The UKRI Trustworthy Autonomous Systems Hub

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Sector Leads Committee: Defence and Security, UKRI TAS Hub
www.tas.ac.uk  https://www.ecs.soton.ac.uk/people/sem03
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The UKRI TAS Programme

The TAS Hub is funded as part of the Strategic Priorities Fund (SPF) which funds multi- and interdisciplinary research across 34 themes in response to strategic priorities and opportunities.

- **Total Funding**: £33m over 4 years
- **Funding**: Hub: £11.7m, Nodes: £3m each
- **Universities**: 20+
- **Researchers**: 130+
- **Industry Partners**: 100+
- **Disciplines**: 10+

World’s largest research programme in Trustworthy AI and Autonomous Systems
TAS Programme Objectives

COORDINATION AND COLLABORATION
A coherent interconnected and multidisciplinary UK research community around the theme of Trustworthy Autonomous Systems.

CREATIVITY AND MULTI-DISCIPLINARITY
Creative and adventurous fundamental research into the technical, social and ethical challenges surrounding Trustworthy Autonomous Systems, drawing on diverse approaches from across disciplines.

ADVOCACY AND ENGAGEMENT
Establish a UK focal point for active engagement with key stakeholders including wider academia regulators, policy makers, industry, businesses, Non-Governmental Organisations and the public.
Over 60 Partners
TAS Hub International Partners

- University of Southampton
- University of Nottingham
- King’s College London
- International Partners
- 60 Project Partners from Industry, Government, Research, Arts, Charities, and Policy-makers

We are open to even more international collaborations (e.g., NSF-funded AI centres, Canada, Industry,...)
Engagements Statistics

24k tweet impressions
1,056 profile visits
236 followers
(as of Feb 2021)

Living with AI Podcast

500+ downloads

78
Industry partners
(+ 18 since launch)

In one week
500 users (visitors)
2 min (average time on site)
532 visits to pump priming page
# Key Sectors

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<th>SECTOR</th>
<th>EXEMPLAR CONCERNS</th>
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<tr>
<td>Autonomous Vehicles</td>
<td>Safety (individual vehicles and CAVs), fair access to individuals, communities and society.</td>
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<td>Healthcare</td>
<td>Safe &amp; ethical telecare, rehabilitation, assisted living, diagnosis, surgery.</td>
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<tr>
<td>Industry X.0</td>
<td>Resilient, safe, efficient, and responsive industry. Avoiding dull, dirty, and dangerous environments</td>
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<tr>
<td>Financial Services</td>
<td>Accountable, fair, explainable, loans, insurance, trading, banking.</td>
</tr>
<tr>
<td>IoT at home and the workplace</td>
<td>Data privacy, explainable and socially acceptable trusted devices, behaviours.</td>
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<tr>
<td>Creative Industries</td>
<td>Understanding user expectations of future autonomous systems, trust and explainability issues.</td>
</tr>
<tr>
<td>Defence and Security</td>
<td>Ethics, legality, equality, data privacy, for cyber security.</td>
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*There are more partners than in this table, incl., govt agencies and some span multiple sectors*
TAS Research Focii

**DESIGN PROCESS**
- Human-Machine Interaction Design
- Computational Models of Trust
- Verification and Validation
- Designing for resilience
- Assurance cases
- Secured against attacks towards users and systems

**OPERATIONS**
- Adaptive functionality
- System resilience to failures
- Modelling, monitoring, and reducing uncertainty
- Explainable AI
- Social adaptation
- Governance
- Flexible Autonomy
- Identifying attack surfaces and responding to threats

**SOCIETAL ACCEPTANCE**
- Regulation
- Public perceptions of AS
- Ethics of AI
- Accountability in human-machine partnerships
- Certification processes
- Skills
- Policy
- Responsible Research and Innovation

**TRUSTWORTHY BY DESIGN**
- Governance & Regulation
- Verifiability
- Resilience
- Functionality
- Security

**TRUSTED IN PRACTICE**
- Trust
- Hub
TAS Hub Programmes

**Research Programmes** complement and integrate the nodes’ research
- Agile Programme
- Integrator Programme
- Grand Challenge Programme
- Pump Priming Programme

**Advocacy & Engagement Programme**
- Public and Creative Engagement
- Adopter Engagement (users, stakeholders etc)
- Policy Engagement

**Skills Programme**
- TAS Doctoral Training Network
- Syllabus Lab to develop new training material for TAS job family
- Industrial Internships & Fellowships

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The diagram illustrates the hierarchical relationship between different programmatic and organizational units, starting from the most general layer at the centre to the most specific at the periphery.
Pump Priming Programme (open to UK research orgs)

- Provide up to £5M (100%FEC) of **competitive research funding** to the UK research community at large with targeted bi-annual calls to fund complementary and integrative research (strict spend profile)
- Fund a **variety of project types**, each worth between £50k to £150k
  - Early career proof of concept; industry-led; foundational; exchanges; business incubators
- Over the initial 4 years of TAS-UK, we anticipate **funding 25 to 80 projects**
- Later **themes for calls set by the grand challenge programme**, and reviews of the research programmes across the hub and nodes
- Call launch after nodes start (Nov) – deadline Jan/Feb, June start
Grand Challenges Programme (open to ‘the world’)

- Source grand challenges for the TAS programme from the international TAS community (similar EPSRC Big Ideas)
- Candidate ideas will go through a sifting and consultation process involving the hub, nodes and partners to select ideas
- Grand challenge ideas developed further for pump priming (specific calls), agile, integrator projects as appropriate
- May lead to further funding calls with UKRI
Sector Leads Committee: Defence & Security

Alec Banks  
*Principal Scientist, Software Systems*  

Joseph Devanny  
*KCL*

Christine Evers  
*UoS*

Hector Figueiredo  
*QinetiQ*

Stuart Middleton  
*UoS*

Defence and security
**Engagement Examples**

**Advertising Internships**
- Advertise your internship positions to the TAS Hub Doctoral Training Network (DTN)
- TAS Hub has many world class UK universities and students with deep AI skillsets

**Matchmaking**
- Engage with existing TAS Hub projects e.g. Agile or Pump Priming projects
- TAS Hub can help you via matchmaking to find collaborators for your projects
- TAS Hub Partner onboarding process

**AI Horizon Scanning**
- Keep up-to-date with TAS Hub mailing lists and Teams site
- TAS Hub engages in regular government consultations and expert reports

Registration
https://www.tas.ac.uk/engage-with-us/ways-of-working-together/

Matchmaking and DTN
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