

## **UKRI-EPSRC POLICY BASELINE**

The following statements summarise the policies and values that EPSRC, within UKRI, has inherited from its predecessor body and which stand as a starting position for the new EPSRC Council as it considers how it can best contribute to the mission of UKRI.

### **VALUES AND BELIEFS**

EPSRC adheres to a number of general, over-arching values and beliefs which precede policies, and which drive its work:

- i) Society should always be the beneficiary of our work
- ii) Research excellence is the primary criterion for investment decisions
- iii) We are committed to the enhancement of training and skills so that the UK has the numerate, highly-skilled workforce it needs
- iv) We are committed to multi-disciplinary investments, and do this by building on the foundation of a strong disciplinary capability
- v) The best way to do project prioritisation is by peer review – a position consistent with, and supported by, government endorsement of the Haldane Principle
- vi) Research is a long-term endeavour: outcomes may not be tangible/visible until 10 years or more (and the routes to impact are many, varied and complex) – it follows from this that the research base requires stable, sustained funding
- vii) We achieve more by partnering appropriately with others, including, and especially, with other research councils with, and on behalf of, whom we have led joint programmes (eg the recent AI CDT call)

- viii) As an underpinning investor, the innovative research we generate may:
  - a) lead to further EPS research; and/or
  - b) lead directly to new products and services; and/or
  - c) be taken up by other parts of UKRI
- ix) We add value by:
  - a) Informing and influencing so that the research and innovation ecosystem is ready to receive our investment and to obtain maximum benefit from it
  - b) Managing/converting our knowledge of UK EPS into new investments that generate impact for the nation
  - c) Monitoring the effects of our investment in order to identify the returns on our investment – for example, through the REF impact case studies
  - d) Promoting our successes and influencing decision-makers so that the nation will invest further in EPS
- x) We engage with our constituencies actively, openly, transparently and approachably
- xi) We believe in the need to adapt, to work flexibly and innovatively. Indeed, Council has always supported the Executive in striving to introduce more imaginative ways of working within constraints (eg cohort training models, algorithmic approaches)
- xii) Ensuring sufficient critical mass in the leadership team is important both to ensure the appropriate level of creativity and agility, and to sustain the necessary level of engagement with our key partners



Graphene ink - Overall Winner and 1st  
Innovation and Equipment and Facilities 2016  
James Macleod, University of Cambridge

## CURRENT STRATEGIES AND PLANS

The major extant EPSRC policies and approaches are embodied in our current [Strategic Plan](#) and our current [Delivery Plan](#), as summarised below.

### Strategic Plan 2015

The current Strategic Plan was signed off by Council at its meeting in October 2014, and published in **February 2015**. The headline components were:

- i) **One vision:**
  - a) Our vision is for the UK to be the best place in the world to research, discover and innovate
- ii) **Two goals:**
  - a) Research and Discover
  - b) Research and Innovate
- iii) **Three strategies:**
  - a) Balancing capability
  - b) Building leadership
  - c) Accelerating impact

RESEARCH.DISCOVER.INNOVATE.  
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The three strategies, in particular, are significant components and drivers of EPSRC business.

- i) **Balancing Capability** is our tool for ensuring a balanced portfolio of research that meets the needs of the UK. By defining and publishing rationales for each research area and assigning a *grow, maintain or reduce* trajectory, we signal to researchers a landscape of priorities, and use these tools as the basis for a strategic dialogue with stakeholders.

*EPSRC [published the refreshed rationales](#) for its 111 research areas as part of its Balancing Capability strategy in February 2017 following extensive engagement and dialogue with the community.*

- ii) **Building Leadership** represents our over-arching intent to invest in the people with leadership potential at all career stages so they can make the maximum contribution, whether that be to universities, business, government or other research organisations.

*In 2017 EPSRC commissioned a mid-term review of its 2013 investment in 115 Centres for Doctoral Training (CDTs) and launched a call for its 2018 investment. A selection of student case studies can be seen in the [Building skills for a prosperous nation](#) brochure.*

- iii) **Accelerating Impact** is our umbrella approach to ensuring that we secure maximum impact from our investments in research and training. We pursue this through a variety of routes, including

working with researchers to consider how outputs might be used, enhancing relationships across the sector, and making research and training outcomes more accessible to all.

*EPSRC invested £60 million across 33 universities to advance their Impact Acceleration Accounts and speed up the contribution that scientists make towards new innovation, successful business and economic return for the UK – some examples can be seen [here](#).*

- iv) **Working In Partnership** - Additionally, a critical unifying element of our strategic approach is to provide national leadership by forging close partnerships across the research and innovation ecosystem. This includes working with our major university partners and with business; in the case of the latter, a notable strength is to build collaborations with industry rooted in our core, foundational role as the UK's major investor in basic research.

*EPSRC announced its first 11 Prosperity Partnerships in 2017, creating exciting opportunities for industry and academia to work together on strategically significant problems – a selection of videos for the Prosperity Partnerships can be seen [here](#).*

## **Delivery Plan 2016-2020**

The current Delivery Plan was signed off by Council at its meeting in **March 2016**.



Headline elements of the Plan are:

- i) Use of the [Prosperity Outcomes Framework](#) (supported by a more general outcomes-focused approach)
- ii) A combination of both community-led and strategic initiatives, with a desired balance of [60:40](#)
- iii) A continuation of all three approaches to [doctoral training](#) (DTP, CDT, ICASE), with a specific action to implement the next tranche of CDTs
- iv) Enhancements to [early-career training/leadership](#)
- v) [ARCHER's](#) successor to be delivered
- vi) An active approach to [equality, diversity and inclusion](#) is essential if we are to draw on the best possible pool of talent and skills
- vii) [International](#): centre-to-centre collaboration

One other significant approach has informed Council's business – namely, the need to *maximise opportunities for securing additional investment*.

