



Engineering and
Physical Sciences
Research Council

EPSRC Centres for Doctoral Training

Webinars

15 December 2022,

5 January 2023, 9 January 2023

Welcome to the EPSRC CDTs webinar!

- The webinar will start at approximately 14.05
- Technical difficulties: email students@epsrc.ukri.org
- Please wait for the end of the presentation before submitting questions
- Submit questions through the Zoom Q&A function (there is no open chat)
- Individual specific questions: better to email us at students@epsrc.ukri.org
- Webinars are not being recorded: we will publish answers to submitted questions on the funding opportunity page (with similar questions combined) in mid-January, after the third webinar
- Full details of the call are on the funding opportunity page

Background

- While working to develop a UKRI collective talent approach, EPSRC continues to support doctoral training through our three routes
- Implementing the recommendations from our review of EPSRC-funded doctoral education
- Centres for Doctoral Training (CDTs) deliver high quality, cohort-based doctoral education
- EPSRC expects to commit up to £324 million through this opportunity, aligned to our strategic delivery plan

EPSRC – Our delivery plan objectives:

People	Places	Ideas	Innovation	Impacts
<p>Investing in people, skills and teams</p> <p>Embedding equality, diversity and inclusivity</p>	<p>Local, national and international partnerships, nurturing excellent research and strengthening clusters across UK nations and regions</p> <p>World-leading capital and digital infrastructure</p>	<p>Investing in 3 discovery research priorities:</p> <ul style="list-style-type: none">• Physical and Mathematical Sciences Powerhouse• Frontiers in Engineering and Technology• Digital Futures	<p>Co-working with business</p> <p>Connecting research and innovation</p> <p>Accelerating translation, commercialisation and knowledge exchange</p>	<p>Mission-inspired research with four priorities:</p> <ul style="list-style-type: none">• Engineering Net Zero• AI, Digitalisation and Data: Driving Value and Security• Transforming Health and Healthcare• Quantum Technologies.

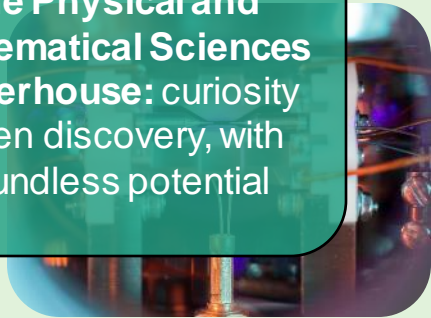
**Supported by a
World Class
Organisation**



EPSRC's 8 Strategic Priorities

Discovery-led Research

The Physical and Mathematical Sciences Powerhouse: curiosity driven discovery, with boundless potential



Frontiers in Engineering and Technology: unleashing our productivity potential

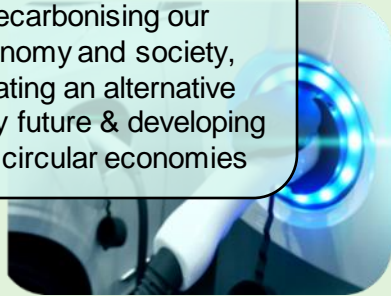


Digital Futures: the future of communications, computing and the internet



Mission-Inspired Research

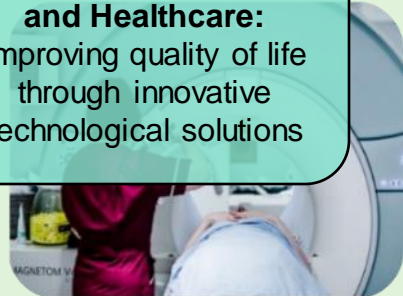
Engineering Net Zero: decarbonising our economy and society, creating an alternative energy future & developing truly circular economies



