

UKRI Trustworthy Autonomous Systems programme: responsibility

Opportunity status: Open

Funders: [Arts and Humanities Research Council \(AHRC\)](#), [Engineering and Physical Sciences Research Council \(EPSRC\)](#), [Economic and Social Research Council \(ESRC\)](#)

Funding type: Grant

Total fund: £3,000,000

Award range: £400,000 - £700,000

Publication date: 11 February 2021

Opening date: 10 February 2021

Closing date: 13 May 2021 16:00 UK time

Last updated: 16 February 2021

Start application ►

Apply for funding to support novel and creative multidisciplinary research on responsibility for autonomous systems.

Your proposed project should integrate researchers from different disciplines, particularly from social sciences, arts and humanities.

You and your organisation must be eligible for UKRI funding.

Funding is available for up to four grants. Successful projects must begin on 1 January 2022 and last 30 months.

This opportunity is part of the UKRI Trustworthy Autonomous Systems (TAS) programme which supports research on the technical, social and ethical challenges

surrounding trustworthy autonomous systems.

[Open all](#)

Who can apply

Research in the area of responsibility of autonomous systems needs a multidisciplinary approach. We are therefore particularly interested in supporting interdisciplinary teams with the appropriate expertise to develop novel and creative research activities that are focused on responsibility as a property for autonomous systems. Successful applicants will be expected to collaborate with the wider [UKRI Trustworthy Autonomous Systems \(TAS\) programme \(TAS website\)](#).

We would encourage researchers from all the disciplines that are supported by UKRI to apply, including but not limited to:

- applied ethics
- computer science
- engineering
- humanities
- innovation studies
- international studies
- law
- organisational management
- philosophy
- politics
- psychology
- sociology.

EPSRC is leading this call on behalf of UKRI, in collaboration with ESRC and AHRC. Standard EPSRC eligibility rules apply. Research grants are open to:

- UK higher education institutions
- public sector research establishments
- research council institutes
- UKRI-approved independent research organisations and NHS bodies with research capacity.

[Read the guidance on institutional eligibility.](#)

You can apply if you are resident in the UK and meet at least one of the bullets below:

- are employed at the submitting research organisation at lecturer level or above
- hold a fixed-term contract that extends beyond the duration of the proposed project, and the host research organisation is prepared to give you all the support normal for a permanent employee
- hold an EPSRC, Royal Society or Royal Academy of Engineering fellowship aimed at later career stages

- hold fellowships under other schemes (please contact EPSRC to check eligibility, which is considered on a case-by-case basis).

Holders of postdoctoral level fellowships are not eligible to apply for an EPSRC grant.

This call is not part of the EPSRC repeatedly unsuccessful applicants policy.

What we're looking for

This call aims to support creative, multi- and inter-disciplinary research which focuses on the challenging questions of how autonomous systems can be responsibly designed and developed to ensure that:

- they are ethical, and legally operational
- responsibility for their decisions, failures, and overall impact can be traced (that is, that they are accountable).

We are seeking to support high quality research which focuses on new design methodologies, models and techniques that facilitate this identification of responsibilities, rather than focusing on the development of more general responsible research and innovation approaches (RRI) for the Trustworthy Autonomous Systems (TAS) programme. Applications should convey how the approach is specifically tailored to autonomous systems.

The notions of responsibility, and the resultant requirements for a responsible autonomous system, are highly dependent on the context, application and users. The development and deployment of responsible autonomous systems will require understanding both of what responsibility means for an autonomous system and its makers and operators, and of how the design and operation of an autonomous system can be undertaken to enable responsibility.

Research funded through this call might focus on areas such as (the following are intended for illustration only and are not intended as a prescriptive list):

- approaches for accountability (for example transparency and auditability) within the design, development, implementation and oversight of autonomous systems
- privacy and fairness preserving autonomous systems, including responsible and appropriate data handling and bias mitigation
- the implications of autonomous systems for different dimensions of responsibility including, for example, role-responsibility, moral responsibility, causal responsibility, liability responsibility, or civil and criminal responsibility
- individual and societal attitudes to responsibility for autonomous systems, and the relationship between trust and responsibility for different applications of autonomous systems.

