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Physical Sciences
Research Council

Welcome





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EPSRC Quantum Technology Research Hubs: Outline Stage Webinar

Tuesday 7th February 2023

10:00am-11:30am



Welcome to EPSRC Quantum Technology Research Hubs Outline Stage Webinar

- The webinar will start at approximately **10.05am**
- Technical difficulties: email quantumtechnologies@epsrc.ukri.org
- Please wait for the end of the presentation before submitting questions
- Submit questions through the **Zoom Q&A function** (there is no open chat)
- Individual specific questions: please email us directly at quantumtechnologies@epsrc.ukri.org and we can arrange a one-to-one meeting.
- Webinars **are not being recorded**: we will publish an FAQ on the NQTP website in the coming weeks and a copy of the slides will be made available for reference.
- Full details of the call are on the funding opportunity page [EPSRC Quantum Technology Research Hubs: outline stage – UKRI](#)





Introduction



Welcome to the QT Team



Katharine Dunn

Joint Head

Budget holder;
Training & Skills strategy; NQCC
contact

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Anke Davis

Joint Head

Budget holder;
International strategy; new
areas of QT, NQCC contact

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Quantum Imaging; Missions
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Adam Oliver

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Phase 3 activities; Quantum
Sensing and Timing; Quantum
Components

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Dawn Chan

Portfolio Manager
Quantum Computing; NQCC
interactions; Fellowships

Dawn.Chan@epsrc.ukri.org



Ashleigh Bignell

Portfolio Manager
Quantum Communications; Phase 3
activities; Studentships

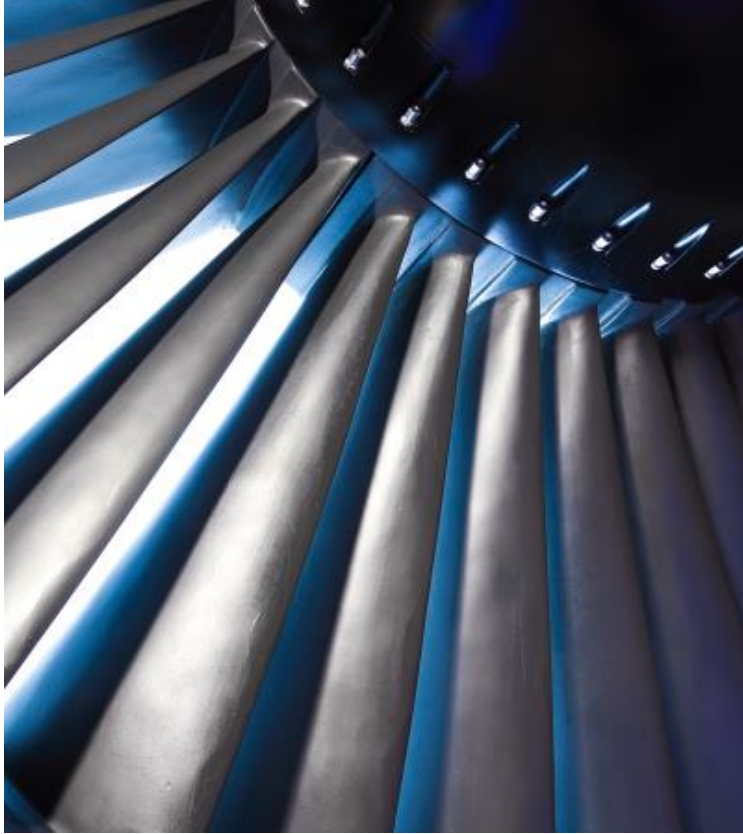
Ashleigh.Bignell@epsrc.ukri.org

Team Member	Responsibilities	Contact Email
Katharine Dunn (maternity leave until March 2023)	Joint Head of Quantum Technologies Theme- Budget holder; Training & Skills strategy; NQCC contact	Katharine.Dunn@epsrc.ukri.org
Anke Davis	Joint Head of Quantum Technologies Theme- Budget holder; International strategy; new areas of QT, NQCC contact	Anke.Davis@epsrc.ukri.org
Joe Westwood	Senior Portfolio Manager- International & Trusted Research; Secretariat for NQTP	Joseph.Westwood@epsrc.ukri.org
Liam Boyle	Senior Portfolio Manager- Quantum Imaging; Missions Programme	Liam.Boyle@epsrc.ukri.org
Adam Oliver	Senior Portfolio Manager- Phase 3 activities; Quantum Sensing and Timing; Quantum Components	Adam.Oliver@epsrc.ukri.org
Dawn Chan	Portfolio Manager- Quantum Computing; NQCC interactions; Fellowships	Dawn.Chan@epsrc.ukri.org
Ashleigh Bignell	Portfolio Manager- Quantum Communications; Phase 3 activities; Studentships	Ashleigh.Bignell@epsrc.ukri.org

