



Royal Academy  
of Engineering

# Royal Academy of Engineering

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# Introducing the Royal Academy of Engineering

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# Agenda

- Introduction
- Introducing the Royal Academy of Engineering (RAEng)
- RAEng Programmes (UK and International)
- Tips for a successful grant application
- Q&A

# The UK's national academy for engineering and technology

- A charity
- A National Academy
- A Fellowship

## Our vision

- Our charitable mission is to deliver public benefit through engineering excellence and technology innovation
- We have outstanding convening power nationally and internationally.
- We understand how to make systems and innovations make a positive difference to society.
- We are trusted for our independence and professional excellence.

## Our 2025 overarching goal is:

To harness the power of engineering to build a sustainable society and an inclusive economy that works for everyone.



# Questions



# Academy Programmes





## **UK Grants and Programmes**

The Academy runs a programme of grants and prizes to support and celebrate the pursuit of engineering activities and to enable closer contact between academia and industry.

## **International Grants and Programmes**

Supporting development through international engineering collaborations. We advance engineering's contribution to a safer, healthier, more prosperous world.

# UK Grants and Programmes



# Research Programmes



**The Academy's research programmes offer comprehensive and bespoke support for excellent researchers, while fostering long-term collaborations between academia and industry**

# Research Programmes

## Early career

Engineering for  
Development Research  
Fellowships (EDRF)

UK Intelligence Community (IC)  
Postdoctoral Research  
Fellowships

## Mid-career

Leverhulme Trust  
Research Fellowships

Leverhulme Trust Awards:  
APEX Awards

Industrial Fellowships

## Established

Research Chairs and Senior  
Research Fellowships

Chair in Emerging  
Technologies



Government  
Office for Science

LEVERHULME  
TRUST



Department for  
Business, Energy  
& Industrial Strategy

# Enterprise Hub

Support for entrepreneurs



**The Academy's enterprise hub offers a number of grants aimed at identifying and supporting the next generation of high potential entrepreneurs and prizes celebrating success in innovation and entrepreneurship.**

# Enterprise Hub Programmes

- Enterprise Fellowship
- Shott Scale Up Accelerator
- Regional Talent Engines



# Education Programmes



**The Academy's education programmes are focused on addressing the UK's engineering skills challenge. The programme works across all phases of education to encourage the widest diversity of people to work as technicians and engineers.**

## Education Programmes

- Engineering in schools - STEM activities
- Further Education
- Higher Education
- Education and Skills Policy
- Webinar series
- This is Engineering

# Education Programmes

- Engineering Leaders Scholarships
- Visiting Professors Scheme (VP)
- Sainsbury Management Fellowships

# Policy Programmes and awards



**The Academy Policy development and award undertakes a range of activities to ensure that engineering is at the heart of policy-making, providing authoritative, impartial advice and expertise. We bring together leading engineers from across all disciplines to work together on issues of national and global importance. We set the agenda for education and diversity in UK engineering and technology and are an advocate for the need to plug the engineering skills gap.**

## Policy

- Engineering Zero
- Policy Fellowships



“I got so much from my Policy Fellowship... it really helped me solve a particular knotty policy challenge. It provided me with generous access to a set of experts, which allowed me to work through my team’s ideas and tap into their years of experience... It gave us a completely different perspective that we would not have otherwise had.”

### **Alex Holmes**

Formerly DCMS, now  
Amazon Global Business  
Development, Royal Academy  
of Engineering Policy Fellow

## Awards

The Academy's awards recognise and reward the very best of engineering talent at all stages of their careers. They include:

**Awards for early- and mid-career engineers** including the RAEng Engineers Trust Young Engineer of the Year awards and the Silver Medals

**Awards for teams** who have delivered significant projects or innovations

**Awards for exceptional service** to engineering from within and beyond the Fellowship





## MacRobert Award



The MacRobert Award is the premier prize for UK engineering run by the Royal Academy of Engineering since 1969. It recognises engineering achievements that demonstrate outstanding innovation, tangible societal benefit and proven commercial success. Winning teams receive £50,000.