## OUR BUSINESS MODEL

Informed by the set of values and beliefs described above, EPSRC's business model has the following key features:

- i) Council itself does not undertake research; it fulfils its mission by investing strategically in those who are best placed to carry out research and training (principally in universities)
- ii) Because Council undertakes no research of its own, its facilitative role requires it to foster highly effective partnerships with universities, business, all our partner organisations in UKRI, and others
- iii) Council takes a long-term view, and makes investments in accordance with that perspective
- iv) Council cannot achieve its mission on its own – it requires community-sourced [strategic advice](#)
- v) Council accepts any appropriate research proposal any time
- vi) Peer review decisions are best kept separate from strategy/policy development
- vii) A [peer review system](#) founded on high quality and timely expert assessment of proposals, supplemented by a number of enhancements introduced since 1994:
  - a) A flexible [college of reviewers](#) and panel members rather than standing bodies
  - b) Separation of proposal review and [funding decision](#)
  - c) Applicant right-of-reply to reviews
  - d) Efficiency measures to ensure healthy [success rates](#) and management of reviewer demand in a sustainable manner
  - e) Three speakers at each panel
- viii) A number of our objectives are, to a large extent, embedded into the research activities in which we invest – notably, our commitments to the promotion and acceleration of impact and to stimulate [responsible innovation](#). As a rule, we do not make bespoke investments in support of these objectives – though may choose to do so
- ix) Advocacy to decision-makers is most effectively undertaken on our behalf by third parties

## SAMPLE ACHIEVED OUTCOMES

As noted above, our fundamental aspiration is to invest in research and training which benefits society. Examples of achieved outcomes in meeting this ambition are given below.

### Science for a productive nation



#### **Software helps car manufacturers produce higher quality products**

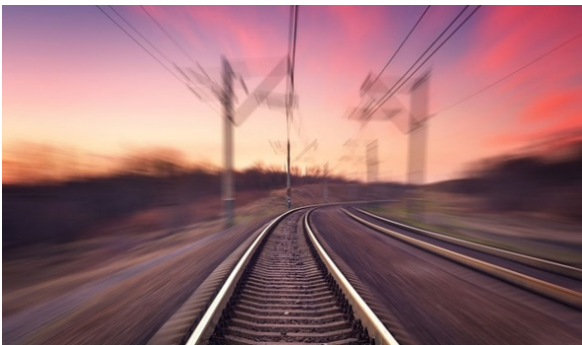
EPSRC-funded research at the University of Leeds has resulted in a software product that helps car manufacturers improve the quality of their products.

- Researchers used 3D modelling to replicate the effects of manufacturing variation – developing a product that has saved car makers £25 million
- Spin-out company Icona Solutions formed to maximise potential of research, creating Aesthetica software
- Aesthetica is now licenced to over 20 companies in 10 countries

Additional case studies related to productive nation

- [Radical sound-absorbing technology reuses 95 per cent of production waste](#)
- [Sensor tech raises safety standards, cut costs and delays](#)

### Science for a resilient nation



#### **Enhancing rail reliability, maintenance and capacity**

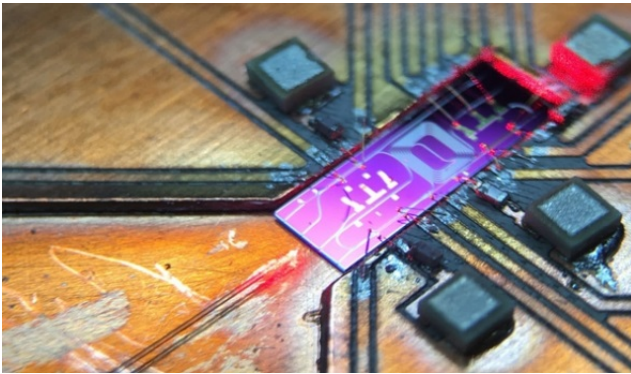
EPSRC-supported researchers at Loughborough University have developed a new fault-tolerant points mechanism that could revolutionise the global rail industry.

- Award-winning technology uses safety concepts derived from the aerospace and nuclear industries
- New track layout, combined with 'redundant actuation', improves reliability and reduces maintenance costs while enhancing network capacity
- The system is being developed to be compatible with London Underground and Network Rail systems

Additional case studies related to resilient nation

- [Drone tracking system enables early detection of unmanned aircraft](#)
- [Research into blast behaviour that could save British troops](#)

## Science for a connected nation



### Quantum tech secures online data transmission with new microchips

EPSRC-supported researchers at the University of Bristol have harnessed the strange world of quantum mechanics to ensure that online data is safe at all times.

- Quantum technologies create unbreakable encryption codes for online data transmission
- Sectors that could immediately benefit from 'unlimited lifetime' security include telecommunications, finance, government and defence
- The technology has been integrated into microchips within a single platform, paving the way for use in mobile devices
- Award-winning spin-out company set up to bring 'single photon' technology to market

Additional case studies related to connected nation

- [The wizard of wireless](#)
- [Optoelectronics Research Centre – a world leader in photonics](#)

## Science for a healthy nation



### New Scan to predict stroke risk

Researchers at the University of Oxford have developed a new type of MRI scan to predict the risk of having a stroke.

- Strokes are the third biggest killer in the UK and a leading cause of disability
- Almost 25,000 strokes in the UK are caused by carotid arteries
- Researchers developed a non-invasive technique which can detect stroke-causing plaque (fatty deposits) in carotid arteries
- The technique can differentiate between risky plaques containing large amounts of cholesterol and more stable ones

Additional case studies related to healthy nation

- [Touchscreen tech helps people with dementia feel like their old selves](#)
- [Robotic systems to help the elderly at home](#)