The activities that are funded through this call will run alongside, and are expected to complement, the existing UKRI TAS programme and contribute to the world leading research into the technical, social and ethical challenges that surround trustworthy autonomous systems.

[Learn about the TAS programme \(TAS website\)](#)

In addition to collaborating with the wider programme, it is anticipated that successful applicant teams will also engage with stakeholders and users of the research, who are essential to the design, conduct and impact of application-orientated research.

We envisage that the successful research activities will deliver primarily against the creative, multi- and interdisciplinary research of this call by:

- undertaking novel and creative multidisciplinary research which addresses the key challenges around responsibility for autonomous systems
- building skills and capability in the development of responsible autonomous systems
- effectively integrating different disciplines and/or expertise (in particular those of the social sciences, arts and humanities) to tackle the research questions around responsibility and those posed by responsible trustworthy autonomous systems
- contributing to the development of a cohesive and world-leading UK community in trustworthy autonomous systems.

Funding available

Up to £3 million funding is available through the Strategic Priorities Fund (SPF) to support up to four grants for 30 months (at 80% full economic cost).

Please note that due to the nature of this funding, additional requirements on spending profile, reporting, monitoring and evaluation as well as grant extensions will apply. This will be reflected in the grant additional conditions, and those funded will need to comply with them. Further details are provided in the additional information section below.

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

Find more information on [equipment funding](#).

How to apply

Applicants should ensure they are aware of, and comply with, any internal institutional deadlines that may be in place. You should prepare and submit your proposal using the Research Councils' [Joint Electronic Submission \(Je-S\) system](#). Please ensure sufficient time to create Je-S accounts for investigators who do not currently have one.

When adding a new proposal, you should go to documents, select New Document, then select:

- 'Create New Document'
- council: EPSRC

- document type: Standard Proposal
- scheme: Standard Research
- on the Project Details page you should select the 'UKRI Trustworthy Autonomous Systems programme: Responsibility' call.

After completing the application:

- you must click 'Submit document', which will send your application to your host organisation's administration
- your host organisation's administration is required to complete the submission process
- applicants should allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date.

EPSRC must receive your application by 16:00 on 13 May 2021.

Please note that successful proposals will be required to make reference to the UKRI Trustworthy Autonomous Systems (TAS) programme within the title of their project. However, applications can be submitted with any appropriate title and this will be amended if successful.

Document guidance

As well as the Joint Electronic Submission (Je-S) application form, the following documents must be submitted.

Case for support

Up to a maximum of nine sides of A4.

Two sides of A4:

- include track record highlighting the skills, expertise and experience of the applicant team as relevant to the programme. Consider non-academic partners or collaborators part of the team
- may include examples of prior successes and/or lessons learnt from running complex or multi-disciplinary projects.

Six sides of A4 to include:

- background
- vision and ambition of the proposed multi-disciplinary research programme, how it aligns to the topic of responsible autonomous systems, and how it will contribute to delivering the objectives of the overall TAS programme
- novelty of the proposed work, the research objectives, and the proposed programme and methodology to achieve those objectives
- plans to maximise the impact of the proposed research
- national importance
- plans for managing the proposed work and its associated risks.

One side of A4 to include:

- plans for collaboration and engagement with the wider TAS programme

- plans for engaging with stakeholders, and users of the research, that will be essential to the design and conduct of application-orientated research.

Workplan

One side of A4.

The work programme should be illustrated with a simple diagrammatic work plan, such as a programme evaluation and review technique (PERT) or Gantt chart.

Justification of resources

Up to two sides of A4.

This should be a two-page narrative description of the need for the resources requested. Please ensure you justify all of the resources you request. See our [guidance for writing the justification of resources document](#).

Project partner letter or letters of support

No page limit.

These must be included from all listed project partners, be signed, dated (no more than 6 months before the call closing date) and on letterheaded paper. The letter or letters must include an outline of how the project partner involvement helps to enhance the quality of proposed multidisciplinary research.

