



Quick Reference

Please note that you must read the full Call document for guidance before submitting your proposal

Trustworthy Autonomous Systems Hub

Call type: Invitation for outlines, followed by submission of invited full proposals

Closing date: 16:00 12 December 2019

Funding Available: Up to £11.7 million available to support one coordination Hub. This funding is part of the Strategic Priorities Fund (SPF).

How to apply: This is a two stage call with a mandatory outline stage followed by an invited full proposal stage.

Assessment Process: Outlines will be considered by an expert panel. Invited full proposals will be assessed by postal peer review followed by a panel interview.

Key Dates:

Activity	Date
Hub Call live on Je-S	15 October 2019
Town Hall meeting	18 October 2019
Outline submission deadline	16:00 on 12 December 2019
Outline Panel	Week commencing 27 January 2020
Invited full proposals submission deadline	16:00 12 March 2020
Full proposal – Interview panel	Week commencing 20 April 2020
Hub start date	1 June 2020 (fixed start date)

Additional information: Please note that this is a call for Hub proposals only. There will be a separate call for research Nodes expected to open in December 2019.

UKRI would like to emphasise that a highly multidisciplinary approach will be required to deliver the objectives of this investment and to tackle the research challenges in the TAS agenda. Multidisciplinary applications led by and involving any discipline from across UKRI portfolio are expected.

Due to the nature of this funding stream there will be specific spending requirements, monitoring and evaluation. These aspects will be reflected as specific grant conditions.

Contacts:

- Please email AI.Robotics@epsrc.ukri.org for general enquires.
- Dr Alex Shevchuk (Alex.Shevchuk@epsrc.ukri.org – 01793 44 4476)
- Dr Victoria Mico (Victoria.MicoEgea@epsrc.ukri.org – 01793 44 4562)



UK Research
and Innovation

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Contents of this call document

[Summary](#)
[Background](#)
[Funding Available](#)
[Equality, Diversity and Inclusion](#)
[Equipment](#)
[Eligibility](#)
[How to apply](#)
[Submitting an application](#)
[Guidance on 'Writing an Application'](#)
[User Engagement Strategy](#)
[Assessment process](#)
[Assessment Criteria](#)
[Moving Forward](#)
[Key Dates](#)
[Contacts](#)
[Change Log](#)
[Attachment Checklist](#)

Summary

UKRI is inviting outline proposals for the coordination Hub, which will act as a focal point of the UKRI Trustworthy Autonomous Systems programme. Up to £11.7 million will be available to fund one Hub for 48 months, with a fixed start date on 1 June 2020. Of these £11.7 million, it is expected that approximately £4 million will be distributed by the Hub through a competitive process to pump-prime new connections, creative new research directions and new application areas, for researchers across the research community. This programme will be funded through the Strategic Priorities Fund (SPF).

The **deadline for Hub Outline submission is 16:00 12 December 2019**. Once submitted, the outlines will be considered at an Outline panel in January 2020. Successful outlines will be subsequently invited to provide full proposals, which will undergo postal peer review followed by an interview panel. The successful team will be required to start their activities on 1 June 2020.

Please note that there will be a separate call for the Nodes which will run in parallel, but slightly off-set from this call for Hub outlines to enable time for multidisciplinary collaboration building. It is anticipated that a call for proposals

for the research Nodes will launch in December 2019, and information about the call will be openly available ahead of this time.

Background

Autonomous systems are already being developed and deployed across industrial sectors in specific, controlled conditions, with little focus on trustworthiness. When autonomous systems are used in an uncontrolled environment, where there is a high level of interaction with people and a much larger number of variables, the resulting potential for unexpected and/or undesirable results is non-negligible. These unanticipated events could have a very significant negative impact on the acceptability and thus compromise widespread deployment of autonomous systems in the UK.

For society to use and benefit from autonomous systems people need to trust them. This means that the autonomous systems need to function as expected for their purpose, and they need to be designed and tested to ensure that they work consistently, and that they are appropriately developed within a legal, ethical and social context. Trust will only be enabled through technical advances conducted in specific societal circumstances.

To ensure that autonomous systems can be trusted, and ultimately adopted by society, fully integrated advances in **both technical, and social sciences and humanities research** are needed. For example, research in logic, autonomy and intelligence and engineering (robotics & vehicles) is needed, but these technical developments must be carried out in the context of fundamental social sciences and humanities research across psychology, sociology, economics, ethics, philosophy, law, political science, international studies, innovation management and science and technology studies. The engagement of multiple disciplines in this endeavour, alongside regulators and the public, is key to ensuring that autonomous systems are developed to be used in real world situations.

