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## The next wave of computing: quantum-centric supercomputing

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### Biography

Dr. Jerry M. Chow is an IBM Fellow and the Director of Quantum Infrastructure at IBM leading the effort to envision and implement IBM's quantum hardware roadmap encompassing technology, characterization, and system integration. His technical expertise is in the area of superconducting qubits quantum computing. Chow graduated magna cum laude with a BA in physics and MS in applied mathematics from Harvard University (2005) and subsequently a PhD in physics from Yale University (2010). He joined IBM as a Research Staff Member in 2010. In 2016 he co-lead the IBM Quantum Experience project, placing a real quantum processor accessible to anyone on the Cloud. In 2021, he was named an APS Fellow in the Division of Quantum Information and received the Yale Science and Engineering Association Award for Advancement of Basic and Applied Science.

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### Abstract

The last few years have witnessed a strong evolution in quantum computing technologies, moving from research labs to an unprecedented access by the general public via the cloud. Recent progress in quantum processor size, speed, and quality, have cleared the picture towards a long-term vision in computing, where quantum processors will play a key role in extending the computational reach of supercomputers. In this talk I will describe how modularity will enable scaling, and how quantum communication will increase computational capacity. All this orchestrated by a hybrid cloud middleware for quantum for seamless integration of classical and quantum workflows in an architectural construct that we call quantum-centric supercomputer.