HYPERION RESEARCH

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US DOE Funds Pathfinder Program for QC Assessment Research Ideas

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RECENT DEVELOPMENT

The US Department of Energy (DoE) Office of Science recently announced that it was seeking applications for basic research aimed at assessing the utility of current and future quantum computers (QCs). The program, the Quantum Testbed Pathfinder, is funded at $12 million USD over the next four years and seeks to answer questions about the fundamental physical limits on quantum processing, the veracity of near-term NISQ systems, and best methods to assess existing and theoretical quantum processing to advance computational science. The announcement was careful to delineate topics that would be considered out of scope including development of quantum algorithms, new candidate or improved existing physical qubits, QC schemes not yet capable of demonstrating high-fidelity logic operations, or any topics concerning quantum communication, networking, or key distribution.

- The Pathfinder announcement stresses a holistic effort to connect device performance, low-level physical parameters, and application performance whenever possible.
- Practically, the program is seeking a wide range of inputs by limiting award sizes to $300,000 USD per year for a single institution and $600,000 USD for a multi-institutional team, with an award size floor of $50,000 per application.

ANALYST COMMENT

DOE maintains a broad range of quantum information science R&D, totaling around $300 million USD in FY2022. Although more limited in scope, this Pathfinder program, with its focus on near-term QC assessment and efficacy, could be an indication that DOE is not only seeking ways to better focus its basic QC research programs but also is looking to establish requirements and procedures to help target DOE near-term QC commercial procurements. For many nascent technologies in the classical IT sector, early-stage government procurements have proven to be critical in generating needed commercial revenues, directing the trajectory of technology development, and perhaps most important in the case of quantum computing, lending legitimacy to a nascent commercial sector. Ultimately this testbed program could play a critical role assisting DOE QC policy makers, and those who track DOE technology patterns, navigate the complexities of current QC technology and associated product offerings targeted for QC end use for a wide range of computational science frontiers.