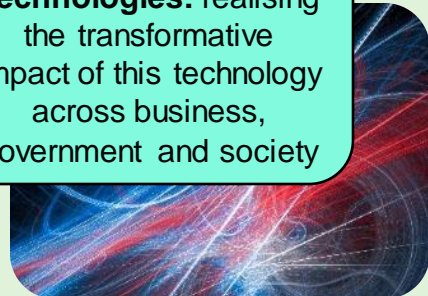
AI, Digitalisation and Data – Driving Value and Security: powering transformative change and the next industrial revolution



Transforming Health and Healthcare: improving quality of life through innovative technological solutions



Quantum Technologies: realising the transformative impact of this technology across business, government and society



International

Talent and Skills

Place

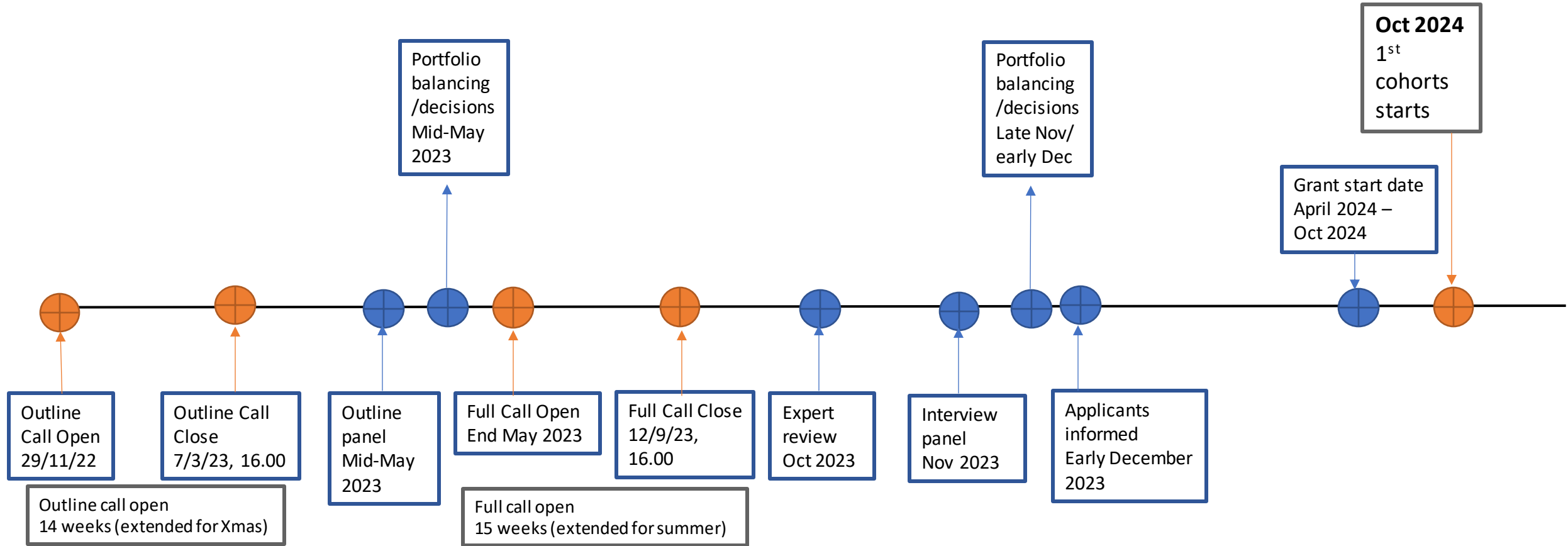
World Class Infrastructure

Impact

Business Engagement

An Effective Ecosystem for Engineering and Physical Sciences

Call timeline



Scope - expectations

- Seeking a clear need for cohort-based doctoral training and an appropriate plan to address this
- 5 cohorts of minimum 10 students per year
- No restrictions on research doctoral qualification (for example, PhD, EngD)
- Formal assessable taught programme – no set requirements on content or qualifications
- Opportunities to work both within and across cohorts, and for business/user engagement



