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NEWS RELEASE

PsiQuantum and Hartree Centre Announce Partnership to Develop Fault-Tolerant Quantum Computing Applications in the UK

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DARESBURY, England--(BUSINESS WIRE)-- At the official opening of PsiDaresbury, the new STFC-PsiQuantum R&D facility, **PsiQuantum** announced that it is beginning work with STFC's Hartree Centre, with the support of the National Security Strategic Investment Fund (NSSIF), on a 12-month project to develop Fault-Tolerant Quantum Computing (FTQC) applications in the UK. Insights from this work will be shared across government and with collaborative industry partners.

Metro Mayor of the Liverpool City Region Steve Rotheram, UKRI-STFC Director Massimo Noro, Director of the National Quantum Computing Centre (NQCC) Michael Cuthbert, Quantum Optics and Senior Research Investigator at Imperial College London Prof. Sir Peter Knight, PsiQuantum Chief Architect and Co-Founder Terry Rudolph, Executive Chair of STFC Mark Thomson, Secretary of State for the Department of Science, Innovation & Technology Rt. Hon. Michelle Donelan MP, Executive Director of STFC Paul Vernon, PsiQuantum Chief Technologist and Co-Founder Mark Thompson, Director at STFC Hartree Centre Kate Royse (Photo: Business Wire)

The event was hosted by PsiQuantum co-founders Terry Rudolph, Chief Architect, and Mark Thompson, Chief Technologist, and included remarks from the Rt. Hon. Michelle Donelan, MP, Secretary of State for Science, Innovation and Technology; Steve Rotheram, Mayor of the Liverpool City Region; Mark Thomson, Executive Chair of the STFC; Paul Vernon, Executive Director, STFC; Professor Sir Peter Knight, Quantum Optics and Senior Research Investigator, Imperial College London; Professor Elham Kashefi, Chief Scientist, NQCC; Michael Cuthbert, Director, NQCC; and Kate Royse, Director, Hartree Centre.

PsiQuantum's advanced R&D facility at STFC's Daresbury Laboratory is backed by £9M of funding from the UK government's Department for Science, Innovation and Technology (DSIT), and gives the company access to one of Europe's largest liquid-helium (approx. -270°C) cryogenic plants. Working with Daresbury Laboratory experts specialized in large-scale cryogenic infrastructure, PsiQuantum is developing next generation cryogenic quantum modules with the highest cryogenic cooling power deployed to date, representing a major step towards large-scale quantum computers capable of solving commercially relevant problems. PsiQuantum's first cryogenic quantum modules are already up and running, with a capacity of over 10x previous systems.

Because large-scale, fault tolerant quantum computers will be the first machines able to run commercially valuable applications, their advent is widely expected to trigger the start of a major transformation across industries, including healthcare, sustainability, financial services and defence, with McKinsey forecasting US$1 trillion (GBP800 million) of value at stake globally. Moreover, access to FTQC capacity will be limited and in high demand, so early movers will gain significant competitive advantage. This is why forward-looking government and industry stakeholders are already developing the required skills ahead of the arrival of the first fault tolerant quantum computers.

The Hartree Centre is a high-performance computing, data analytics and artificial intelligence (AI) government research facility and is part of the of the Sci-Tech Daresbury science and innovation campus. The centre helps provide UK industry and academia with access to advanced high-performance computing technologies, expertise and training with the aim of boosting UK economic growth.

This project builds on the Centre's longstanding access to industry and applications know-how, and brings in PsiQuantum's deep expertise in FTQC algorithm development. The collaboration has three aims:

- Build a strong FTQC knowledge base at the Hartree Centre
- Identify the most valuable and high impact problem statements for government and industry
- Develop algorithms that will underpin two high-priority applications.

The programme of work includes FTQC training to build necessary skills at the Hartree Centre; thematic workshops addressing a suite of problem statements relevant to critical computational challenges for dual-use technology applications; and two industrially-relevant use cases.

Science, Innovation and Technology Secretary, Rt. Hon. Michelle Donelan MP said:

"PsiQuantum choosing to take the next crucial steps in the development of their technology here in the UK is a resounding vote of confidence in the UK's quantum capabilities, bolstered by our National Quantum Strategy. We are determined to drive the adoption of quantum technologies throughout our economy, with £2.5 billion backing

over the next 10 years, to unlock untold advances in healthcare, green technology, and beyond."