Background

- EPSRC as part of the **National Quantum Technologies Programme** started a process to publish the funding call for **Quantum Technology Research Hubs from 2024 to 2029 in January 2022**.
- This was to ensure the momentum and capabilities developed by the Phase 1 and Phase 2 Quantum Technology Research Hubs was not lost and the community were able to plan for the 5 years from 2024 to 2029.
- **This call is open to applications from existing and new Quantum Technology Research Hubs.**
- EPSRC held roundtables and workshops with the academic community to develop the call scope as well as consulting with academic, industry, National Quantum Technologies Programme partners and the Strategic Advisory Board from July to November 2022.
- This call is related to **EPSRCs strategic delivery plan 2022 to 2025** where Quantum Technologies is a priority area.

Aim of the Call



- The Quantum Technology Research Hubs will be expected to act as UK centres of excellence in cutting edge quantum technologies research.
- They will bring together teams of multi-disciplinary academic researchers; thereby developing the next generation of quantum technology researchers, academic leaders and entrepreneurs.
- They will act as a focus for industry, government and other stakeholder involvement in QT research, supporting a vibrant technology innovation ecosystem and fostering links with appropriate quantum, infrastructure and fabrication facilities.



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Call Timeline



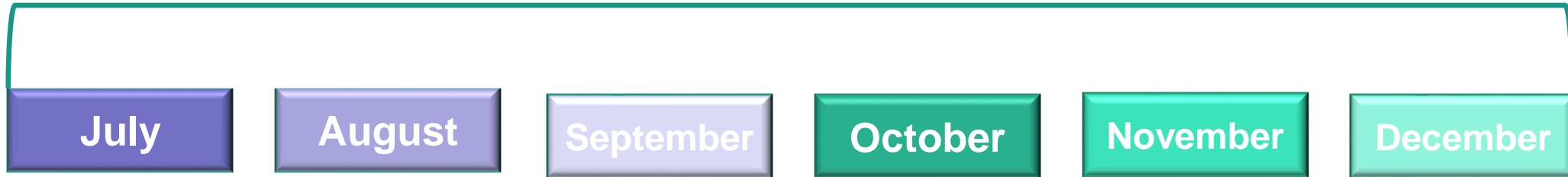
Call Timeline

Outline Stage Timeline (2023)



Call Timeline

Full Stage Timeline (2023)



Full Stage of
Call closes 4pm
5th October
2023

Full Stage Timeline (2024)



Full stage
interview
assessments.

Notice of
funding
decisions.



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Call Scope

Please refer to the [call document](#) for full details





Scope of the Call

- The aim of this call is to fund a portfolio of QT Research Hubs that cover the following scope areas.
 1. **Quantum networks for distributed entanglement**
 2. **Quantum computing research to improve quantum computing performance**
 3. **Engineering quantum technology devices and components for sensing, imaging, positioning and timing.**
- We intend that we make at **least 1 award in each of these areas.**
- Applications will need to **address the majority of the scope** bullet points to ensure that the vision in that area can be realised with the funding available.
- Applications may **cover more than 1 call scope area**



1. Quantum Networks for Distributed Entanglement

This would cover the areas of Quantum communication, computing and sensing and include underpinning technology in control systems, and integration. Broad research topics to be addressed include:

- **quantum networks at different scales**
- **scaling quantum communications**
- **distributed quantum computing**
- **quantum safe communications**



2. Quantum computing research to improve quantum computing performance

Broad Research topics to be addressed:

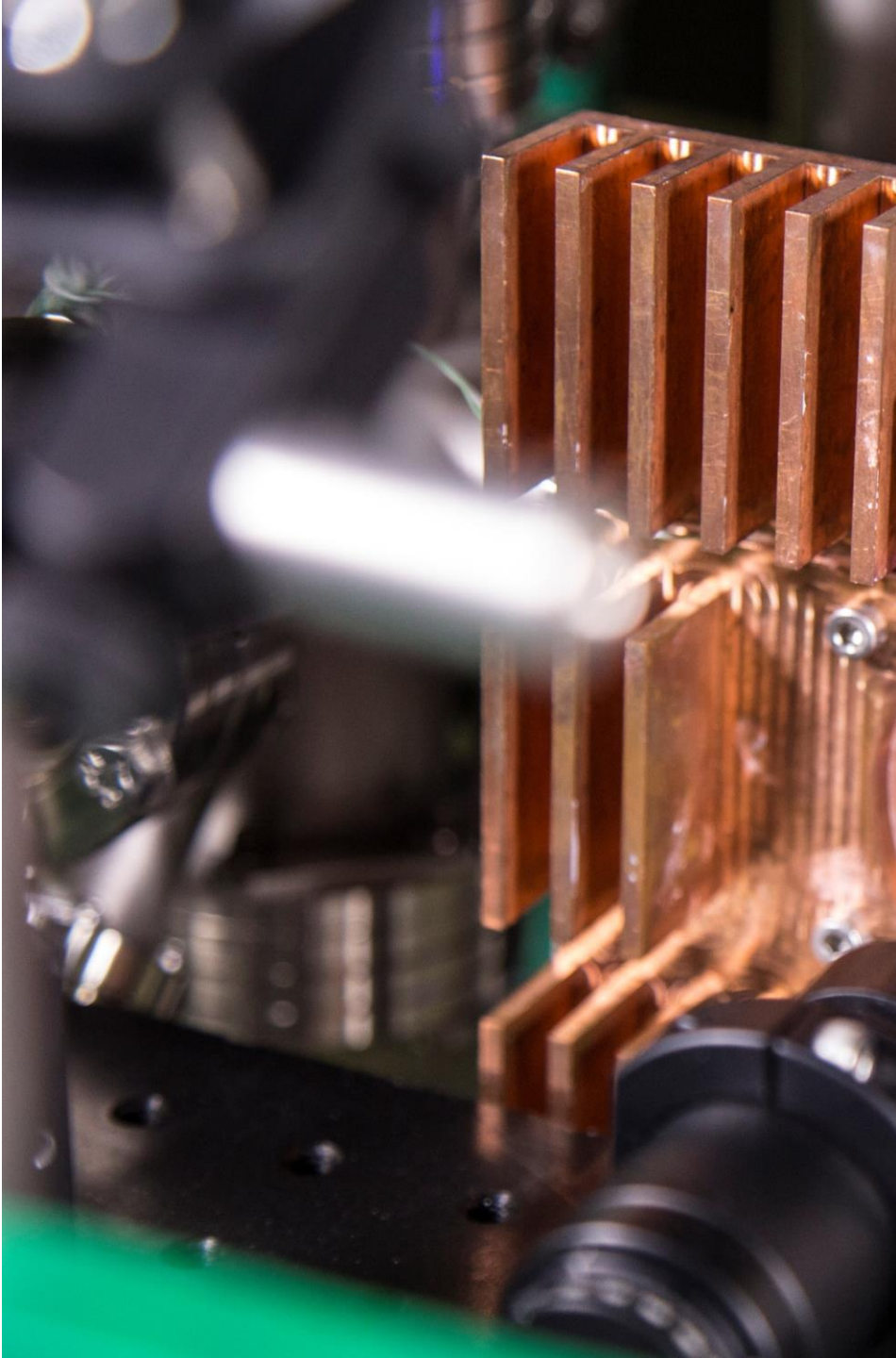
- **hardware development (qubit performance, noise sources, calibration and control – platform specific and cross platform protocols to be explored)**
- **error mitigation and error correction**
- benchmarking, verification, theory and standards
- development and execution of **applications for noisy intermediate scale quantum platforms and fault tolerant platforms**
- community building through multi-disciplinary science networks for example **integration of high performance computing and quantum computing**



- Investments in this scope area would work in collaboration with the National Quantum Computing Centre (NQCC).
- If you are looking to apply to the EPSRC Research Hub Call, please go to the [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](#).
- At the outline stage please address how your research both aligns and complements the work being carried out by the NQCC.
- If proposals are invited to full stage, we would ask applicants to contact the NQCC directly to develop their full-stage proposals in collaboration with the NQCC.



