



National Quantum
Computing Centre

Collaborating with the National Quantum Computing Centre

EPSRC Research Hub Outline Call
2023



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Outline-Stage Proposals:

- If you are looking to apply to the EPSRC Research Hub Call, please go to the **National Quantum Computing Centre website** ([National Quantum Computing Centre - UKRI NQCC](#)) for background information on the facilities and services they supply. For further details on the technical research teams please refer to: [Research Teams - UKRI NQCC](#).
- If you are looking to apply to the **Quantum computing research to improve quantum computing performance** scope area, at the outline stage of the EPSRC Research Hub Call, please look to address how your research both aligns and complements the work being carried out by the NQCC.

Full-Stage Proposals:

- If proposals are invited to full stage, there will be an expectation that applicants consider how they can utilise the NQCC services and facilities for their proposal.
- Specifically for the **Quantum computing research to improve quantum computing performance** scope area, applicants will be need to [contact the NQCC directly to develop their full stage proposal](#).



The National Quantum Computing Centre

- Aim to work across government, industry and the research community to **enable the delivery of quantum computing capabilities for the UK**
- Focus on the **challenge of scaling QC**, and **supporting growth of the wider UK ecosystem**

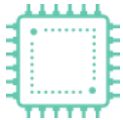


The NQCC's objectives

- **Solve key challenges by building and evaluating prototypes**, leading to the development of an intermediate-scale full-stack quantum computer that can demonstrate an 'advantage' for a range of tasks by 2025.
- **Build partnerships** and support the growth of the UK ecosystem by engaging the research community, industry, business, government and the public sector.
- **Deliver a long-term roadmap** for general-purpose quantum computing in the UK.



provide assurance



accelerate scaling



drive user adoption



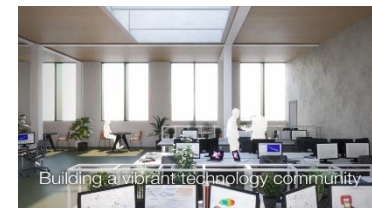
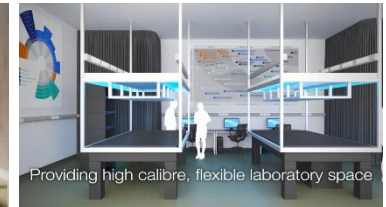
catalyse the supply base



provide development focus



support skills & training

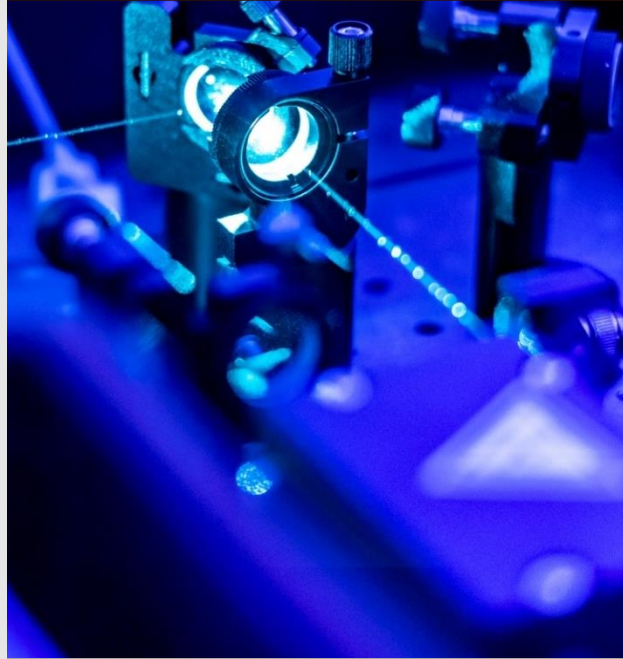


The NQCC's Programme

Three key strands

- Quantum computers based on different platforms built, operated and hosted on site
- A unique national centre focusing on the translating UK research into innovation, with a strong end-user engagement focus

Technology



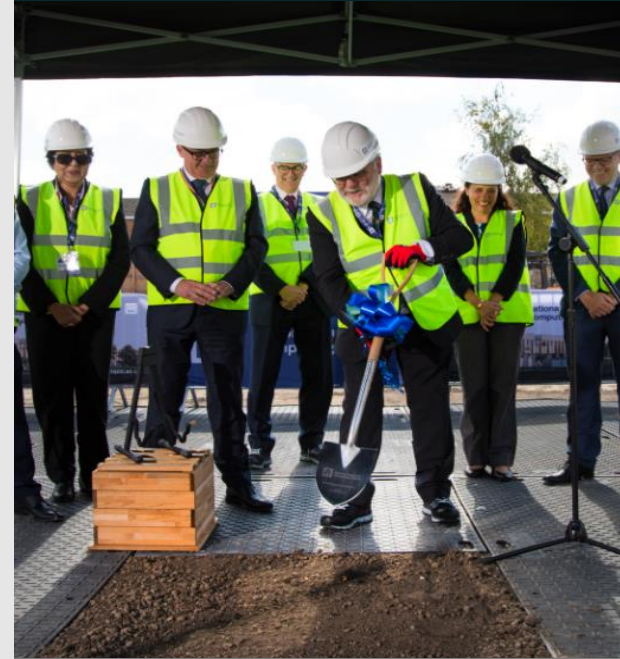
OBJECTIVE: 100+ Qubit NISQ-era platform by 2025

Technology vision:

Design, build, operate and host quantum computers.