Proposal cover letter

Up to two sides of A4.

This letter will only be seen internally by UKRI and should include keywords associated with the proposed work. Applicants can also express any other information they feel is relevant to their application.

You should attach all your documents as PDFs to avoid errors. They should be completed in single-spaced Arial 11 font or similar-sized sans serif typeface.

Find more [advice on preparing your proposal](#).

EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. You must complete all relevant parts of the ethical information section.

[See further guidance on completing the Je-S form](#). EPSRC guidance can be found under Additional Information.

How we will assess your application

Assessment process

This call will use a two-stage assessment process.

Stage one: postal peer review

Proposals will be sent out for postal peer review. Postal peer review will consider the assessment criteria detailed below.

Any proposals without sufficiently supportive reviews will be rejected at this stage without principal investigator (PI) response.

Applicants that receive sufficiently supportive reviews will have the opportunity to reply to comments made by the reviewers in a PI response document.

Stage two: interview panel

Proposals with sufficiently supportive postal peer review will be invited to interview in order to select the final successful applicants.

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 collaborating institution.

All criteria detailed below will be assessed in determining the final rank ordered list, taking into consideration the peer review comments, PI response and interview. Full details of the interview process will be sent to candidates before the interviews.

Assessment criteria: standard criteria

Quality (primary)

The research excellence, referring to the:

- novelty, relationship to the context, timeliness and relevance to identified stakeholders
- ambition, adventure, transformative aspects or potential outcomes
- suitability of the proposed methodology and the appropriateness of the approach to achieving impact.

National importance (secondary major)

Including:

- how the proposed research contributes to, or helps maintain, the health of other disciplines, contributes to addressing key UK societal challenges and/or contributes to future UK economic success and development of emerging industry or industries
- evidence that world-class research will be undertaken and that it will contribute to the development of world-leading UK research capabilities
- evidence for how the proposed approach adds value and tackles the unmet needs of the existing TAS programme and broader UK landscape.

Applicants and partnerships (secondary major)

The ability to deliver the proposed project, referring to:

- appropriateness of the balance of skills and expertise within the applicant team for delivery of the proposed programme of activities
- appropriateness of the track record of the applicants
- relevance and appropriateness of any collaborators.

Resources and management (secondary)

Including:

- appropriateness of the resources requested to deliver the proposed programme of work, including those to support collaboration with the existing TAS Programme
- effectiveness of the proposed management plan and risk mitigation strategy
- effective integration of different disciplines and/or expertise as appropriate to tackle the research questions posed by responsible trustworthy autonomous systems.

Call specific criteria

Fit to call (primary)

Including:

- potential to drive forward cross-disciplinary fundamental research in responsible trustworthy autonomous systems
- evidence that the proposed work differentiates between research to enable the development of responsible autonomous systems, and the broader agenda of responsible research and innovation
- complements the existing TAS programme and will contribute building a cohesive UK community in trustworthy autonomous systems
- build skills and capability in responsible autonomous systems.

Engagement (secondary)

Including:

- appropriateness of plans to engage with the existing UKRI TAS Programme
- plans for engaging with stakeholders, and users of the research, that will be essential to the design and conduct of application-orientated research

Nominating reviewers

As part of the application process you will be invited to nominate up to three potential reviewers who you feel have the expertise to assess your proposal. If appropriate, please provide one international and one non-academic suggestion as this will help us to manage any conflicts that might arise. Please ensure that any nominations, national or international, meet the EPSRC policy on conflicts of interest.

For more information about the reviewer selection process please see the related content links.

Guidance for reviewers

Please add your assessment of the call specific criteria (fit to call and engagement) to the 'Call Specific Criteria' box.

Read about the [EPSRC peer review process and guidance for reviewers](#).

EPSRC are managing the programme on behalf of UKRI. Consequently EPSRC's peer review process and reviewer guidance, which is similar to that of the other Research Councils, is being used. Postal peer reviewers will be directed to this call document when contacted to review the proposals.

Contact details

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.