### 2022 winner

Quanta Dialysis Technologies for creating a compact and portable dialysis machine, allowing more flexible and accessible care for patients with renal failure.

# Diversity and Inclusion



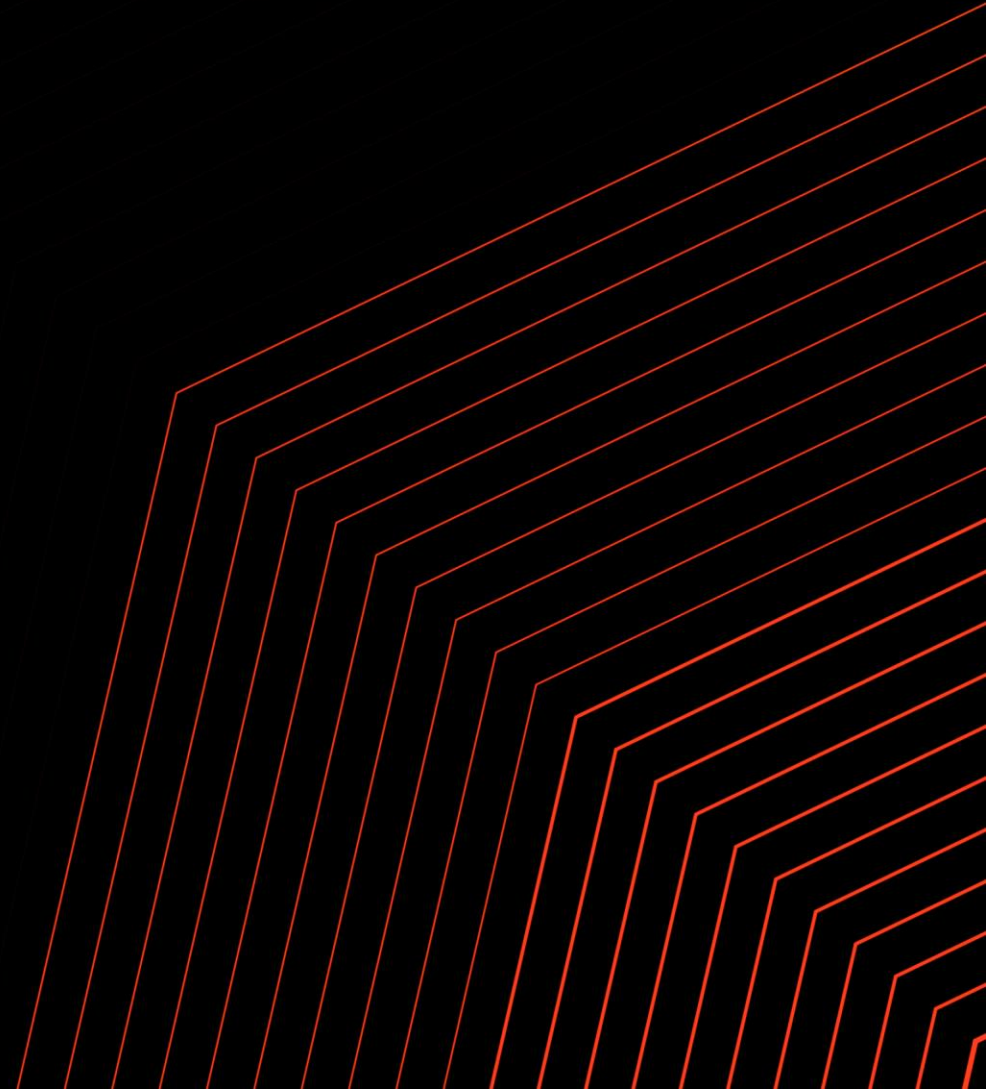
**At the Academy we have put diversity and inclusion at the heart of our strategy.**