Near-term: Establish quantum computing test beds

Facilities



OBJECTIVE: Flagship facility by 2023

Main facility design & construction:

- Breaking ground – Q3 2021
- Construction start – Q1 2022
- Facility handover – Q3 2023

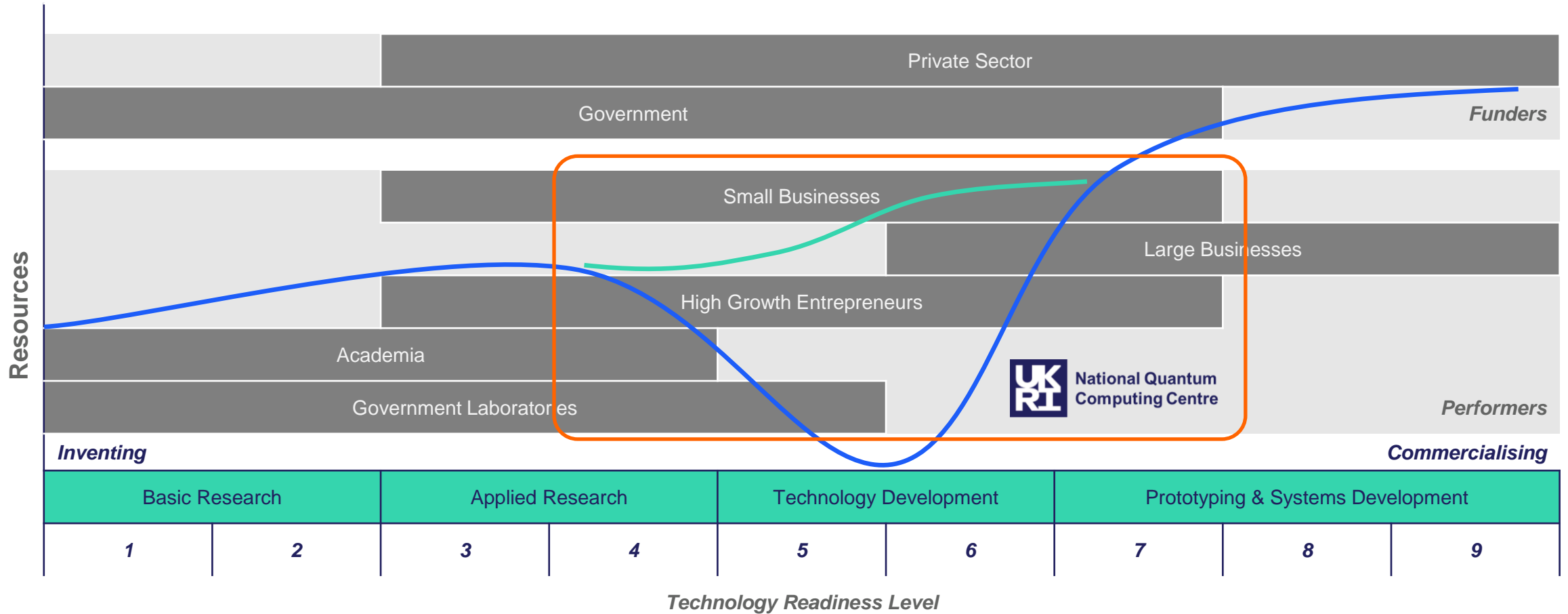
Engagement



OBJECTIVE: To build a UK QC user community by 2024

- Eco-system participation
- Supporting skills for a future quantum workforce

NQCC's position in the landscape



How the NQCC can support collaboration with the Hubs

Pathway	Description
User engagement	<ul style="list-style-type: none">• Support for engaging with potential end users of quantum computing through the NQCC's SparQ programme• Development of use cases and exploration of applications for quantum computing
Integration & hosting of quantum computing test-beds	<ul style="list-style-type: none">• Integration and hosting of platforms within the NQCC's facilities, with supported deployment and ongoing support once operational
Technical evaluation	<ul style="list-style-type: none">• Characterisation, benchmarking and validation of quantum computing platforms
Collaborative R&D	<ul style="list-style-type: none">• Technical collaboration on the development of technologies aligned to the NQCC's roadmap, including hardware, software, algorithms, application and enabling or component technologies (e.g. cryoelectronics, miniaturised vacuum systems, laser systems)
Knowledge transfer and training opportunities	<ul style="list-style-type: none">• Hosting students and researchers



Thinking of Applying?

- We welcome you to get in contact if you have any specific questions and **we will arrange a 1:1 meeting with you to discuss further**. Please contact the Quantum Technologies Theme mailbox : **QuantumTechnologies@epsrc.ukri.org**
- E-mails we receive which have relevance to the NQCC will be forwarded onto the NQCC mailbox.
- A **Frequently Asked Questions document and a copy of this presentation** will be available on the NQTP website (<https://uknqt.ukri.org/>) after the webinar [w/c 20th February](#).



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