National Quantum
Computing Centre



3. Engineering quantum technology devices and components for sensing, imaging positioning and timing

Broad research topics to be addressed include:

- **quantum systems integration**
- **scale up and manufacturability**
- **integrated optics**
- **hybrid systems**
- **working with application domains to understand how to achieve the full potential of quantum components and devices**



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Expectations



Expectations

In addition, all QT Research Hubs will each be expected to:

- ✓ **Act as a UK centre of excellence**, able to harness existing strengths from across the research landscape, through consortia that bring together researchers and research translators in relevant areas such as engineering, information and communications technology, computer science, mathematical sciences and physics
- ✓ **Focus on challenges associated with translation of quantum technology to application areas**, addressing the scope areas identified above
- ✓ **Include relevant underpinning and enabling science** for the scope areas for example materials and components
- ✓ **Offer visionary leadership**, with the ability to **collaborate with the other QT Research Hubs and the wider community** to champion the area and the UK QT community

Expectations

- ✓ Have **significant engagement with industry and other stakeholders**, as this is essential to continue to contribute to the development of a quantum technologies industry base in the UK. This includes developing an interface that allows easy engagement for industry and user communities
- ✓ Deliver its programme of work in a responsible fashion according to best practice in **Responsible Research and Innovation**
- ✓ **Integrate with other relevant UK, UKRI and National Quantum Technologies Programme (NQTP)** investments where appropriate.
- ✓ **Responsible innovation** you are expected to work within the [EPSRC framework for responsible innovation](#).
- ✓ **International collaboration** applicants planning to include international collaborators on their proposal should visit Trusted Research for [guidance on getting the most out of international collaboration whilst protecting intellectual property, sensitive research and personal information](#).

Expectations

Engagement with NQCC-Please see additional NQCC slide set for further details

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](#).



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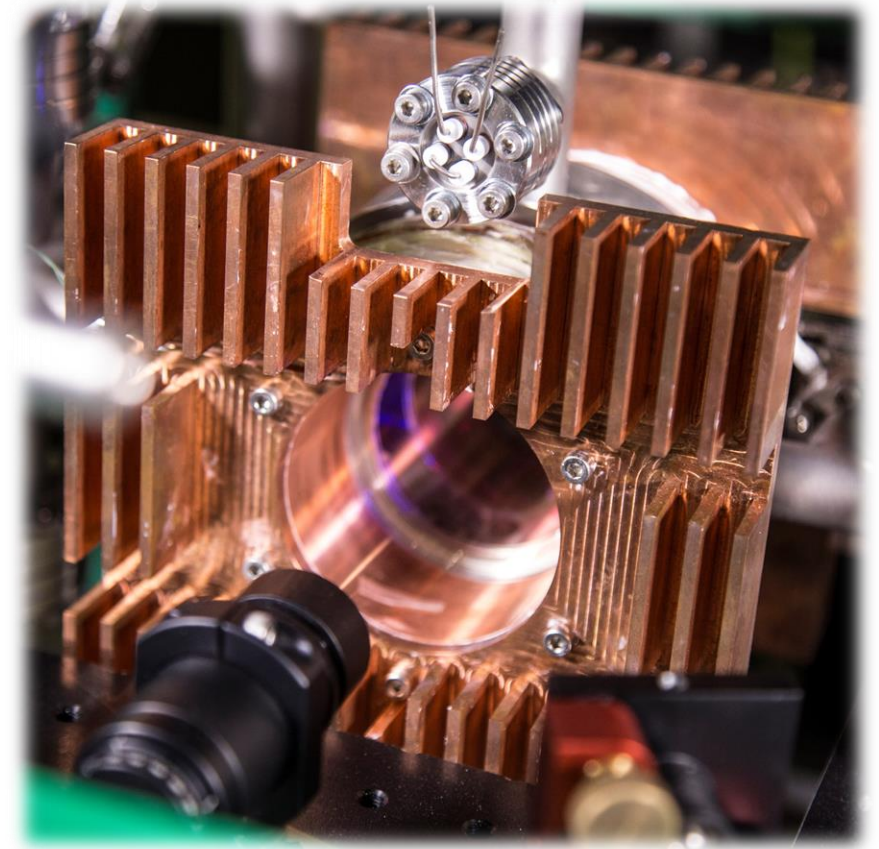
Eligibility Criteria



Eligible Institutions

Standard EPSRC eligibility rules apply.