Any queries regarding the submission of proposals through Je-S should be directed to the Je-S helpdesk:

- JeSHelp@je-s.ukri.org
- 01793 444164.

The Je-S Helpdesk opening hours are Monday to Thursday, 8:30am to 17:00pm UK Time and Fridays, 8:30am to 16:30 pm UK time, excluding bank holidays and other holidays.

For any other call specific information:

- please email AI.Robotics@epsrc.ukri.org for general enquiries
- Dr Danielle Lloyd, Danielle.Lloyd@epsrc.ukri.org, 07523 931 757
- Dr Victoria Mico, Victoria.MicoEgea@epsrc.ukri.org, 07712 543 215

Additional info

Background

Autonomous systems are self-contained systems that can act independently of human control or in collaboration with humans, by sensing, reasoning and adapting to a given situation or environment. They are already being developed and deployed across industrial sectors in specific, controlled conditions.

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 significant. These unanticipated events could have a very significant harmful and negative impact,

directly affect the acceptability of these systems, and compromise widespread deployment of autonomous systems in the UK.

For society to use and benefit from autonomous systems people need to trust them, and the systems themselves need to be demonstrably trustworthy. This means that the autonomous systems need to function as expected for their purpose. They need to be designed and tested to ensure that they work consistently.

Not only do they need to be appropriately developed, taking into consideration the legal, ethical and social contexts, but they need to be subject to meaningful and appropriate oversight. Trust will only be enabled through technical advances conducted in specific societal circumstances (if those technical applications are embedded in legal, organisational, and social contexts in which they are demonstrably trustworthy).

The UKRI Trustworthy Autonomous Systems (TAS) programme of which this call is a part is a £33.7 million investment on fundamental research into key challenges around the adoption and deployment of autonomous systems. By focusing on key aspects such as safety, security, reliability, acceptability and trust, this programme will ultimately enable autonomous systems to be legitimately, and more effectively, adopted across society and industrial sectors.

The UKRI TAS programme will convene key stakeholder groups to drive forward cross-disciplinary fundamental research into the design, development, curation, verification and validation of autonomous systems to enable trust, and to ensure that they are safe, reliable, resilient, legal and ethical. This is an essential step to de-risk the technology for the short and long-term benefit of society.

The TAS programme is currently being delivered through two interconnected parts:

- a central Hub that will lead on the delivery of the objectives of the programme,
- several research Nodes, each focusing on one aspect of research (trust, security, governance and regulations, resilience, functionality, and verification) required to making autonomous systems trustworthy.

Read more about the [**TAS programme research nodes.**](#)

This investment has the following objectives:

- coordination and collaboration – building a connected and multidisciplinary UK research community tackling the challenges of trustworthy autonomous systems
- creativity and multi-disciplinarity – undertaking recognised world leading fundamental research in the area, with benefits to real world applications and adoption of autonomous systems
- advocacy and engagement – putting in place a clear single point of contact for TAS expertise and engagement with key stakeholders.

Grant additional conditions (GACs)

Please note that due to the nature of this funding stream, there will be specific spending requirements, monitoring and evaluation. These aspects will be reflected as grant additional conditions for successful proposals (see below).

Grants will be subject to the standard UK Research and Innovation grant conditions. However, due to the nature of this funding, the following grant additional conditions will apply to any successful proposal. Note that these conditions may be amended, or further conditions may be added to those below before the grants are awarded.

GAC 1 – start date of the grant

Notwithstanding RGC 5.2 Starting Procedures, this grant has a fixed start date of 1 January 2022 – no slippage of this date will be permitted. Expenditure may be incurred prior to the start of the grant and be subsequently charged to the grant, provided that it does not precede the date of the offer letter.

GAC 2 – naming and branding

In addition to RGC 12.4 Publication and Acknowledgement of Support, the Grant Holder must make reference to the UKRI Trustworthy Autonomous Systems (TAS) programme and UKRI funding and include the UKRI logo and relevant branding on all online or printed materials (including press releases, posters, exhibition materials and other publications) related to activities funded by this grant. References to the Strategic Priorities Fund must be included.

