Leading European institutions partner with IBM to accelerate joint research and educational opportunities in quantum computing

Institutions include Aalto University, University of Turku, University of the Basque Country, International Iberian Nanotechnology Laboratory, University of Innsbruck, EPFL, Chalmers University of Technology, ETH Zurich, and Saarland University

LAUSANNE, Switzerland, July 3, 2019 /PRNewswire/ -- IBM (NYSE: IBM) announced today at the World Conference of Science Journalists the expansion of the IBM Q Network™ in Europe to include additional universities and an international research organization. These institutions are collaborating with IBM Q^{TM} to accelerate joint research in quantum computing and develop curricula to help train students for careers that will be influenced by this next era of computing, across science and business.

The IBM Q Network is a global community of forward-thinking companies, academic institutions, startups and research labs working with IBM to advance quantum computing and foster a growing ecosystem.

As IBM Q Network partners, Aalto University, University of Turku, EPFL, University of the Basque Country and The International Iberian Nanotechnology Laboratory will have direct access to IBM Q Network resources and access to the IBM Q Experience™'s publicly available quantum computing systems for teaching, as well as faculty and student research projects that advance quantum information science and explore early applications.

Examples of future direction of quantum computing application research and exploration by these universities include:

Aalto University (Finland): The university plans to work with IBM researchers to extend the quantum computing ecosystem in Finland. This intended collaboration in education, outreach and science will strengthen Aalto's capabilities as a center of excellence in quantum computing.

University of Turku (Finland): The university plans to investigate quantum computation and simulation research, as well as use the IBM Q Experience for outreach and specialized education focused on quantum algorithms, quantum and classical programming, and fundamental quantum physics.

EPFL (Switzerland): The university plans to target the creation of a broad community of researchers, innovators and educators in quantum science and engineering via a strong collaboration with the IBM Q Network. EPFL intends that students and researchers will contribute to scientific progress in quantum computation, sensing and communications, as part of an Edge-to-Cloud Digital Technology thrust. Moreover, advances in quantum engineering and science will be reflected in future EPFL Digital Educational curricula.

University of the Basque Country (UPV/EHU, Spain): A leading university on quantum research in Spain, UPV/EHU plans to work with IBM Q to promote the quantum ecosystem in Spain. A series of highly interdisciplinary events such as conferences, hackathons and lectures are being planned for community building and to identify promising new routes towards practical quantum applications.

The International Iberian Nanotechnology Laboratory (INL, Portugal/Spain): INL plans to promote the collaboration with the IBM Q Network in the field of quantum science, technology and computing. As a first step, INL will work towards generating awareness of quantum computing's near-term potential among relevant stakeholders from education, business and science.

University of Innsbruck (Austria): The university plans to work with the IBM Q Network on its quantum-related experimental and theoretical research, including quantum algorithms and quantum computing, quantum optimization, simulations, quantum networks and many more areas.

Additionally, ETH Zurich, Chalmers University of Technology, and Saarland University will collaborate on joint research with the IBM Q Network to advance the foundational science, technology, and software required to enable more capable quantum systems.

Examples of future joint-research collaborations include:

Swiss Federal institute of Technology in Zurich (ETH Zurich, Switzerland): ETH Zurich plans to work with IBM Q to explore how quantum computing may be used to advance the scientific understanding in chemistry, physics, machine learning, and optimization, including new quantum algorithms for the efficient calculation of the electronic structure of molecules and the simulation of the static and dynamic properties of relativistic field theory models on a lattice. In addition, the university intends to study quantum algorithms for combinatorial optimization, distribution learning, classification, and efficient simulation of stochastic models, for potential applications in finance and logistics.

Chalmers University of Technology (Sweden): Home of the Wallenberg Center for Quantum Technology (WACQT), the university plans to work with IBM Q to explore how quantum computing can be utilized to increase its knowledge on chemicals and reaction processes. This intended collaboration also includes education and outreach activities to contribute to the rapidly growing quantum community in Sweden.

Saarland University (Germany): The university plans to work with IBM Q to train its quantum engineering students. Saarland also intends to collaborate with IBM in research in the field of quantum control theory and practice – the firmware for quantum computers.

"Developing quantum computing skills and expertise throughout the world is what will lead to the discovery of applications that drive breakthroughs in business and science," said Walter Riess, IBM Q Europe lead, IBM Research. "The collaboration in plan with these academic and research leaders in Europe is vital to how we will grow a 'quantum ready' ecosystem of scientists, professors, developers, and students."

The IBM Q Network also announced last month that Consejo Superior de Investigaciones Científicas (CSIC) established an IBM Q Hub in Spain. And this September, IBM's lab in Zurich will host a Qiskit™ Camp to give developers, researchers, and students an immersive learning experience with the publicly available IBM Q Experience, and the full-stack open source Qiskit quantum software framework. For more about this Qiskit Camp, visit: https://community.qiskit.org/events/europe/

The IBM Q Network provides more than 60 organizations across the globe with quantum expertise and resources, cloud-based quantum software and developer tools, as well as IBM Q Experience access to IBM's

publicly available or, for those who have contracted for premium access rights, IBM's most advanced, commercially available and scalable approximate universal quantum computing systems.

In addition, the IBM Q Experience now supports more than 140,000 users, who have run more than 10 million experiments and published more than 170 third-party research papers. Developers have also downloaded Qiskit more than 210,000 times to create and run quantum computing programs.

For more information about the IBM Q Network, as well as a full list of all partners, members, and hubs, visit https://www.research.ibm.com/ibm-q/network/

About IBM Q

IBM Q is the world's most advanced quantum computing initiative, focused on propelling the science and pioneering commercial applications for quantum advantage. For more information about IBM's quantum computing efforts, please visit www.ibm.com/ibmq

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