[Check if your institution is eligible for funding.](#)



Applicant Eligibility

Standard EPSRC eligibility rules apply.

Please note:

- You may only submit **1 outline proposal as a principal investigator.**
- **You can be a co-Investigator on more than 1 outline submission.**
- Research organisations can be part of more than one outline submissions.
- Only one Je-S form to be submitted by the lead organisation for each outline.
- If you are leading an outline submission, we would appreciate if you could get in touch with our team (quantumtechnologies@epsrc.ukri.org)

Applicant Eligibility

- Each QT Research Hub will require a minimum of 1 FTE in each of the following roles:
 - **Hub manager**
 - **Communications manager**
 - **Business development manager**
- The combined director and leadership time charged to the grant for delivery of the QT Research Hub should be approximately **1 full time effort (FTE)**.
- The leadership team will be expected to spend **0.2 FTE on responsible research and innovation, equality, diversity and inclusion, succession planning and development of future research leaders**.
- **The leadership team can be based at different research organisations.**



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Available Funding



Available Funding

- Research funding is available to support up to **5 QT Research Hubs** with a significant budget.
- The funding can be from **£15 to £19.5 million (80% FEC) per QT Research Hub**.

Partnership Resource Funding (PRF) will not be available through this call. EPSRC will fund pilot and development research projects through future funding calls.

Equipment Costs

- **Outline:** list equipment in the **Justification of Resources**, no business cases or quotes are required.
- Although this is not a call designed for significant capital expenditure, equipment over £10,000 in value (including VAT) and up to £400,000 is available through this call. Justification of the requirement for individual items of equipment between £10,000 and £400,000, and details of the proposed contribution to the cost of the equipment, must be provided in the Justification of Resources (JoR).
- Smaller items of equipment (**individually under £10,000**) should be in the Directly Incurred - Other Costs heading.



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Application Process



How to Apply

Submitting your application

- Before starting an application, you will need to [log in or create an account in Je-S](#)
- You can save completed details in Je-S at any time and return to continue your application later.
- After completing the application, you must click '**Submit document**', which will send your application to **your host organisation's administration.**

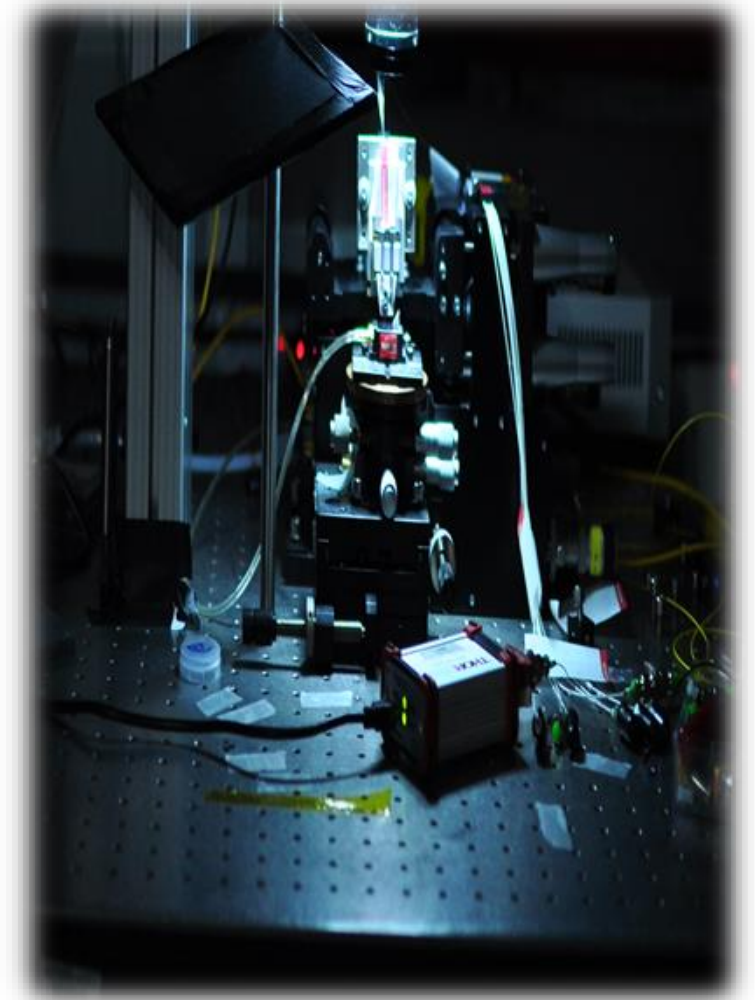
Deadlines:

EPSRC must receive your outline application by [4:00pm on 27 April 2023.](#)

If your outline proposal is successful, and you are invited to submit a full proposal, this application must be received by [4:00pm on 5 October 2023.](#)

Application Documentation

- You should attach your documents as PDFs to avoid errors.
- They should be completed in single-spaced Arial 11 font or similar-sized sans serif typeface.
- EPSRC will not accept any other attachment types under this opportunity.
 - No project partner letters of support to be submitted.
 - Please list Project Partners on Je-S form and indicative contributions.
 - Please mention project partners in the Case for Support.
- Read our advice on writing proposals for EPSRC funding.



Outline Stage Application Documentation

Your outline proposal should consist of an **application form** which includes all the **proposed academic partners**.

Attachment	Page Limit	Description
Case for Support	Up to 8 sides of A4	Case for support should include the following information using the headings below: <ul style="list-style-type: none">• Overall Vision and Ambition• Track Record• Proposed programme of work• Management plan• Collaboration and user engagement strategy (mention project partners)• Responsible research and innovation (RRI)• Financial costs
CV for the director	Up to 2 A4 pages	
Justification of Resources	Up to 2 A4 pages	Approximate resource and capital costs will need to be listed (approximate costings across WPs and years).
Proposal cover letter (Optional)	No page limit	This is an optional attachment and will only be seen internally by EPSRC.

Case for Support Information

Case for Support Content	Description
Overall vision and ambition	<ul style="list-style-type: none">• How the scope or scopes will be met resulting in a UK centre of excellence, which creates a major impact in the area.
Track record	<ul style="list-style-type: none">• Each QT Research Hub must be led by an internationally respected director supported by a multidisciplinary leadership team.• Describe the relevant track record of the team.• Highlight previous experience of leading large scale research and technology programmes and/or examples of strategic research leadership.• Provide details of relevant past collaborative work with entrepreneurs, industry and international research groups.
Proposed programme of work	<ul style="list-style-type: none">• Describe the programme of technology research that will be carried out and the work packages within the programme of work.• Describe how the work packages have been prioritised to ensure the scope area is met.
Management plan	<ul style="list-style-type: none">• Describe the leadership structure and how the programme of work will be managed.• Outline how the technology translation process will be managed as part of the overall management structure.

Collaboration and user engagement strategy

- Describe how the **consortium has engaged with industry** and other users of research during the preparation of the proposal.
- Outline the plans to develop and execute a **strategy for engaging with potential users** of the research.
- Project partners will need to be listed with an indication of their commitment. **Project partner letters of support will not be accepted at the outline stage.**

Responsible research and innovation

- Briefly outline the approach to **responsible research and innovation**.
- Outline any **stakeholder and public engagement activities** planned, including any partners or professional expertise that may be engaged.

Financial costs

- Identify the **percentage of time the director and leadership team** will be spending on the project on the application form. The combined director and leadership time charged to the grant for delivery of the QT Research Hub should be a minimum of **1 full time effort (FTE)**.
- The leadership team will be expected to spend **0.2 FTE on responsible research and innovation, equality, diversity and inclusion, succession planning and development of future research leaders**.
- Each QT Research Hub will require a minimum of 1 FTE in each of the following roles:
 1. **Hub manager**
 2. **Communications manager**
 3. **Business development manager**
- An estimated level of resource for directly incurred costs should be provided.