Scope - remit

- Proposals should be **centred in** EPSRC's remit, addressing EPSRC's strategic delivery plan 2022-2025
- Multi and interdisciplinary proposals are welcome, including those involving the arts and humanities and medical sciences, addressing AHRC's and MRC's strategic delivery plans (co-funding discussed later)
- Proposals focused on the applications and implications of novel and existing AI technologies should be submitted to the AI CDT call – contact us if unsure



Scope – focus areas

- All applicants **must** choose one
 - Full definitions on funding opportunity page
1. Meeting a user-need and/or supporting civic priorities
 - Requires user co-creation and co-delivery, with appropriate cash/in-kind leverage
 2. Delivering an EPSRC research priority
 - Addressing one of EPSRC's 7 priorities
 3. Supporting an innovative approach to CDT delivery
 - Intentionally open – open to discussion



Eligibility

- Applications must be led by eligible institutions with research degree awarding powers
- Applications are welcomed from both single and multi-institutional teams
- The PI must be from the lead organisation and satisfy standard EPSRC eligibility criteria
- Generally expect no more than 10 named investigators
- We welcome as Co-Is research technical professionals and professional research and investment strategy managers who are integral to developing the bid
- We have limited the number of applications that can be submitted as lead institution (regardless of funding route: EPSRC, other UKRI councils, MOD etc)



Eligible costs

- Studentship costs (fees, stipends and appropriate research training support for the equivalent of 40 students over 5 cohorts)
 - Expectation of students having minimum 50% EPSRC support, unless by exception
 - Justified stipend enhancement
- Centre delivery, coordination and management (**not** supervision)
- Start-up costs for new centres only
- Base on current prices (including stipends)



Partnerships and leverage

- **Appropriate** user co-creation, contributions and engagement
- No Je-S project partners in outlines: instead detail the co-creation of the bid by significant partners, and give EPSRC indication of leverage
- Meeting Mojo <https://cdtcall.meeting-mojo.com/> :
 - Free, private online meeting place for interested **non-academic** partners
 - To identify like-minded partners with shared interests, and connect about future CDT collaborations