Steve Rotheram, Mayor of the Liverpool City Region, said:

"Our area has been an architect to some of the greatest inventions and discoveries that have transformed the world – and it's a legacy we're proud to be continuing today. By uniting world-leading experts and industry leaders, we're innovating further and faster than ever before and developing technology that has the potential to not only transform industry – but change the world we live in.

"I want to establish the Liverpool City Region as a hotbed of innovation and new technology, and I'm confident that facilities like this will ensure that we can continue to attract highly skilled, well-paid jobs and opportunities from around the world to our area. I can't wait to see what the future has in store for this partnership."

Mark Thompson, Chief Technologist at PsiQuantum, said:

"PsiQuantum is grateful for the support of NSSIF and delighted to embark on this important partnership with the Hartree Centre. Together, our work over the next 12 months will help to meaningfully advance understanding of Fault-Tolerant Quantum Computing applications across both government and industry in the UK. The Hartree Centre's unique access to applications-specific expertise, coupled with PsiQuantum's deep technical experience with Fault-Tolerant Quantum Computing algorithm development, will make for a powerful collaboration and we're keen to get to work."

Kate Royse, Director of STFC Hartree, said:

"Here at STFC's Hartree Centre, we are extremely excited to be working in partnership with PsiQuantum, in its mission to build the technologies needed to realise the potential of quantum computing. Quantum computing is set to change the world we live in, to transform industry and change our lives for the better.

"By bringing together the experience and capabilities of both the Hartree Centre and PsiQuantum, we are developing a capability in quantum technologies that will ensure the UK remains at the forefront of this field. This is an exciting stepping-stone towards building a significant and resilient quantum computing ecosystem for the North West."

About PsiQuantum

PsiQuantum's mission is to build and deploy the world's first useful quantum computer. The company was founded on the premise that commercially valuable quantum computing systems will require fault tolerance and error

correction, demanding a very large-scale system implementation. The company believes that it has the fastest and most feasible path to a large-scale fault-tolerant system, based largely on existing technologies and infrastructure – including high-volume semiconductor manufacturing, packaging, and high-power cryogenic systems.

Society today – and by extension a large fraction of global industry – is built on a foundation of chemistry, physics, and information. Quantum computing has the potential to categorically advance our mastery of the physical world and of information, with widespread impact across science and technology. We are engaged with customers and partners to evaluate and revolutionize applications spanning climate, healthcare, finance, energy, agriculture, transportation, communications, and beyond.

PsiQuantum's founders had a combined sixty years of experience in academia prior to the inception of the company in 2015. The company has assembled a world-class team of quantum physicists, semiconductor, electrical and mechanical engineers all supported by a group of notable investors and advisors. Our work spans semiconductor process development, integrated photonic device and systems design, superconducting device manufacturing, high-throughput wafer, chip and sub-assembly test, optoelectronic packaging, cryogenic CMOS control electronics, high-power cryogenic cooling, quantum optics, quantum error correcting codes, fault-tolerant quantum algorithm compilation, and domain-specific quantum algorithm development. Currently, the company utilizes the capacity and expertise of a tier-1 semiconductor foundry to build thousands of wafers and millions of quantum chips.

For more information, go to: **psiquantum.com/about**

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The Hartree Centre

The Hartree Centre helps UK businesses and organisations of any size to explore and adopt supercomputing, data science and artificial intelligence (AI) technologies for enhanced productivity, smarter innovation and economic growth. Backed by significant UK government funding and strategic partnerships with industry leaders such as IBM, Atos and the University of Liverpool, the Hartree Centre is home to some of the most advanced digital technologies and experts in the UK.

Our experts collaborate with industry and the research community to explore the latest technologies, upskill teams, and apply practical digital solutions to individual and industry-wide challenges for societal and economic benefit.

The Hartree Centre is part of the Science and Technology Facilities Council (STFC) – one of Europe's largest multi-disciplinary scientific research organisations – within UK Research and Innovation, building on a wealth of established scientific heritage and a network of international expertise.

About National Security Strategic Investment Fund (NSSIF)

The National Security Strategic Investment Fund (NSSIF, en-sif) is the Government's corporate venturing arm for dual-use advanced technologies. It is a joint initiative between HM Government and the British Business Bank.

NSSIF invests commercially in advanced technology firms, alongside other investors, supporting long-term equity investment – 'patient capital' – and harnesses the Government's unique technology expertise. Its objectives include accelerating the adoption of HMG's future national security and defence capabilities and the development of the UK's dual-use technology ecosystem.

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Source: PsiQuantum