

Proposal for a TAS Global Sandpit event

The UKRI Trustworthy Autonomous Systems Programme is the UK's flagship multi-disciplinary research programme that looks to address the challenge of developing best practices for the design, operation, and governance of trusted and trustworthy autonomous systems for the benefit of society. One of its goals is to establish international collaborations that will ensure that the research it funds in the UK is informed by, and complements research carried out in other parts of the world on trustworthy autonomous systems.

As a first step, the TAS Hub aims to organise an in-person 4-day sandpit in collaboration with US institutions to co-create 12-month research projects with a view to establishing new relationships and address the challenges of building, operating, and regulating autonomous systems across different countries and cultures.

For more information on what a typical sandpit involves [find out here](#).

Key dates

- 21 September Submission of expression of interest.
- 30 November Outcomes announced
- 12-16 December Sandpit (Location in the US)

The Sandpit process

The sandpit will be an intensive, interactive, inclusive and free-thinking environment, where a diverse group of participants from a range of disciplines and backgrounds will work together for five days. The aim will be to immerse participants in collaborative thinking processes and ideas sharing in order to construct innovative approaches.

It will be led by a director, who will be supported by a team of mentors. Professor Derek McAuley will be the Director for this sandpit. A professional facilitator will support the Director.

The Director, mentors and a small number of stakeholders will attend the sandpit but will not be eligible to receive research funding. Instead, their role will be to assist participants in defining and exploring challenges in this area.

The process can be broken down into several stages:

- defining the scope of the challenges
- evolving common languages and terminologies amongst people from a diverse range of backgrounds and disciplines
- sharing understandings of the challenges, and the expertise brought by the participants to the sandpit, and perspectives from relevant stakeholders
- taking part in sessions focused on the challenges, using creative thinking techniques

- capturing the outputs in the form of highly innovative research projects
- a funding decision on those projects at the sandpit using 'real-time' peer review.

Participants should be able to apply their knowledge, skills, and experience across disciplines to develop innovative research arising from different perspectives, with the potential to deliver new ideas focused on trustworthiness of autonomous robotic systems.

As the sandpit progresses, participants will build up thoughts on how the identified 'challenges' may be addressed and develop their innovative ideas and activities into research projects.

Projects should contain genuinely novel and speculative research. The director and mentors will act as independent reviewers, making a funding recommendation on the projects emerging from the process through a 'real-time' peer review process.

Scope

The sandpit will include inputs from a variety of sources, bringing together a wide variety of disciplines and innovators to address the research challenges associated with understanding and developing trustworthiness of autonomous robotic systems.

The sandpit will address key concerns around Trustworthy Human-Machine Teaming such as those given below, in relation to specific operational contexts:

- Multiple Humans-Multiple Machines: multiple human operators and analysts and teams on the ground working with robots (air, ground, under-water /surface, AI-based planning systems) in disaster response or agri-robotics.
- Single Human-Single Machine: human, robot, and AI-based system for robotic surgery or engine repair.

The scenarios will consider specific trust issues for example around transparency of autonomous decision-making, delegation of control, resilience, and explainability.

Through the sandpit, participants will build up thoughts on how these challenges may be addressed and develop their innovative ideas and activities into research projects.

The aim of this sandpit is to generate research proposals that:

- take into account the needs of customers and stakeholders and consider co-design with end-users
- form new collaborations between researchers, innovators, and users in diverse research areas
- create new and transformative research ideas in *trustworthiness of autonomous systems (robots or software agents)*.
- allow researchers to pitch projects for seed funding to test and de-risk novel ideas
- address the key research challenges that are identified
- cultivate a common language between disciplines.

Priority application areas include disaster response, healthcare, and environmental sustainability.

Achieving the sandpit aims will require participants from an appropriate mix of diverse backgrounds and relevant disciplines. Researchers from a diverse range of disciplines are therefore encouraged to apply to attend this sandpit.

We are not defining the disciplines that should be represented but asking potential participants to indicate how their expertise can address the challenge of trustworthiness in autonomous robotic systems in the broadest sense.

Applicants need not have worked on the problem before. However, emphasis will be placed on working across disciplines to foster new collaborations and bring new thinking to the problem.

Funding Available

The TAS Hub will look to fund projects worth between £50k/\$65k. The total budget available is £200k/\$260k. The number of projects funded will depend on the quality of the projects proposed and the funds available at the time from TAS hub and other sources.

Funds can be requested from TAS Hub to cover the cost of travel for research visits (e.g., by US-based researchers), consumables and interns. US-based researchers should apply via their own institution (JHU Institute for Assured Autonomy and University of Texas at Austin Good Systems Group.)

How to apply?

Applying to participate in the sandpit will be done by completing an [expression of interest online survey](#).

Your answers to the expression of interest questions will be used to assess your application and convince a panel that you have the suitable skills and attitude to participate in this sandpit. No further documentation will be accepted.

The expression of interest will indicate participant availability for these dates and their commitment to attend if shortlisted. Please be advised attendance for the full five days is mandatory, although part of this may be conducted virtually.

Information about the venue and the exact format of the sandpit will be provided to the successful participants. Accommodation will be provided; however, participants must make their own travel arrangements.

The deadline for expressions of interest is 21 September 2023. Please note that late submissions will not be considered. TAS Hub will confirm selected participants and the sandpit schedule by the end of November. Those selected to attend will receive further briefing before the event.

Selected applicants will be required to inform their line manager, in advance of the event, that they are going to attend the sandpit.