The UK has significant strengths in computing and autonomous systems, and there is a strong track record of collaboration between these fields and researchers in the social sciences and humanities. UKRI has a number of key activities in the landscape, including (but not limited to) investments made within the Digital Economy Programme, UKRI ISCF in Robotics in Extreme Environments, and networks in 'Validation and Verification of Autonomous Systems' and 'Robotics and Autonomous Systems'. However, the apparent lack of a coherent community or truly recognised authority in trustworthy autonomous systems has been identified as a barrier to the UK successfully developing, deploying, and adopting autonomous systems.

In this Context, UKRI is investing £33m in Trustworthy Autonomous Systems through the Strategic Priorities Fund (SPF). The Trustworthy Autonomous Systems (TAS) programme aims to bring together the research communities and key stakeholders to drive forward cross-disciplinary fundamental research to ensure that autonomous systems are safe, reliable, resilient, ethical and trusted.

This investment has the following objectives:

- a) **Coordination and collaboration** - To build a coherent, interconnected and multidisciplinary UK research community around the theme of

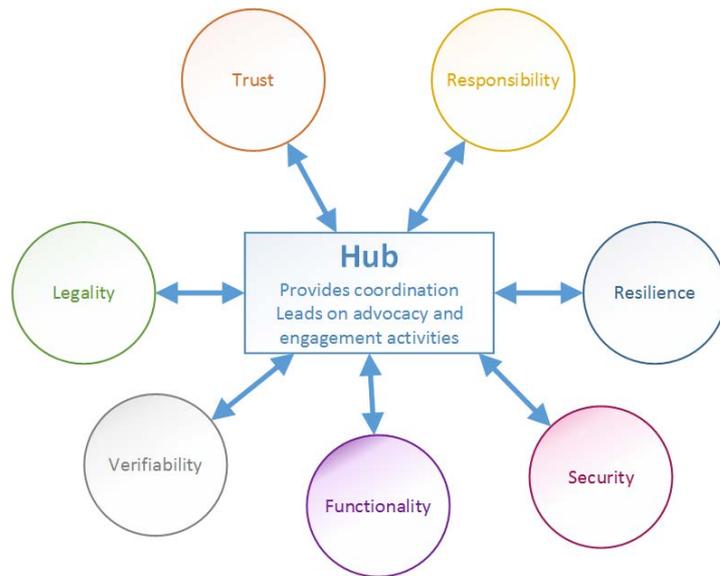
Trustworthy Autonomous Systems, bringing together pre-existing activities and a diverse range of stakeholders.

- b) **Creativity and multidisciplinary** - To invest at scale in world-leading creative and adventurous fundamental research into the technical, social and ethical challenges surrounding Trustworthy Autonomous Systems, drawing on diverse approaches from across disciplines.
- c) **Advocacy and engagement** - To establish a UK focal point for active engagement with the autonomous systems agenda and enable engagement with key stakeholders including wider academia regulators, policy makers, industry, businesses, Non-Governmental Organisations and the public.

These objectives of the programme will be delivered through two discrete but interdependent components, a single **hub** and multiple research **nodes**:

- A central **Hub** to build and lead a world-leading multidisciplinary research community. The hub will lead on both the **coordination** and **advocacy & engagement** objectives, building an interconnected research community, and proactively engaging across stakeholders. The Hub (either virtual or physical) is intended to be a single point of engagement for different stakeholders (e.g. industry, businesses, professional bodies, government), help drive culture change and integration of trustworthiness across autonomous systems research, as well as undertaking public engagement activities. It is anticipated that the Hub will also conduct highly multidisciplinary research into cross-node issues and have a key role in delivering pump prime funding for community building activities and to support new ideas, creative research directions, and applications of this research in real world, user-driven contexts.
- Multiple **research nodes** to undertake fundamental, creative and multidisciplinary research in a number of areas of current un-met need. The nodes will be separate entities connected to the hub and they are expected to address a research challenge in depth. Each node will be expected to collaborate broadly with other nodes, the hub and the wider community.