**Engineering needs people with different experiences, ideas, and perspectives so that we can respond with the best and most innovative solutions to the problems our world is facing..**

# Diversity and Inclusion Programmes

- A Fellowship fit for the future
- The Diversity Impact Programme
- Graduate Engineering Engagement programme

# Questions



# Global Programmes



**We are a national academy  
with a global outlook.**

**The Academy's global  
programmes include  
developing relations with  
other national academies;  
leading debate and public  
policy projects; promoting  
UK engineering capability  
and building capacity in  
developing countries.**

# Sustainable Development Programmes

- The Africa Prize
- Africa Grants
- **Frontiers**
- **Leaders in Innovation fellowship**



# Higher Education Partnerships in sub-Saharan Africa

What does the programme offer?

- **The programme aims to improve engineering capacity in sub-Saharan Africa through improving the knowledge, skills and employability of engineering graduates, and building the research capacity of local higher education institutions.**
- **This is achieved through grant giving, partnerships with local industry, universities and UK institutions.**
- **Up to £140,000 grants over a 2-year period.**



## GCRF Africa Catalyst

What does the programme offer?

- **The aim of GCRF Africa Catalyst is to strengthen professional engineering bodies in sub-Saharan Africa so that they can effectively promote the profession, share best practice and increase local engineering capacity, to help drive development**
- **This is achieved through grant giving and partnership with UK institutions**
- **£30-160,000 grants from 12 to 18 months**



**The Academy's International Partnerships programmes help develop and promote the UK's global position in engineering and innovation. We also work to enhance international engineering leadership in addressing global challenges. We aim to achieve these objectives through collaboration with like-minded partners in the UK and internationally..**

# International Partnerships Programmes

- Talent & Mobility Visas and international mobility programmes
- Partnerships and summits Including the Global Grand Challenges Summit GGCS
- Engineering X

## Global Talent visa programme

- The Global Talent visa is a UK immigration category for talented and promising individuals in specific sectors wishing to work in the UK.
- **The Academy acts as the endorsing for all engineering applications,**
- There are 4 routes through which an individual may be eligible:
  - Route 1 – Senior Academic Appointments
  - Route 2 – Individual Fellowships
  - Route 3 – Endorsed funders
  - Route 4 – Peer review (applications are assessed by panels made up of our Fellows)
- The Academy is also involved in shaping the policy and governance of the Global Talent visa route, alongside the other endorsing bodies (including the RS, BA, and UKRI).



## Partnerships – current activities

**UK-China** exchange on net zero, incl. on policy challenges and R&I collaboration

**UK-South Korea** exchange on the future of the power grid

**UK-US** exchange on 6G, responsible engineering and complex systems

**UK-Germany** partnership on energy systems

**CAETS** engagement with global engineering leadership, including on SDGs, Diversity & Inclusion and other issues

**Euro-CASE** engagement – policy engagement at European level

# Engineering X



# Engineering X





**Engineering X is an international collaboration founded by the Academy and Lloyds Register Foundation that brings together some of the world's leading problem-solvers to address the great challenges of our age. The Engineering X community is currently working on 5 missions**

# Safer Complex Systems



## Current and upcoming activities:

- Launch of 18 complex system case studies
- Online lecture series on ethics of managing complex systems
- Identifying experts for workshops on complex systems governance challenges

Humans rely on critical infrastructures to survive. Much of this infrastructure is made up of complex systems that are highly interconnected and interdependent. When one fails, many others are also affected, with catastrophic consequences.

We build and convene diverse expert communities to understand the systems landscape, develop educational resources and tools, and nurture advocates for systems approaches to improve safety.

# Safer End of Engineered Life

The decommissioning, dismantling and disposal of products and structures at the end of their life can be harmful to human health and the environment, as well as squandering scarce resources, if not carried out responsibly.

- End of engineered life is rarely planned for and a system change is needed to address safety and sustainability issues worldwide.
- We champion design-for-demanufacture and circular economy principles.

