

Robotics for a Safer World

Challenge Director: Andrew Tyrer

andrew.tyrer@innovateuk.ukri.org

Twitter: @Andrew_Tyrer

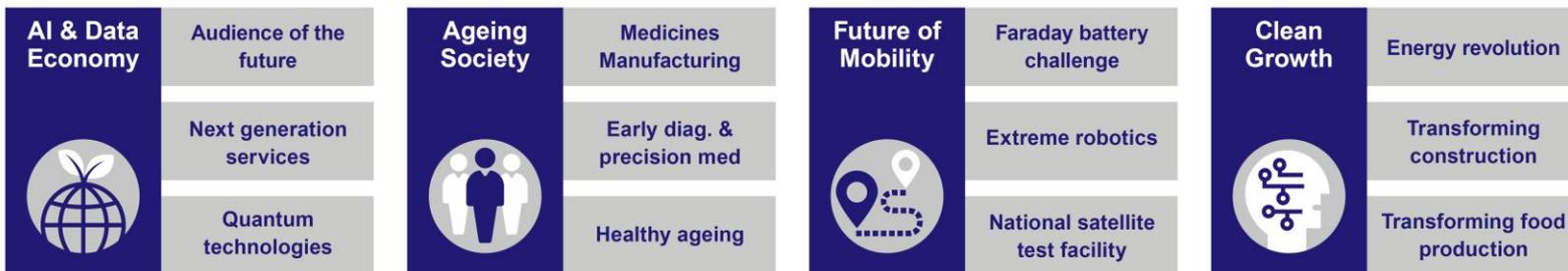


#Industrial Strategy

Industrial Strategy Challenge Fund (ISCF)

The ISCF aims to bring together the UK's world-leading research with business to meet the major industrial and societal changes of our time, as part of the government's £4.7 billion increase in research and development over the next 4 years.

The Grand Challenges



Context



The opportunity: why does the UK want to be a world-leader in robotics technology?

Economic Impact

McKinsey (2013) estimates economic impact of advanced robotics \$1.7- \$4.5tr by 2025

Address the productivity gap in cross sector robotics by up to £218bn (15% of GVA)

Barclays (2015) suggest moderate investment in robotics would create an extra 33,000 UK manufacturing jobs by 2020 and 73,500 by 2025

Societal Impact

Reduced human exposure to hazardous environments

Safer nuclear decommissioning and maintenance

Contribute to cleaner energy

Skills development for a global outlook

Challenge

Robotics for a Safer World

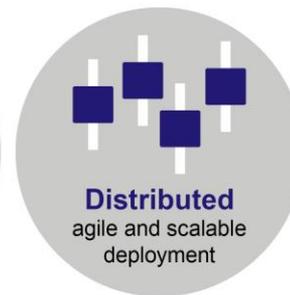
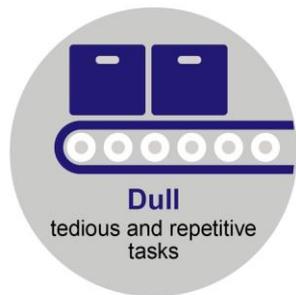
The robotics challenge is a £93m+, 4-year programme that will develop robots to take people out of dangerous work environments, and go into areas beyond human limits. The challenge will:

- Develop robotic solutions to make a safer working environment in industries such as offshore energy, nuclear energy, space and deep mining
- Increase productivity
- Open up new cross-disciplinary opportunities



Challenge

The Challenge will address priority areas from which to remove humans, with the use of robotics and AI technology: ‘the six D’s’