It is expected that each node will focus on **one** of the following aspects: trust, responsibility, resilience, security, functionality, verifiability and legality. It is anticipated that each of these topics will be tackled by a multidisciplinary team. The nodes will be expected NOT to focus on sectorial application, but instead to take a cross-cutting multidisciplinary approach to deliver fundamental research. Building on this fundamental research, application-oriented research may be undertaken in partnership with stakeholders and users of research, to demonstrate how the outcomes of the fundamental research might be exploited in real-world and sector-specific contexts. **A separate call for these nodes will be issued in December 2019.**



In preparation for the UKRI SPF funded TAS programme and to facilitate interactions and collaborations between interested parties, UKRI is holding a Town Hall meeting event in London on 18 October 2019 as described on <https://epsrc.ukri.org/newsevents/events/ukri-trustworthy-autonomous-systems-programme-town-hall-meeting/>. Note that having attended to the event is not mandatory and is not a pre-requisite for being eligible to this call. Similarly, attendance the Town Hall meeting will NOT guarantee subsequent funding.

Scope of the call – coordination Hub for the TAS programme

This call document is seeking outline applications for the **coordination Hub only**. A separate call document will be issued for the research nodes and information will be readily available prior to the nodes call launch.

Expectations of the Hub

It is anticipated that the Hub will lead on aspects of all three objectives of this investment in Trustworthy Autonomous Systems (as above) and play a key role in providing national leadership and coordination to the programme and the research community by:

- Building a world-leading multidisciplinary research community, facilitating its engagement and driving international collaboration
- Creating an inclusive and accessible research environment and facilitate wide participation from across the UK research and innovation community
- Delivering funds to pump-prime new research ideas and opportunities across the community effectively and transparently
- Undertaking highly multidisciplinary research to complement the research activities of the nodes
- Providing a single point of engagement for the community and key stakeholders in industry, businesses, government, regulation and policy making, as well as the public.

UKRI would like to emphasise that a highly multidisciplinary approach will be required to deliver the objectives of this investment and to tackle the research challenges in the TAS agenda. Hence it is expected that applicant teams to be highly multidisciplinary to provide balanced leadership to the programme. The principal investigator will be expected to evidence strong leadership and management skills.

Activities undertaken by the Hub *may* include (but are not limited to):

- Workshops for community building and engagement across disciplines
- Designing and delivering training activities around for researchers, practitioners and other stakeholders to drive culture change around the design of autonomous systems
- Initiatives to build and enable national and international collaborations and position the UK in an world-leading position
- Developing a repository of tools, materials and reports, advancing data collection and methodologies
- Undertaking public engagement activities, and producing communications around the benefits of autonomous systems
- Showcasing UK autonomous systems research, included that conducted within the programme, sharing its benefits, discussing issues openly and seeking solutions through engagement with stakeholders and users
- Road-mapping existing research challenges in the autonomous systems landscape, as well as user problems, needs and concerns, and use this to set the direction of the programme's research
- Undertaking fundamental multi-disciplinary research which cuts across and is complimentary to that undertaken by the nodes
- Engaging with policy makers, including UKRI, to influence the autonomous systems landscape

Funding available

For this call, UKRI through the Strategic Priorities Fund (SPF), is investing up to £11.7 million (inclusive of £4 million for pump-priming) which will be available through the full proposal stage of this call to support one Hub for 48 months, with a fixed start date of 1 June 2020.

Please note that there will be a separate call for the Nodes which will run in parallel, but slightly off-set from this call for Hub outlines to enable time for multidisciplinary collaboration building. It is anticipated that a call for the research Nodes will open in December 2019, and information about the call will be openly available ahead of this time.

Please note that due to the nature of this funding, **additional requirements on spending profile, reporting, monitoring and evaluation and extension will apply**. This will be reflected in specific grant conditions and those funded

(Hub and Nodes) will need to comply with them. Full details on these additional grant conditions will be published in the Hub full proposal call document. In particular, note that **grant extensions will only be considered under exceptional circumstances (in line with the Equality Act 2010)** and will require UK Research and Innovation agreement on a case-by-case basis. The Research Organisation remains responsible for compliance with the terms of the Equality Act 2010, including any subsequent amendments introduced while work is in progress, and for ensuring that the expectations set out in the UK Research and Innovation statement of expectations for equality and diversity are met.

Equality, Diversity and Inclusion

The long term strength of the UK research base depends on harnessing all the available talent. EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice and funding policy. We are committed to supporting the research community, offering a range of flexible options which allow applicants to design a package that fits their research goals, career and personal circumstances. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcome applications from academics who job share, have a part-time contract, or need flexible working arrangements.