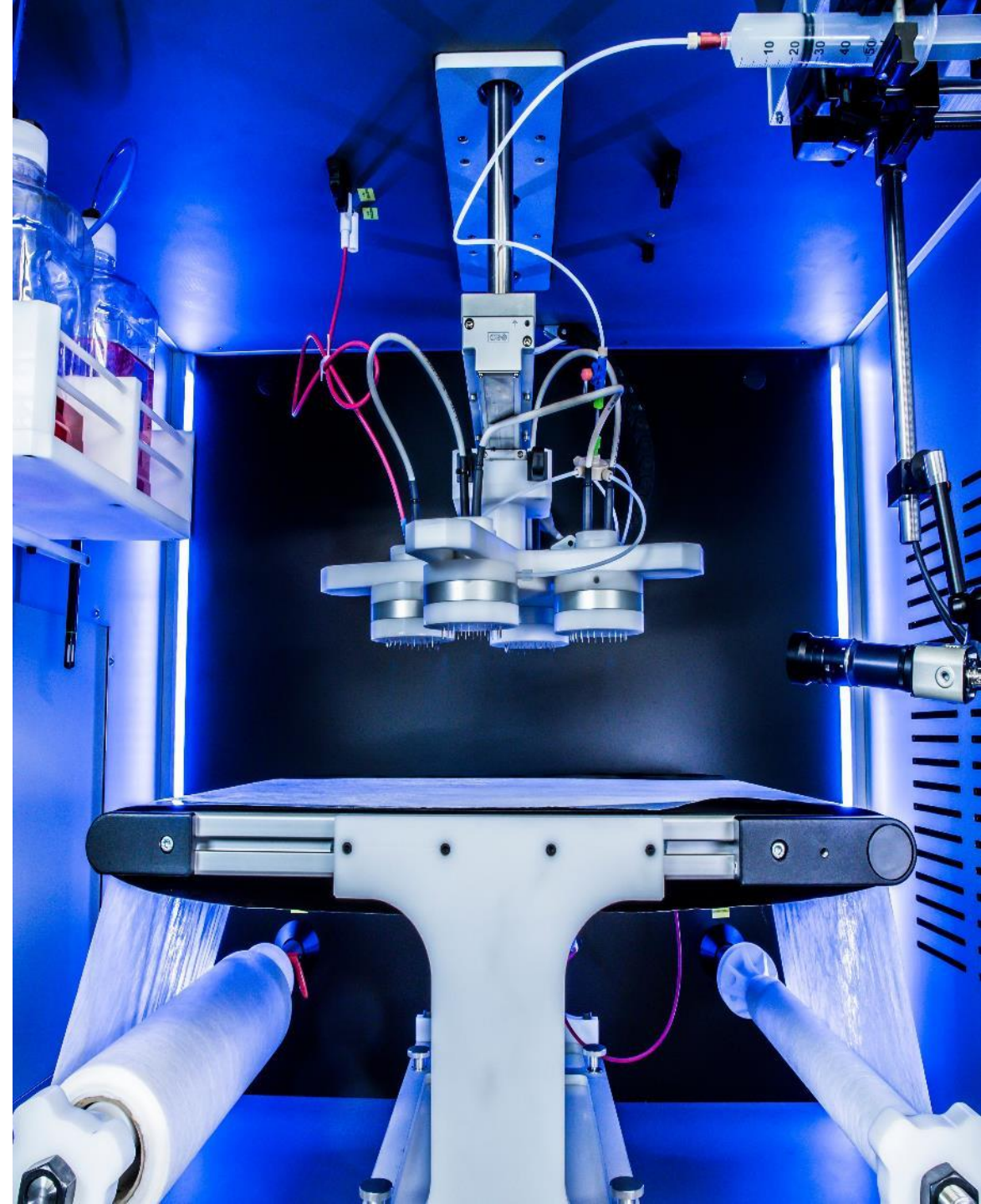
Partnerships and leverage

- Must include a minimum 20% cash contribution towards the total studentship costs (stipends, fees, RTSG) from **any** non-UKRI sources
- Additional cash/appropriate in-kind leverage is expected in many cases (especially in user/civic need focus area)
- Level of cash and in-kind contributions and model of engagement is expected to be appropriate to, for example, R&D intensity of the sector, size of the companies or other partners involved, balance of business vs public vs third sector



How to apply - outline

- One proposal per CDT application
- Je-S form - successful summaries to be published
- 3 page case for support – no template; to address the 3 criteria
- Additional info form not seen by panel, for use in portfolio balancing
- No further documents (no letters of support required)
- Deadline: 7 March 2023, 16.00



Outline assessment

- Outline panels with mixed expertise
- Proposals for existing and new centres considered together
- Assessed and banded against criteria:
 1. Strength of vision & expected outcomes
 2. Fit to the chosen focus area
 3. Appropriate team and partnerships
- No feedback unless directed by panel
- Post-panel portfolio balancing exercise



Full proposal stage

- Full details will follow in May
- Expect to invite no more than 120
- Will require project partner contributions
- Expert review then interviews
- Criteria to include:
 - feasibility of delivery
 - quality of training approach
 - management and governance
 - value for money
 - demand from students / employers