## Current/upcoming activities:

- 6 projects on safer decommissioning of offshore structures and ships
- Addressing open burning of waste - UNEA 5.2 side event & COP27, grants development
- 15 SEEL Champions from 11 countries



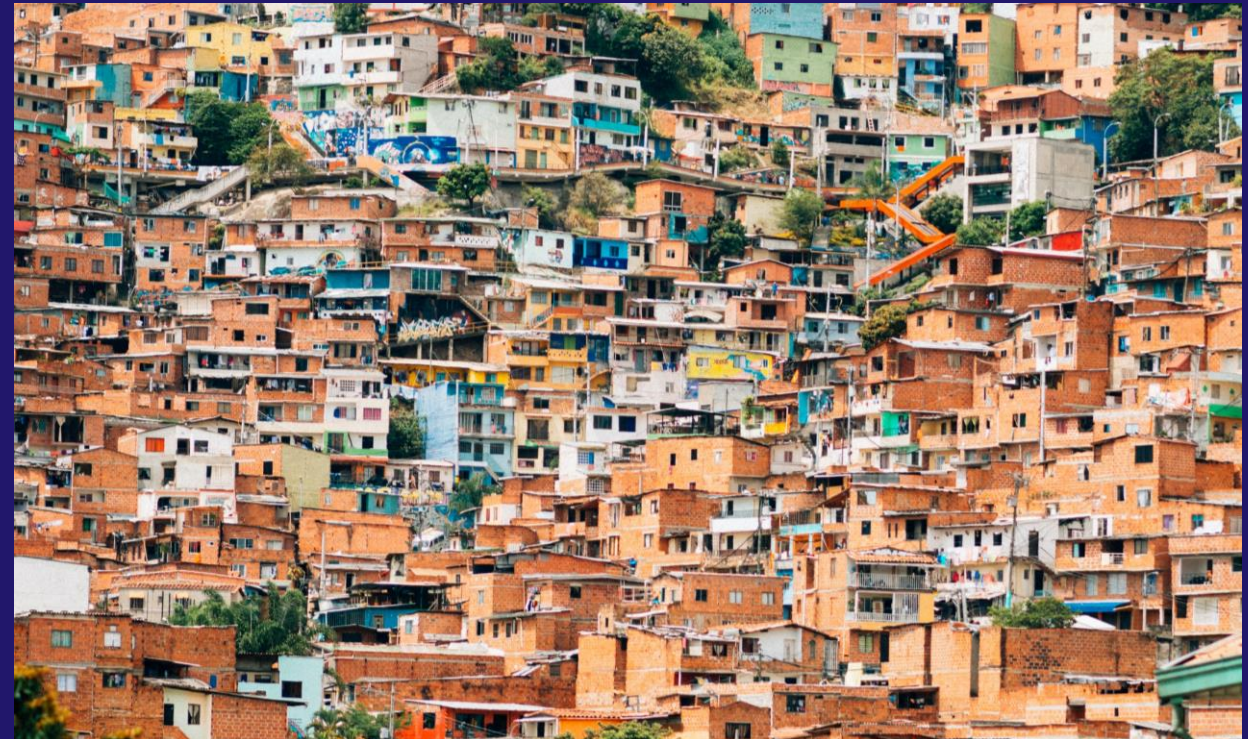
# Transforming Systems through Partnership

To solve the most pressing sustainability and development challenges, academics must work in partnership with industry, government and communities to build trust, engineer appropriate solutions and scale their uptake whilst training the next generation to do so too.

We catalyse partnerships between industry and academia to facilitate research, collaboration and knowledge exchange to address the SDGs.

## Current and upcoming activities

- 100+ live grants in 7 countries
- Programme evaluation to look back and learn
- Thematic/SDG and in-country workshops



# Pandemic Preparedness

Supports the UK and global engineering community to learn from the COVID-19 pandemic through sharing lessons on disruptive solutions and best practice in the pandemic prevention, preparedness, response and recovery.

