# Call for Proposals – UK Quantum Technology Hub for Sensors and Timing

# Call Document 1: New Partners in Academia

## Proposals deadline: 16:00 Thursday 9th April 2020, and quarterly thereafter until further notice.

### Introduction:

The mission of the UK Quantum Technology Hub for Sensors and Timing is to translate state-of-the-art lab technology into deployable practical devices. Collaboration is at the heart of what we do, with academics and leading companies working together to translate research into marketable applications. We are an international centre of excellence bringing together world-leading physicists, engineers, industry and end-users. To support our mission we have a Partnership Resource Fund (PRF) of £2million that will be used to foster a coherent National Quantum Technology Program by promoting inclusiveness and cohesiveness across the entire national quantum sensors and timing landscape.

The PRF will be split equally between funding new partners in academia and new collaborations with industry, to:

* add new science and technology concepts as they emerge outside of the Hub, involving new partners in academia;
* open up new pathways for academia to have impact with industry partners, in new sectors and on the strategic route to new applications for QT;
* engage with the wider scientific, industry, government, funding and public communities.

**Application Specific Demonstrator Systems:**

The Quantum Technology Hub in Sensors and Timing is committed to delivering a series of application specific demonstrator systems in the period EPSRC 01/04/20 to 31/03/24 (FY20 - FY23) and beyond. The demonstrators are targeted at specific industry applications where there is both economic value and the opportunity to exploit new sensor capabilities which outstrip the performance of conventional techniques.

Since the initial design of the work programme, it has emerged that certain additional capabilities are required to fully deliver the objectives of the Hub in two particular areas.

1. MEMS based seismometers developed at Imperial College have been successfully deployed on a mission to Mars and have detected seismic activity on the planet. Based on this experience, it is clear that the Hub programme would be significantly enhanced if a new generation of low noise electronics could be developed that is compatible with both the MEMS device and the environment in which it is to be deployed. We are seeking a collaborating partner with the necessary experience and expertise to address this problem. The focus of the work should be on novel engineering approaches that cannot be sourced commercially.
2. Magnetoencephalography based on optically pumped magnetometers has proven to be highly successful in early trials on human subjects. This work is led by the University of Nottingham. The Phase II programme of work envisages extension of the technology to address the application to some specific brain functions. We have become aware that the technology may now be ready to explore the behaviour of epilepsy. In order to explore this potential, we are seeking a team with expertise in conventional SQUID based MEG and epilepsy. The focus of the work should be on the adaptation of the technology, including image processing and data analysis rather than largely clinical trials, although some overlap is expected.

### Scope of the New Partners in Academia Scheme:

~50% of the PRF is reserved to specifically target research

with a strategic fit to the QT Hub (e.g. via the technology platform), but complementing QT Hub activities by offering new concepts, new modalities, new enabling technologies, or speculative new application areas.

As with all activities in the Hub, activities supported via the PRF will need to be performed in line with the principles of Responsible Research and Innovation (RRI).

The programme will accept proposals led by any eligible UK academic institution ([EPSRC eligibility criteria](https://www.epsrc.ac.uk/funding/howtoapply/fundingguide/eligibility/organisations/)).

### Funding:

Proposals will be funded at 80% of academic costs. Capital items are not eligible costs. Any non-academic partners are not eligible for any funding.

All proposals will be subject to expert review and competitive evaluation by our Applications and Technology Exploitation Panel and the Hub Executive Management. A decision on funding any successful proposal will be made by April 30th.

### Submission Procedure:

Proposals are invited from any UK based academic group with the necessary capabilities to tackle either of these opportunities. Projects can be of up to 31 months duration. Work cannot start until FY 2020-21.

It is expected that successful proposers will work very closely in collaboration with the existing Hub teams in the relevant areas.

Proposals may be submitted at any time prior to the deadline. Prior to submission applicants are strongly encouraged to contact the QT Hub PI, Professor Kai Bongs, to discuss the suitability of their proposal.

The maximum length of a proposal will be 4 pages and must be submitted to Jo Smart via email at [J.C.Smart@bham.ac.uk](mailto:J.C.Smart@bham.ac.uk) by Thursday 9th April. Proposals must address the following sections:

* *Concept and objectives*
* *Alignment to the quantum hub project and national programme*
* *Advancement beyond the state-of-the-art*
* *Work Programme*
* *Potential Impacts and Pathways to Impact*
* *Proposed arising intellectual property use and ownership arrangements*
* *Consortium and Resources*
* *Budget justification and requested funding*

If relevant, the proposal should include signed statements of support from industry stating their cash and/or in-kind commitments (these are additional to the page limit).

### Evaluation criteria:

Proposals will be evaluated against the following criteria:

* alignment to the objectives of: i) the quantum hub for sensors and timing; and ii) the broader quantum hub programme
* excellence of the proposed concept, science and technology
* quality of consortium and implementation strategy
* potential impact and ability to realise the impact (clear vision and strategy for working with industry, including understanding of the industry / user drivers)
* industry support demonstrated through indirect cash contribution and/or in-kind support (direct cash contribution will be considered with high favour)

### Evaluation procedure:

Proposals will be evaluated by a selection of the PRF panel at panel meetings, or a remote-meeting equivalent, following the general EPSRC peer review principles: [EPSRC Assessment Principles](http://www.epsrc.ac.uk/funding/assessmentprocess/prprinciples/). Proposals will be circulated to panel members selected for their expertise by the Chair of the Application and Technology Exploitation Panel. The proposals will also be circulated to The QT Hub PI and Director. The panel will discuss the proposals with consideration of the evaluation criteria and provide the ATEP Chair with their advice. The ATEP Chair, QT Hub PI and QT Hub Director will vote and award funding with consideration of the advice and available budget. A majority decision will be acceptable if consensus can’t be reached, and QT Hub PI will have the casting vote, if needed.

Proposals will be evaluated in a fair and transparent way. Confidentiality will be assured through following standard EPSRC procedures. The panel will follow the EPSRC standard procedures for avoiding conflicts of interest: [EPSRC Conflict of Interest procedures](https://www.epsrc.ac.uk/funding/assessmentprocess/) . All reviews will be independent and objective. The panel will seek to avoid selecting reviewers where a conflict of interest is identified, such as:

* anyone with an identified personal or organisational association with the project to be assessed
* anyone with an identified personal association with any other proposal in direct competition for funding.

Anyone asked to provide a review will check to ensure that there is no reason why they should not do so, and should decline the request citing 'conflict of interest' as their reason if they feel there to be a concern. Where a conflict is identified after a review is submitted that review will be classed as unusable and excluded from the process.

Applicants will receive feedback on their proposal and be given a right to reply to reviews and, upon agreement with the QT Hub PI, may re-submit an improved proposal.