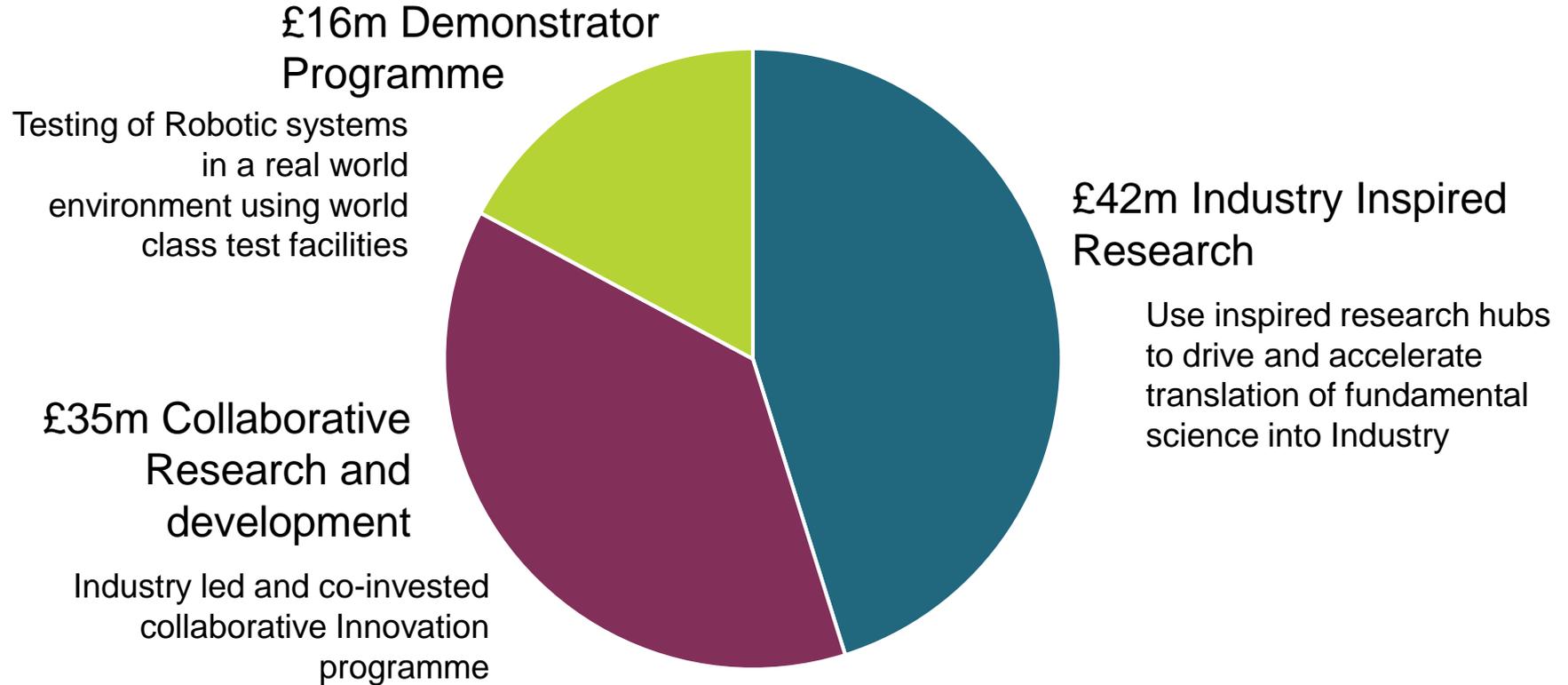
Expectations



The Challenge will:

- Accelerate the speed of developed Robotics and AI technologies to market
- Target markets with growth potential, such as nuclear decommissioning, satellite servicing and renewable energy
- Demonstrate alignment, leverage and grow market share for UK companies in Robotics and AI activities
- Ensure that opportunities for collaboration are identified and exploited
- Build a cohort of UK organisations to enable collaborative applied research to be demonstrated in real world problems, in live field test conditions leading to the development of fully integrated working solutions

Programme



Demonstrator (£16m)	CR&D (£35m)	Hubs (£42m)
<p>Phase 1</p> <ul style="list-style-type: none"> • 25 Projects Live • 48 Organisations <p>Stand-out Projects</p> <ul style="list-style-type: none"> • Nesta – Flying High • Astroscale • Autonomous Last Mile • Team Tao – Shell X Prize <ul style="list-style-type: none"> • £11.65M Investment so far <p>Phase 2 Build & Test</p> <ul style="list-style-type: none"> • Open to Phase 1 only • Briefing & Networking July • Closed 26th September 18 • Up to £6m funding 	<p>Round 1</p> <ul style="list-style-type: none"> • 24 Projects Live • 70 Organisations • £16.42M investment <p>Round 2</p> <p>Innovation Lab</p> <ul style="list-style-type: none"> • Run 10-14th September • Competition Closes 10th October • Up to £15m available <p>Mission Activity</p> <ul style="list-style-type: none"> • In planning • Feb /March 2019 	<p>Four hubs established</p> <ul style="list-style-type: none"> • ORCA • FairSpace • RAIN • NCNR <ul style="list-style-type: none"> • £45.36M investment • £51.67M of co-investment from industry

Wider Impacts



Executive Summary

- Cities are enthusiastic about the potential for drones to deliver societal benefit
 - Public confidence, technical progress and space to experiment are all needed if we are to move forward
 - We need to move quickly to help unlock the opportunity
- NESTA are leading the Flying High consortium, together with 5 cities (with over 20 applicants) to overcome both technological and public perception issues with Beyond Visual Line of Sight use of drones

NESTA Flying High Recommendations

Recommendations focus on future activity around core themes

- Public involvement and confidence
- Development of large scale feasibility studies
- Regulatory development
- Infrastructure needs
- Alignment of different players of the UK drone industry
- Proposals for challenge prizes

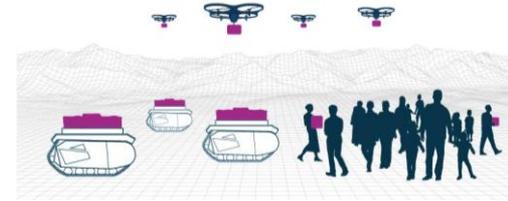
Full report attached

<https://www.nesta.org.uk/report/flying-high-challenge-future-of-drone-technology-in-uk-cities/the-need-for-flying-high/>

Co-funding with MOD & DFID: Autonomous 'Last Mile' Resupply

Programme provides additional funding to the Dstl / DFID Autonomous Last Mile Resupply programme. Focussed on military and humanitarian aid applications in challenging environments.

- QinetiQ: Developing a multi-platform Unmanned Ground Vehicle (UGV) & Unmanned Air Vehicle (UAV) system.
- Barnard Microsystems Ltd: Developing a long range, vertical take-off, vertical landing UAV capable of automatic pick-up and drop-off of loads.



QINETIQ



Barnard
Microsystems

We continue to build a cohort of organisations who self identify as being funded under the ISCF RAI Challenge programme

- Held all hands away day
- Produced a live directory of all projects
- Run bespoke events centered around technologies and solutions
- Introduced projects to end-users



Key Challenges

- Impact in end-user markets
 - Bring in end-users early
 - Showcase demonstrators
 - Engage Internationally
- Effective Monitoring and Evaluation of the Challenge and its progress
- Follow on funding
 - Present programme ends in 2021
 - Further investment will be required to deliver on strategy