

Trustworthy Autonomous Systems programme Research Nodes Brief

A call for Hub outlines opened on 18 October 2019. The deadline for outlines is 16:00 12 December 2019.

A call for the research Nodes will open in December 2019.

Context & programme delivery

UKRI is investing £33m in a multi-disciplinary research programme focussed on 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.

The Trustworthy Autonomous Systems programme will be delivered through two discrete but interdependent components, a single hub and **multiple** research **nodes**. The Hub will **not** be involved in node peer review or selection.

Up to **£21 million** will be available to fund several research nodes. UKRI expects to fund 7 nodes each focusing on one of the following topics: **trust, responsibility, resilience, security, functionality, verifiability and legality**.

Scope of the research nodes

The research nodes will undertake fundamental, creative and multidisciplinary research in a number of areas of current un-met need. Each node will be expected to address a research challenge in depth, focusing on **one** of the following aspects: trust, responsibility, resilience, security, functionality, verifiability and legality.

The nodes will be expected not to focus on sectorial applications, but instead 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.

Nodes will be expected to be complementary to each other and to the programme as a whole, working closely with the Hub to deliver the objectives of the programme. The nodes will have access to the competitions for pump-priming new opportunities administered by the Hub.

It is anticipated that each node will multidisciplinary, including investigators from across the UKRI portfolio as appropriate. Each node may be multidisciplinary to a different extent depending on the challenges posed by the topic. Applicants for node investments will be expected to articulate the key challenges they intend to address within a given topic and to put together an appropriate multidisciplinary team to tackle these challenges in different configurations.



Expectations of the nodes

It is anticipated that the research nodes will deliver primarily against the creativity and multidisciplinary objective of the TAS programme by:

- Designing and undertaking a creative and multidisciplinary research programme focused on one of the seven key topics (trust, responsibility, resilience, security, functionality, verifiability and legality), seeking to significantly advance the state in one of these areas through a combination of fundamental and challenge driven research

- Building a multidisciplinary team and mutually beneficial stakeholder relationships appropriate to tackling one of the key topics. It is expected that the level of multidisciplinaryity will differ between nodes depending on the nature of the topic.
- Collaborating widely with other nodes and key stakeholders in the UK and internationally to maximise synergies and complementarities between the research funded through this programme and other activities
- Engaging closely with the hub to build a UK community in Trustworthy Autonomous Systems, and to collaboratively deliver the broader objectives of the investment
- Addressing new and emerging research opportunities through maximising the flexibility of their research programme and potentially by accessing the pump prime funds managed by the Hub.

In addition to their core activities, the research nodes will be expected to engage closely with the Hub to deliver the three objectives of the programme. This may include accessing pump prime funding distributed by the hub, which may be used to:

- Undertake risky research within, between and beyond the nodes
- Build new collaborations, nationally or internationally
- Explore new research directions, particularly to address gaps identified
- Engage with stakeholders and users of the research to conduct application-oriented research, building on from the fundamental research undertaken
- Conduct activities to demonstrate how the outcomes of the fundamental research undertaken in the nodes might be exploited in real world applications.