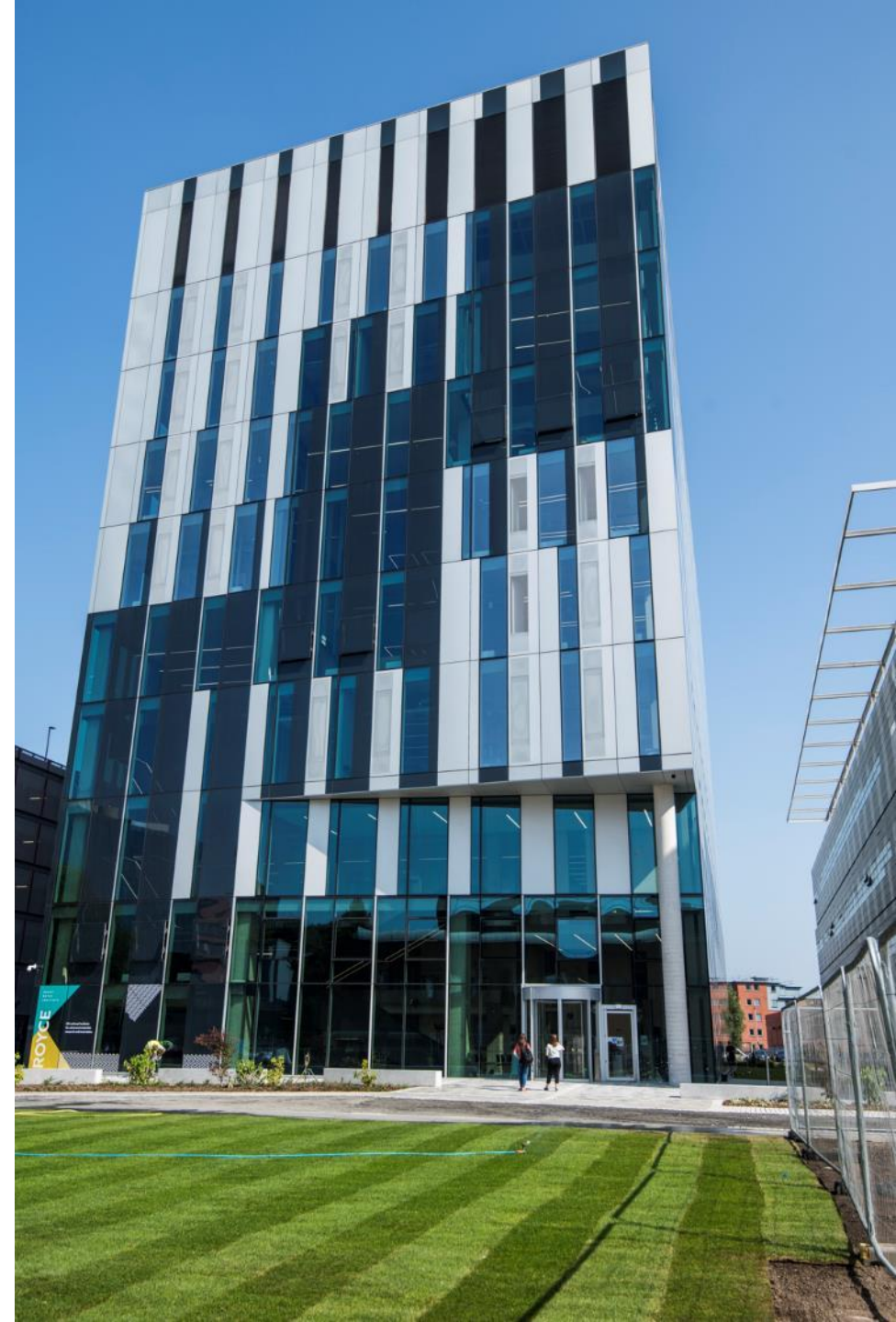


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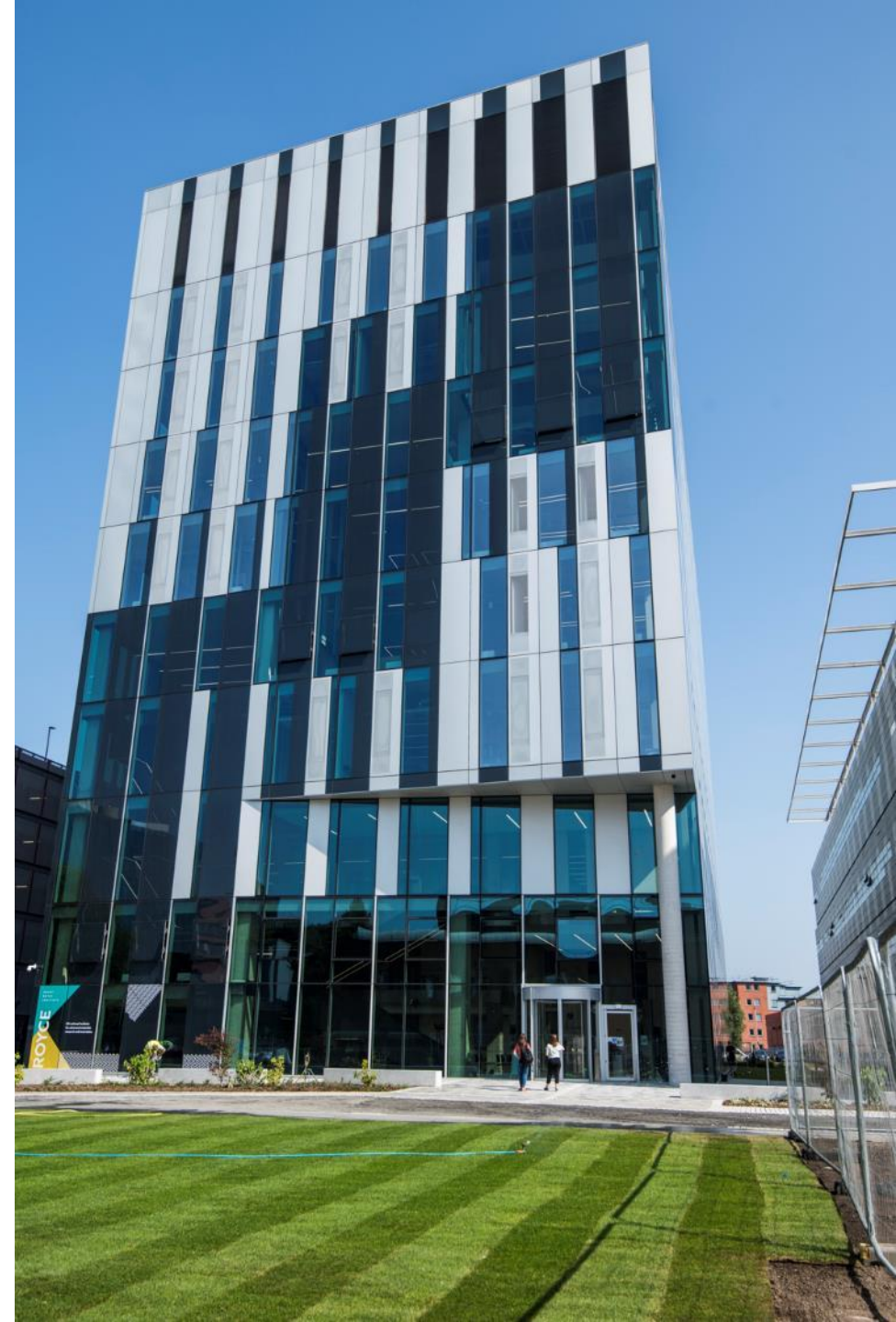
Portfolio balancing

- Science, Engineering and Technology Board to provide EPSRC with advice
- Portfolio balance across focus areas, then:
 - Distribution over EPSRC's 7 science priorities
 - The balance within those 7 priorities
 - Geographic distribution of students
 - Other landscape diversity such as balance of institutions and sectors
- Will also take account of co-funding (next slide)
- No fixed expected balances across these



Funding decisions

- Further to EPSRC's funding:
 - AHRC and MRC to support proposals with research in their remits (arts and humanities, medical sciences) and aligned to their strategic delivery plans
 - MOD intend to fund one CDT and may contribute to others
 - Potential for further co-funding
- **All proposals will be considered together during the assessment process, regardless of funding source and disciplinary focus**