## Current/upcoming activities:

- 23 grants in 9 countries
- Global review of engineering during the pandemic
- 10 grant impact extensions



# Engineering Skills where they are Most Needed



- Population growth in many low-income and newly-industrialised economies is driving huge investment in critical infrastructure.
- Lack of domestic capacity to maintain and operate infrastructure causes serious safety challenges and high accident rates.
- We support the delivery of skills and education programmes to develop capacity and enhance safety standards so that infrastructure remains safe and fit for purpose.

## Current and upcoming activities:

- 35+ impact grants in 19 countries
- 25 Safety Champions in Engineering Education from 6 countries
- Scoping Global Engineering Capability Review 2
- Safety skills webinar series



# Questions

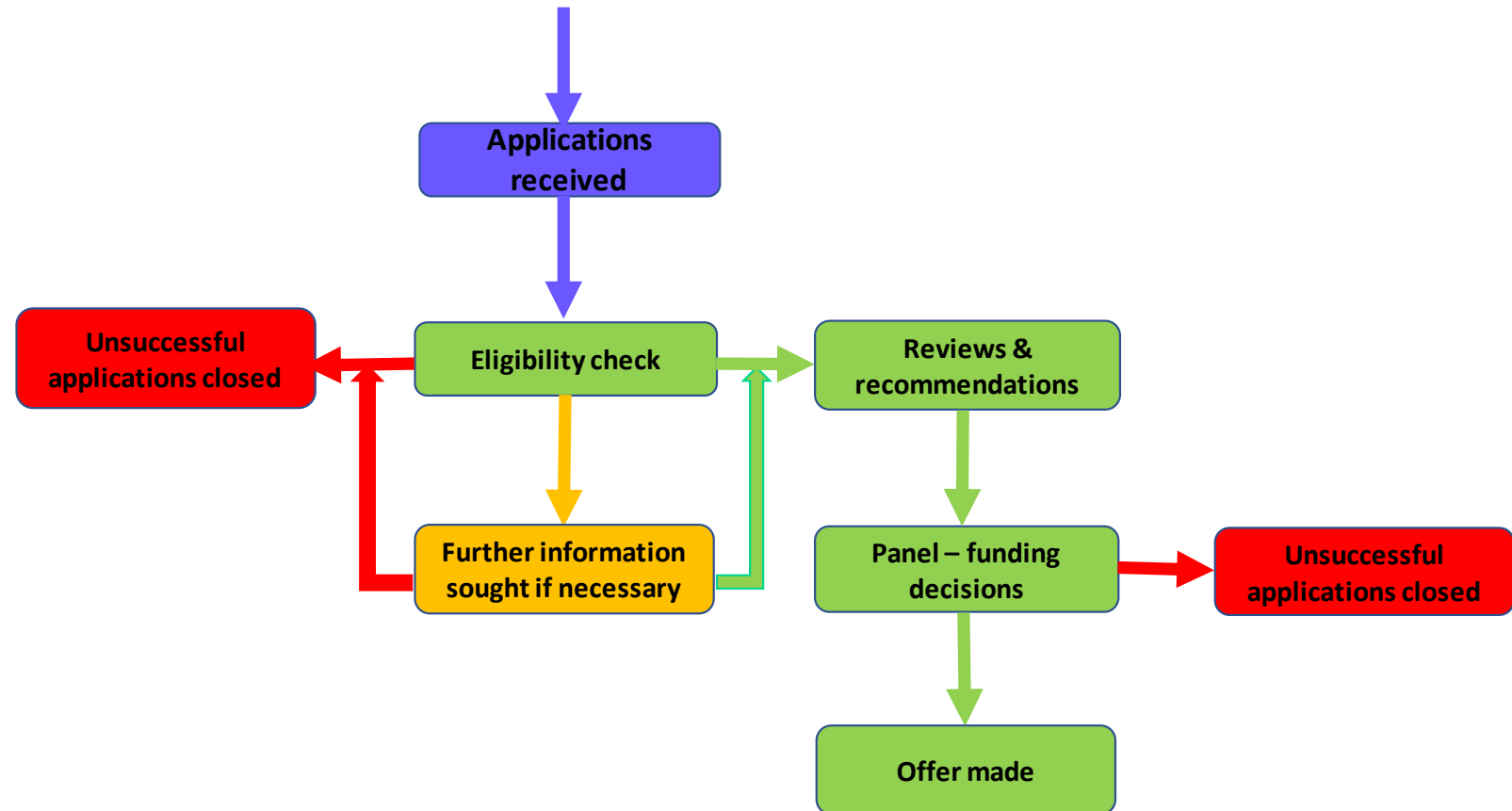


# Tips for a successful grant application





## The grant applications assessment, review, and award process



## Tips for a successful grant application

- Applicants Guidance Notes
- Grant Management System (GMS)
- Questions: Contact the Programme Manager (Contact Person)
- Applications assessment, review, and award criteria
- Grant scheme goals and objectives

## Tips for a successful grant application

- Project goals, objectives, outputs, outcomes, and Impact. Theory of Change (ToC) and Work Breakdown Structure (WBS)
- What is the problem you are trying to address? Supported with evidence
- What are you trying to change?
- What is the solution? Supported with evidence.
- Innovation and creativity
- Project budget

## Tips for a successful grant application

- Collaborators
- Project timeline
- Writing for external readers
- Flow, alignment and connectivity
- Project sustainability

## Tips for a successful grant application

- Supporting documents
- Diversity and Inclusion

## Theory of Change (ToC)

# Theory of Change Framework

### Goals 'WHAT'

Goals are broad statements about "what" will the project accomplish? Projects may have more than one goal, but many objectives per goal.

### Objectives 'HOW'

Objectives are specific statements about "how" of the process to achieve the goal(s). Every goal will have one or more objectives tied to it. Always start an objective with an action verb that is measurable.

### Inputs

1. Funding Sought from the Royal Academy of Engineering.
2. Matched funding from stakeholders.