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Assessment Criteria



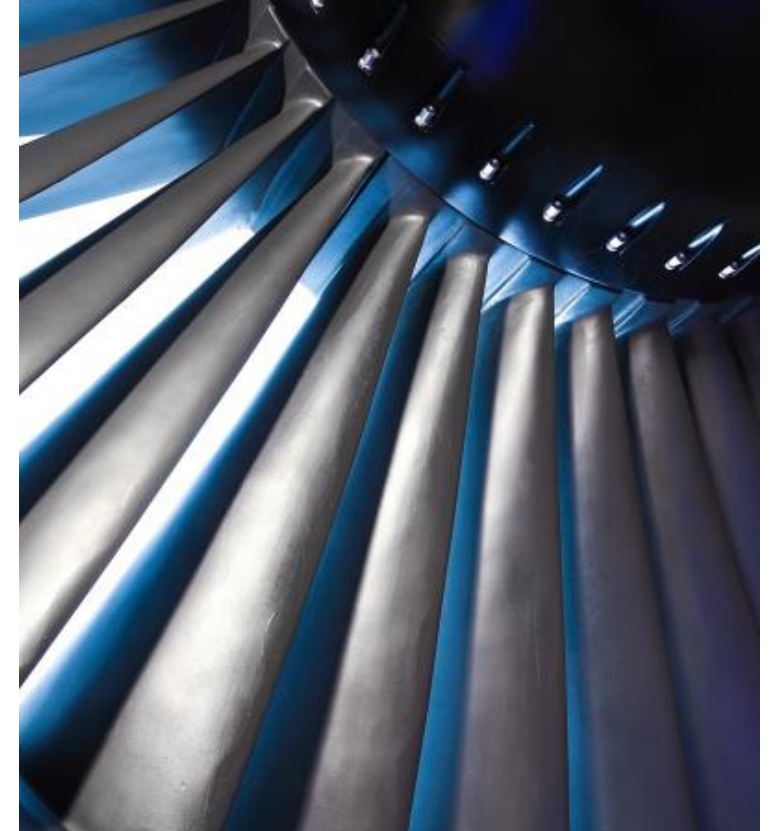
Assessment Criteria for Outline Stage Proposals

Assessment Criteria	Description
1. Fit to Scope	<ul style="list-style-type: none">The Panel will evaluate the QT Research Hub vision and proposed technology research work programme.
2. Membership	<ul style="list-style-type: none">The panel will evaluate the membership to ensure that there is the correct mixture of disciplines and skills to enable the QT Research Hub to deliver the scope.
3. Ability to deliver the work programme	<ul style="list-style-type: none">This will include the management structure, the interaction (and proposed interaction) with industry, users and the other QT Research Hubs.The panel will look at the resource and capital requests to ensure that the proposal has been appropriately costed and include the resources required to deliver the programme.

Assessment Criteria for Outline Stage Proposals

Portfolio Balance

- At the outline proposal stage, the expert panel will provide advice on the **selection of a balanced Quantum Technology Research Hubs portfolio** ensuring **coverage of the 3 call scope areas** from the **high-quality proposals**.





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Key Points & Contact Details



Summary Points

Funding Amount:

The funding can be from **£15 to £19.5 million (80% full economic cost) per QT Research Hub**. This value includes indexation costs.

Duration: The duration of the funding will be for **up to 60 months**.

Start Date:

The latest start date will be the **1 December 2024**. The start date will be agreed with EPSRC after the outline stage and details will be included in the invited full proposal guidance.

Eligibility:

To apply you must be based at a UK research organisation eligible for UK Research and Innovation (UKRI) funding.

Thinking of applying?

Get in touch with EPSRC:

If you are considering applying for this funding opportunity please get in touch with the EPSRC Quantum Technologies Team (QuantumTechnologies@epsrc.ukri.org) to let us know about your interest in leading a consortium.

- 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
- 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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Questions?

Useful Information

Get help with developing your proposal:

- For help and advice on costings and writing your proposal **please contact your research office** in the first instance, **allowing sufficient time for your organisation's submission process.**

Ask about this funding opportunity:

- 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
- 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.

Get help with applying through Je-S:

Email: jeshelp@je-s.ukri.org

Telephone: 01793 444164

Opening times: [Je-S helpdesk opening times](#)



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Thank you



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