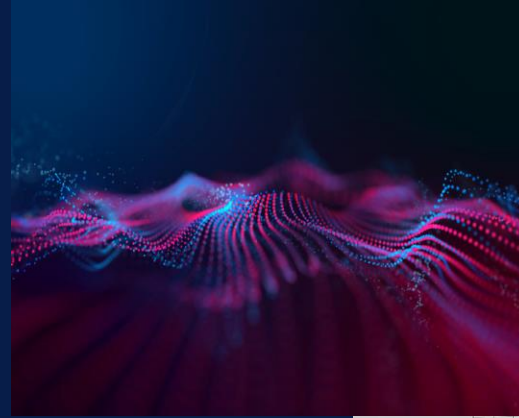


Ministry of Defence

A CDT fully supported by MOD

Training relating to transformational technological developments.

To uniquely and profoundly take forward the defence and security of the UK, in the 25 year timeframe.



Embracing foresight, diversity & thought leadership

We can imagine what good will look like: we can't specify it precisely today, but want to make it a reality

- Research & training involving a diverse set of perspectives
 - Technological
 - Socio-economic
 - Geo-political (government/defence)
- Thinking outside of the box
 - Science and technologies that could disruptively affect defence challenges in 2050
 - So-called “Generation after Next”
 - Capability that does not exist and/or contributing technology that is not fully understood.
 - Concepts will be ‘leap ahead’ and world leading to challenge the boundaries of current and emerging understanding
 - (Defence) Capability covers perspectives including: equipment, concepts of use, applications etc
 - Inclusive of delivery partners beyond technology
 - Cross-UKRI, strategists, think tanks, fiction writers, global tech, international partners etc
 - Cohort approach: it may not be possible to embody all aspects in each PhD? Coupling PhDs, so that collectively they do could be alternative way? There may be other novel approaches?

Context

- Defence challenges – how will science and technology disruptively enhance the key enduring elements of defence capability. We are seeking novelty in:
 - Situational awareness integrated across all operating environments and modalities
 - Decision making (command and control) and enablers such as communication and computing
 - Effectiveness in circumstances short of war (known as “sub-threshold”)
 - Military effects
 - Freedom of Access and Manoeuvre, to have presence, and to deliver and achieve effects
- Useful references:
 - MOD S&T Strategy (<https://www.gov.uk/government/publications/mod-science-and-technology-strategy-2020>)
 - Defence Technology Framework (<https://www.gov.uk/government/publications/defence-technology-framework>)
 - Defence S&T Portfolio (<https://www.gov.uk/government/publications/defence-science-and-technology-programmes-and-projects/ministry-of-defences-science-and-technology-portfolio>)
- What we don't want within this scope is a CDT focused solely on an individual technical domain such as AI, quantum, engineering biology, etc

Convergence, emergence & a systems approach

Sustaining strategic advantage through science & technology could mean the way we drive forward science and technological outcomes today is not future fit, in terms of UK being competitive in the world

How do you spot, develop and take opportunities in the most competitive way?

- Convergence: new technological paradigms increasingly occur at the interfaces between and with digital, physical, human and system integration and interoperability in mind
- Emergence: factors other than technical performance determine how attractive and relevant scientific and technological breakthroughs are to defence, national, societal and global challenges; and when they will be adopted
- Systems Thinking: understanding the nature and value of the specifics in the bigger picture
 - Understanding a range of future contexts ('future worlds')
 - Driving forward research and harnessing methods to model the dynamics and complexity of socio-technical emergence – leading to richer decision making in respect of the highest value components of emerging science and technology or other elements
 - Informing the technological decision making landscape requires the right information about unfamiliar and uncertain emerging technologies and their applications: performance, form factor, limitations, dependencies, roadmaps, etc.



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Questions?