### Activities

'What we do'

A group of tasks to produce the outputs.

### Outputs 'Services/ products (deliverable)

The quantitative measurement of a tangible product.

### Outcomes 'What happens'

Immediate: What happens as a result of activities/outputs.

### Impact 'Desired change'

Impact is a desired change in the status of targeted community that would not have occurred without contribution of this project.

**Risks:** Describe and list all the risks that can jeopardise the delivery of the project. Also describe methods and approaches for mitigating the risks in order to achieve project impacts.

# Work Breakdown Structure (WBS)

	Major project deliverables	Work component and sub components	Assign work: roles and responsibilities – who?	Timeline & milestones When?	Resources needed in GBP
	1	2	3	4	5
1	<p>Project deliverables are the results delivered to the client or stakeholders at the end of a project - established at the beginning of a given project to ensure that everyone understands the task at hand—guides deliverables</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• For a mobile development team, a deliverable might be an iOS application meeting specific functional requirements.</li> <li>• For a consulting firm, deliverables might include a research report that includes practical recommendations.</li> <li>• For a cybersecurity team, a deliverable might include a security audit and recommendations.</li> <li>• For an engineering company, a completed building might be a deliverable.</li> </ul>	<p>Break each major deliverable into work components and sub components.</p> <p>These are groups of related deliverables needed to comprise a larger, major deliverable.</p> <p>Depending on the size and scope of your project, you might have more than one level of work components.</p>	<p>Assign work components/packages to individuals, internal staff, external suppliers if will be used, and partner institutions working in collaboration with others.</p>	<p>Dates and milestones (check points)</p>	<p>Inputs needed to deliver the deliverable</p>

# Upcoming opportunities





## Upcoming opportunities

- Global Engineering Capability Review (GECR) 2023
- Engineering Skills for Safety Series of Webinars (ESSSW) 27 04 2023
- Networking opportunity



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Thank you  
Questions?

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