GAC 3 – collaboration and collaboration agreements

This grant is awarded on the condition that it will remain aligned to the TAS programme and will work in strategic partnership with the Nodes and the Hub to deliver the objectives of the investments.

A formal Collaboration Agreement must be in place with the basis of collaboration between any organisations involved in the grant. This Agreement should include the following:

- the allocation of resources throughout the project
- ownership of intellectual property
- rights to exploitation.

It is the responsibility of the Research Organisations to put such an agreement in place before the research begins. The terms of collaboration agreements must not conflict with the UKRI terms and conditions. Arrangements for collaboration and/or exploitation must not prevent the future progression of research and the dissemination of research results in accordance with academic custom and practice.

The EPSRC contact must be informed within three months of the start of the grant, that the collaboration agreement is in place and has been signed by all partners and/or the progress made (unless some alternative timeline has been agreed with EPSRC beforehand). If sufficient progress has not been made within three months of the start of the grant, EPSRC reserves the right to enact RGC 23.

GAC 4 – expenditure

At the start of the grant the financial spend profile will be agreed by UKRI. In addition to any reporting requirements set out in GAC 4, the Grant Holder must

immediately notify the UKRI Project Officer(s) of any accumulation, slippage or variation in expenditure greater than 5% of the annual profiled funding. We reserve the right to re-profile the grant if required.

Any deviation from the agreed allocation of funding and profiled costs must be negotiated and approved through written consent by UKRI. The approval of profile changes should not be assumed and will be dependent on spend across all associated grants.

At the end of the grant period a breakdown of the expenditure should be submitted along with the final expenditure statement.

GAC 5 – grant extensions

No slippage or grant extensions (beyond exceptional circumstances in line with the Equality Act 2010) will be allowed. UKRI/EPSRC will not be responsible for any cost overrun incurred during the course of this grant. The Research Organisation(s) will be required to make up any shortfall from alternative sources.

GAC 6 – monitoring and reporting

In addition to the requirements set out in the standard UKRI grant condition RGC 7.4.3, the Grant Holder is responsible for providing bi-annual progress reports against non-financial performance metrics. These will be in accordance with the arrangements specified in the Trustworthy Autonomous Systems business case.

UKRI will put in place a monitoring and evaluation plan for the Trustworthy Autonomous Systems programme of which this grant is a part. The grant holders will be required to supply UKRI with information requested to facilitate monitoring and evaluation of the TAS programme.

GAC 7 – governance

UKRI will establish an external Strategic Advisory Board to advise UKRI on the management of the TAS Programme and the progress of the programme against the objectives. Members of all parts of the TAS programme may be invited to join the Strategic Advisory Board sessions as appropriate.

GAC 8 – review of the project and assurance reviews

In addition to the requirements set out in standard UKRI grant conditions RGC 7.4 and RGC 7.5, EPSRC reserves the right to instigate a review of all or part of the grant at any stage during the lifetime of the award, as well as after the grant has finished. EPSRC will give the grant team(s) due notice of any review and will provide details of the Terms of Reference and documentation required. An unsatisfactory outcome of the review may result in a reduction or termination of the grant funding.

Supportng documents

[How to prepare a proposal](#)

[Resubmissions](#)

[Repeatedly unsuccessful applications](#)

[Equipment](#)

[Use of animals](#)

[Responsible research and innovation](#)

[Ethical considerations](#)

[Equality, Diversity and Inclusion](#)

[Reviewer selection](#)

[Conflicts of interest](#)

[DORA](#)

[Equality Impact Assessment](#)

Timeline

- **10 February 2021**
Opening date
- **13 May 2021 16:00**
Closing date
- **Week commencing 6 September 2021**
Interview panel
- **1 January 2022**
Fixed start date of grant

Related content

[Call document for the Trustworthy Autonomous Systems Hub](#)

[Call document for the Trustworthy Autonomous Systems Nodes](#)

NOTE This is the first phase of our new website – let us know if you have **feedback** or would like to [help us test new developments](#).

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