Peer review is central to EPSRC funding decisions, we require expert advice and robust decision making processes for all EPSRC funding initiatives. We are committed to ensuring that fairness is fully reflected in all our funding processes by advancing policy which supports equality, diversity and inclusion. Please see our Equality and Diversity webpages <https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

Guidance on Journal-based metrics

As part of our commitment to support the recommendations and principles set out by the San Francisco Declaration on Research Assessment (DORA; <https://sfdora.org/read/>), UKRI reviewers and panel members are advised not to use journal-based metrics, such as journal impact factors, as a surrogate measure of the quality of individual research articles, to assess an investigator's contributions, or to make funding decisions.

The content of a paper is more important than publication metrics, or the identity of the journal, in which it was published, especially for early-stage researchers. Reviewers and panel members are encouraged to consider the value and impact of all research outputs (including datasets, software, inventions, patents, preprints, other commercial activities, etc.) in addition to research publications. We advise our peer reviewers and panel members to consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice.

Equipment

Equipment over £10,000 in value (inc. VAT) is not available through this call. Smaller items of equipment (individually under £10,000) should be in the Directly Incurred - Other Costs heading (at the full proposal stage).

For more information on equipment funding, please see:
<https://epsrc.ukri.org/research/facilities/equipment/>

Eligibility for this call, standard UKRI eligibility rules apply relating to the status of the organisation and the employment status of individuals applying. Investigators from **all disciplines supported by UKRI** are welcomed and encouraged to apply.

Eligible organisations are Higher Education Institutes, Research Institutes and Research Organisations that can apply for funding from UKRI Research Councils. A list of eligible organisations to apply to UKRI is provided at:
<https://www.ukri.org/funding/how-to-apply/eligibility/>.

Certain Public Sector Research Establishments (PSREs) are also eligible to apply. If PSREs wishing to apply have not previously applied for UKRI funding and are not currently designated Independent Research Organisation (IRO) status, they may be required to complete an eligibility form. To be eligible, PSREs will need to demonstrate research capacity and capability relevant to UKRI, as per the standard eligibility rules. PSRE applicants should contact UKRI at the earliest opportunity to discuss their interests in applying (contact details are provided at the start of this call document).

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:
<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/>

How to apply

A two-stage application process will be used in this call:

- **Stage 1: Outline proposal** must be submitted by 16:00 on 12 December 2019. Application details are provided below.
- **Stage 2: Invited full proposal.** The deadline for full proposal submission will be 16:00 12 March 2020. Only invited full proposals will be accepted at this stage and any unsolicited proposals will be rejected.

The full proposal guidance and further details on the assessment process will be published on the EPSRC website.

Stage 1: Submitting an outline application

You should prepare and submit your proposal using the Research Councils' Joint Electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

Although multi-institutional bids are welcomed, only one Je-S application form should be submitted for a given outline proposal. It is the responsibility of the lead organisation to ensure all the documentation required is submitted with the proposal form. This will also be the case at the full proposal stage.

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Outline Proposal'
- Scheme 'Outline'
- On the Project Details page, you should select the 'Trustworthy Autonomous Systems Hub - Outline' call.

Your submission should contain the following two documents:

- 1. Je-S application form**
- 2. Outline Case for Support.**

Please do not upload any other attachments, if submitted those will not be sent to the panel.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your outline application by **16:00 on 12 December 2019**.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<https://epsrc.ukri.org/funding/applicationprocess/>) which should be consulted when preparing all proposals.

Guidance on writing an outline proposal

Outline submissions must contain the following documents:

- **Je-S application form**
Please note: budgets are not required at the outline stage and should only be submitted for full proposals. Therefore, applicants should enter £0 for any part of the Je-S form where costings are required.
- **Outline Case for Support (up to six sides of A4 in total):**

Up to **two sides** of A4 to include the track record of the applicant team. This should not focus solely on the Principal Investigators but should demonstrate the track record across the team. Applicants should outline the management capabilities of the team as currently constituted, particularly in the context of successfully managing complex, multidisciplinary activities. It is recognised that teams and proposed management structures may need to be evolved at full proposal stage.

Up to **four sides** of A4 to describe:

- The vision for and importance of the Hub in the national context
- The planned approach to leading the TAS programme, outlining how a truly multidisciplinary approach will be facilitated

- The planned approach to coordinating the community and the research nodes, including how this will add value to the programme
- The outline strategy for engaging with all the relevant stakeholders, including government, regulators, policy makers and the public

For advice on writing proposals please visit:

<https://epsrc.ukri.org/funding/applicationprocess/preparing/>

Stage 2: Submitting a Full proposal (invited only)

If successful at the outline stage, the full proposal application should be received by the deadline of **16:00 12 March 2020**.

