly checkpoint meetings, during which UK SPF could provide updates on the progress and the findings of the research as well as to invite for a mid-point peer review of the final report.

Evaluation:

- The scoring system is as follows:

[1] If the bidder(s) may wish to seek clarifications concerning the invitation to tender (ITT), please get in touch with Tales Gaspar by 17.00 BST on the date stated in the timetable

Criteria	Weight
Understanding the requirements	20%
Relevant experiences	20%
Methodology and approach	20%
Project management	10%
Resources allocated (CVs)	20%
Price	10%

Notes for bidders:

- Individual bidders are not discouraged however given the data requirements we will prioritise organisations/group submitters
- Unsuccessful bidders will receive their scores to help inform future tenders
- The successful contractor will be required to meet (in person or virtually) with the UK SPF drafting group to provide regular updates and feedback
- The successful bidder is expected to work with the UK SPF secretariat to create a press release and publicise the report and its findings
- Interested companies should contact Tales Gaspar at tales.gaspar@techuk.org for Terms and Conditions. Any contract or order awarded as a result of this ITT shall be subject to these Terms and Conditions. Any reference to your own conditions of contract/conditions of sale in your standard bid documentation shall be specifically withdrawn.
- Interested companies should submit one electronic copy of their quotation per proposal –including financial and technical proposals – to Tales Gaspar at tales.gaspar@techuk.org by 17.00 BST on the date stated in the Timetable. Your quotation is expected to include all required information, or clearly state the reason for being unable to do so. Any assumptions used in preparing responses should be clearly stated.
- The technical response, covering aspects such as understanding the requirements, relevant experiences, methodology and approach should be limited to a maximum of 5 pages. Your quotation shall be firm, fixed and capable of acceptance.
- Please direct any questions relating to clarification of the ITT by email to Tales Gaspar (tales.gaspar@techuk.org).
- By submitting a response, you accept that you understand the requirement and have sufficiently addressed all aspects of the tender and information provided and that you have checked all stated details, such as prices, to be correct and as intended.