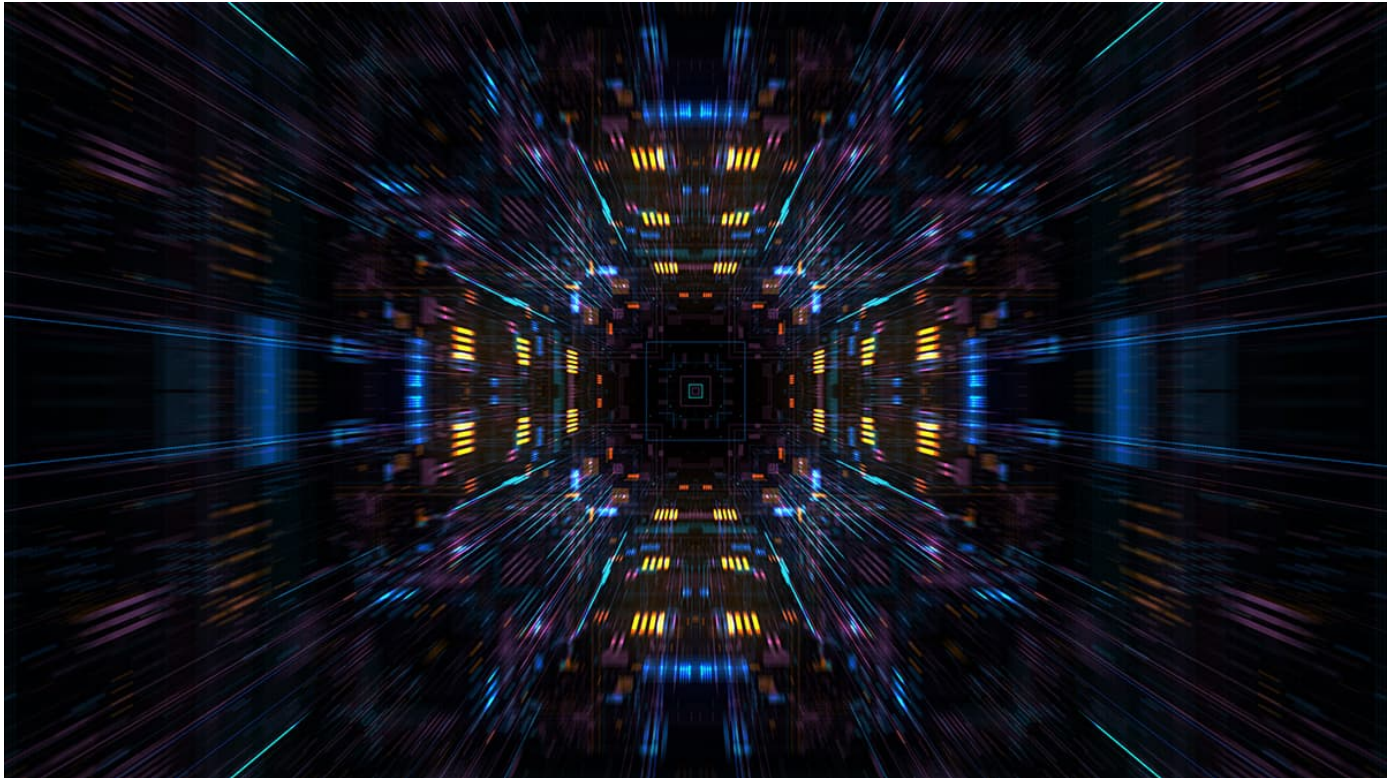


## Europe is at the forefront of quantum-based technologies, says report

11 Feb 2023



Sound return: The European Commission's €1bn Quantum Technologies Flagship has already led to the creation of 25 spin-offs firms (courtesy: iStock/Quardia)

Europe is leading the race to implement quantum-based technologies, [according to a new report](#) from the [European Commission](#). The report examines the state of the 10-year €1bn [Quantum Technologies Flagship programme](#), which began in 2018. It aims to boost quantum research in Europe as well foster the implementation of quantum technologies such as quantum sensing, communication and computation.

The flagship has so far brought together over 1500 scientists and 236 organisations, made up of 77 privately owned companies, 103 universities and 56 research organisations. The 36-page report examines the activities during the flagship's ramp-up phase from 2018 to 2021 when the programme received €193m under the Horizon 2020 programme.

This first phase led to 19 R&D projects that ran from 2018 to 2022 and two additional projects that went from 2020 to 2024. The projects were carried out in quantum communication, computing, simulation, sensing and metrology as well as fundamental quantum science.

During the first three years of the programme, the flagship led to 25 start-up companies, 105 patents and 1313 scientific papers with another 223 under review. The report also says that a total of 1961 conferences were attended by researchers, while 161 conferences or workshops were organised.

The flagship also sparked national initiatives in quantum technologies that aim to set-up up local ecosystems to support the growth of quantum research and development. Germany is providing €2bn for its own quantum initiative, while France is spending €1.8bn and the Netherlands €670m.



**'Concrete achievements'**

According to the report, coordinating research at national and European level is crucial given that no single country can do everything required to develop quantum technologies. One of those issues is the development and manufacturing of quantum devices through the production of quantum chips. Others are the need to provide researchers with access to clean rooms as well as prototyping, production and testing facilities.

Some of those issues will be tackled by the European Chips Act, which will support the development of dedicated pilot lines for design, manufacturing and testing of quantum chips.

[Roberto Viola](#), the commission's director general for communication, networks, content and technology, [says that](#) the report's findings show that "impressive results and concrete achievements" have been made by the flagship as well as "significant steps in bringing quantum research from laboratory to commercial applications".

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