The full proposal guidance and further details on the assessment process will be published on the EPSRC website.

Stakeholder Engagement Strategy

At the outline proposal stage, applicants should outline their approach to stakeholder engagement in the outline Case for Support. At the full proposal stage applicants will be required to develop an appropriate strategy for engaging with all key stakeholders including the potential users of the research funded in the project (resources for this activity can be requested as part of the Pathways to Impact and must be justified in the application). Further details are provided in the Assessment section.

Assessment

Assessment process

This call will use a three-stage assessment process.

Stage 1 - Outline proposal

There will be no postal peer review of outline proposals. Outline proposals will be considered by an independent multidisciplinary panel with the necessary expertise to assess the proposals against the criteria listed below. Successful outline proposals will be invited to submit a full proposal.

Stage 2 – Invited full proposals

Invited full proposals will undergo postal peer review. Proposals that do not have sufficiently supportive reviews will be rejected at this stage. Full proposals with supportive enough comments will progress to an interview panel stage, and the applicants will have the chance to respond to any comments made by the reviewers prior to the interview.

The full proposal guidance and further details on the assessment process will be published on the EPSRC website.

Stage 3 - Interview Panel

An interview stage will be held in order to select the final successful proposals. The Principal Investigator and up to two others identified on the proposal will be

invited to attend the interview and it is expected that at least one of the attendees will be from a collaborative institution. Full details of the interview process will be sent to candidates prior to the interviews.

Assessment criteria

Stage 1 – Outline proposal (assessed by an external panel)

Outline applications will be assessed against the following criteria (equally weighted):

- The suitability and timeliness of the applicant team's vision, and their plans for delivering the hub and leading a national investment in Trustworthy Autonomous Systems.
- Effectiveness of planned approach to coordinating and facilitating collaboration between the hub, nodes, and the wider community
- Appropriateness of the stakeholder engagement strategy
- The ability of the applicant team to lead the TAS programme

Additional grant conditions (AGCs)

Grants will be subject to the standard UK Research and Innovation grant conditions. However, the nature of this funding will require additional grant additional conditions, such as expenditure, extensions, monitoring and evaluation. Additional grant conditions will be published in the Hub full proposal call document.

Moving forward

Successful outlines applications will be invited to submit a full proposal. The full proposal guidance and assessment process will be published on the EPSRC webpage.

If you are currently restricted under the Repeatedly Unsuccessful Applicants Policy, you may submit unlimited outlines, but you will only be able to submit one full proposal (as PI or CO-I) during the 12 month restricted period.

Key dates	Date*
Hub Call live on Je-S	15 October 2019
Town Hall meeting	18 October 2019
Outline submission deadline	16:00 on 12 December 2019
Outline Panel	Week commencing 27 January 2020
Invited full proposals submission deadline	16:00 on 12 March 2020 (subject to change)
Full proposal – Interview panel	Week commencing 20 April 2020
Hub start date	1 June 2020 (fixed start date)

*UKRI aims to adhere to the key dates as published, however there may be exceptions where the sift, prioritisation or interview meeting may have to change due to panel member availability.

Contacts

Requests for help and advice concerning the writing and costing of your proposal should be addressed to the Research Office within your institution.

If you have any requests about preparing and submitting your proposal using Je-S, please contact the Je-S helpdesk via JeSHelp@je-s.ukri.org, +44 (0) 1793 44 4164.

For any other call specific information:

- Please email AI.Robotics@epsrc.ukri.org for general enquires.
- Dr Alex Shevchuk (Alex.Shevchuk@epsrc.ukri.org – 01793 44 4476)
- Dr Victoria Mico (Victoria.MicoEgea@epsrc.ukri.org – 01793 44 4562)

Change log

Name	Date	Version	Change
Victoria Mico	26/09/2019	0.2	N/A
Alex Shevchuk	02/09/2019	0.1	N/A

Je-S attachments Check List

Outline:

Attachment Type	Maximum page length	Guidance
Outline Case for Support, inclusive of	6 sides of A4	This document is mandatory

Application Team Track record		Up to 2 sides of A4 to outline the applicant team's track record, and up to 4 sides of A4 to address the assessment criteria
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Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.