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Microsoft's Expanding Quantum Computing Ecosystem

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RECENT DEVELOPMENT

Microsoft continues to expand its presence in the quantum computing (QC) community with a recent announcement of a [growing partnership](#) with neutral atom QC supplier Atom Computing. Public statements by Atom Computing officials reveal that sometime this year the two companies will begin offering an Atom Computing system, likely its 1000-plus physical qubit array supporting up to 50 error-corrected logical qubits, to be owned and installed at customer facilities. Atom Computing officials indicated that the company is focused on on-premises deployments as a way to support in-house QC ecosystem and workforce development. For its part, Microsoft will supply its Azure Quantum stack, qubit virtualization system, and cloud HPC and AI integration tools. This is the first such foray by Microsoft into the direct on-premises QC market.

The partnership is only one of many ways Microsoft is embracing opportunity in the QC sector. The firm also has partnerships with trapped ion qubit supplier, Quantinuum, as well as silicon spin qubit maker Photonic Inc., in addition to its promising internal efforts to develop a quantum system based on topological qubits. Finally, through its Azure Quantum cloud-based services, Microsoft provides access to a wide range of QC vendors including QCI, Rigetti and Pasqal.

ANALYST COMMENT

Microsoft is using its deep pockets, global reach into the classical IT sector, and ambitious R&D agenda to extend its presence beyond its long-standing enterprise software and hyperscaler business by widely embracing the emerging QC sector. For its QC partners, Microsoft offers a wide range of capabilities that can help address gaps in technology, supply QC integration software support, offer greater market access, and increase end user visibility. Other QC vendors are also increasing their efforts in similar partnerships, though none with the scope of the Microsoft engagement. That said, Microsoft only has limited experience in addressing the unique hardware and software requirements of the classical HPC community, likely the primary early adopter market for QC systems, and has almost no experience in on-premises operations. Microsoft and Atom Computing will have to work closely to coordinate efforts in addressing this relatively unexplored frontier. Finally, it remains to be seen the extent to which QC early adopters will rise to the offer of on-premises systems, which already is seeing growing QC vendor support from firms including QuEra, IBM, D-Wave, Quantinuum, and IQM.

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